Content Authenticity Initiative | Adobe

Content Authenticity Initiative
High School Special Topic

Generative AI

Special Topic. Generative AI

Standards Connections*

Common Core English Language Arts

Speaking & Listening:

CCSS.ELA-LITERACY.CCRA.SL.1
Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others' ideas and expressing their own clearly and persuasively.

CCSS.ELA-LITERACY.CCRA.SL.2
Integrate and evaluate information presented in diverse media and formats, including visually, quantitatively, and orally.

Presentation of Knowledge and Ideas:

CCSS.ELA-LITERACY.CCRA.SL.4
Present information, findings, and supporting evidence such that listeners can follow the line of reasoning and the organization, development, and style are appropriate to task, purpose, and audience.

CCSS.ELA-LITERACY.CCRA.SL.6
Adapt speech to a variety of contexts and communicative tasks, demonstrating command of formal English when indicated or appropriate.

Writing:
CCSS.ELA-LITERACY.WHST.11-12.7
Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.

CCSS.ELA-LITERACY.WHST.11-12.9
Draw evidence from informational texts to support analysis, reflection, and research.

Speaking and Listening:
CCSS.ELA-LITERACY.SL.9-10.4
Present information, findings, and supporting evidence clearly, concisely, and logically such that listeners can follow the line of reasoning and the organization, development, substance, and style are appropriate to purpose, audience, and task

Reading Informational Texts:
CCSS.ELA-LITERACY.RI.9-10.2
Determine a central idea of a text and analyze its development over the course of the text, including how it emerges and is shaped and refined by specific details; provide an objective summary of the text.

* Common Core Standards in English Language Arts can be found here: *https://learning.ccsso.org/wp-content/uploads/2022/11/ELA_Standards1.pdf*

International Society for Technology in Education (ISTE) Standards

Empowered Learner 1.1.a
Students articulate and set personal learning goals, develop strategies leveraging technology to achieve them and reflect on the learning process itself to improve learning outcomes.

Digital Citizen
1.2.a Students cultivate and manage their digital identity and reputation and are aware of the permanence of their actions in the digital world.
1.2.c Students demonstrate an understanding of and respect for the rights and obligations of using and sharing intellectual property.

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Learning Objectives:
Students will:
- Define terms used throughout the curriculum to clarify what is included when
  we use the term "generative AI."
- Understand the basics of how generative AI tools process and learn from
  existing data to respond to new prompts.
- Consider criteria for detecting the use of generative AI and reflect on the
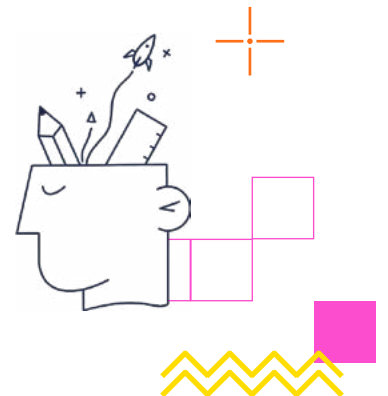 effectiveness of those criteria.

Learning Objectives:
Students will:
- Debate some of the ethical, legal, and practical concerns around generative AI,
  as well as potential benefits offered by this technology.
- Reflect on how these concerns relate to them as students and consumers.

Learning Objectives:
Students will:
- Review main concepts introduced throughout the unit.
- Experiment with an AI generator to create, refine, and evaluate images and text.
- Consider future applications of generative AI tools in their courses.

Overview for Middle and High School Educators

These lessons on generative artificial intelligence (AI) are intended for use with students in grades 6-12 in US public, independent, and charter schools. They partner with the broad *Content Authenticity Initiative (CAI) Media Literacy curriculum,* but can also be taught as stand-alone lessons for educators wishing solely to address this new step in a constantly evolving media landscape.

These educational materials offer an introduction to generative AI and to many of the critical questions this emerging technology presents, including: How does generative AI affect me? How does it affect others? What are some of the challenges and concerns about generative AI? How can I use generative AI safely, ethically, and effectively? And more.

In teaching students about generative AI, these lessons encourage them to think critically in response to the topics covered and supplementary readings presented, deepening their understanding of how this evolving technology both informs and transforms our lives, in ways large and small. Importantly, these lessons also lay the groundwork to equip students to think judiciously about their relationship to technologies that will emerge in the future. **Middle school** students are encouraged to build on what they already know about generative AI, identify questions that arise from their studies, and reflect on their learning. **High school** students are further led to identify topics for additional exploration and reflect on how their positions on the issues related to generative AI are impacted by their examination of the benefits and drawbacks of this new technology.

The middle and high school units cover similar topics, with the high school units designed to explore the ideas in greater depth and at a faster pace. The **middle school** unit aims to introduce students to the topic, equipping them with terminology, background information, and critical thinking skills to help them make good choices as creators and consumers of materials generated by AI. The **high school** lessons take the same starting point, but many of the tasks and materials are more complex, pushing older students to grapple even more deeply and interact with the technology and its ethical ramifications more fully.

The educational resources for both curricula include pedagogic objectives; suggested readings, resources, and case studies; talking points and discussion questions; vocabulary and definitions; reproducible worksheets and handouts; assignment ideas; and optional extensions or modifications, including notes about differentiating activities to address specific learning needs. While these materials have been designed for specific age groups in terms of depth, content, reading level, scaffolding, and conceptual abstraction, teachers should feel free to select materials from both curricula to best suit their students' needs, particularly for students in grades 8-9.

In the 3 lessons, spread over 4 (MS) or 5 (HS) 50-minute sessions, students engage in partner, group, and independent work, participate in whole-class discussions, read articles and present their learning, reflect on their understanding orally and in writing, write persuasive arguments about generative AI (HS curriculum), and use vocabulary terms and specific evidence to support their claims. Students also get hands-on practice with an AI image generator and develop norms for using this technology safely.
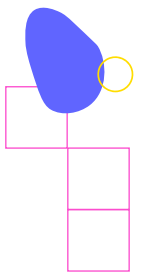
Throughout both units, students discuss the material presented and debate the implications of different aspects of generative AI. Recognizing that this technology is constantly evolving and poses increasingly complex ethical questions, the curriculum aims not to present definitive answers to these questions, but rather to introduce students to some of the considerations that factor into determining a just, safe, and ethical approach to using these tools. For this reason, many of the discussions are designed to be open-ended, with no "right" answer. At the same time, because it's essential that educators combat misinformation when it arises in the classroom, the lessons also include notes for anticipating and responding to potential areas of confusion and suggestions for redirecting class discussions when needed.

Common Core Standards
The **middle school** unit, intended for grades 6-8, meets Middle School Common Core English Language Arts standards in the areas of Speaking and Listening, Reading Informational Texts, and Science & Technical Subjects. The **high school** unit, for grades 9-12, meets High School Common Core English Language Arts standards in the areas of Speaking and Listening, Presentation of Knowledge and Ideas, Writing, and Reading Informational Texts, as well as International Society for Technology in Education (ISTE) Standards for Empowered Learners and Digital Citizens. For both curricula, standards are detailed in the lesson materials.

The Lessons
- Topic 1: What is Generative AI?
- Topic 2: What Are Some of the Concerns About Generative AI?
- Topic 3: Hands-on Practice with Generative AI

Why
The *CAI Media Literacy* curriculum addresses changes occurring in the digital landscape at a never-before-seen pace. The way information flows in the current moment compels us to broaden our understanding of what media is, how different media operate, and what mis/disinformation are, so that we can help our students become smarter consumers of content, capable of thinking critically in reaction to the media they encounter. Ultimately, this allows our students to make informed decisions about their lives and their world, and empowers them to engage with digital media in school and at home, now and in the future.

In the same spirit, these lessons on generative AI recognize and address the rapidly changing world of AI technology as it becomes more powerful, more accessible, and—in some cases—harder to detect. Generative AI has and will continue to impact many sectors of society, including healthcare, journalism, art, and finance. These changes bring productive potential along with valid concerns around bias, misuse, and data privacy concerns.

The stakes are high, and these educational materials aim to prepare students to ask vital questions and think about social responsibility in a technologically changing world.

Learning Goals

The lessons here provide high school students with a foundational understanding of generative AI, its benefits and its challenges, in order to prepare them to become responsible consumers and producers of media. Beyond simply introducing the "whats" and "hows" of generative AI, these lessons open up conversations about the "whys," using case studies and real-world dilemmas to challenge students to think critically about how generative AI can impact them and others, intentionally or not. Students reflect on their evolving understanding of the benefits and drawbacks of generative AI and work towards developing ethical frameworks for the responsible use and consumption of this technology.

Adobe Express

These educational materials have multiple activities involving generative AI features in Adobe Express. This decision was made for multiple reasons, including the following:
- The CAI is connected to Adobe.
- Adobe tools are often available to students at educational institutions.
- Adobe has an AI Ethics team that focuses on issues like bias and guides engineering teams to correct any imbalances, misrepresentations, or impartialities.
  - The educational materials explore concerns around bias in generative AI.
  - Adobe's AI features have feedback mechanisms so that public users can report concerns.
- Adobe Express's generative AI features, powered by Adobe Firefly, are designed to generate diverse images that can enhance creativity and learning.
- The Adobe Firefly generative AI model was trained on millions of high quality, professional-grade Adobe Stock images and public domain content where copyright has expired. The generative AI tools then create new content from scratch in order to protect artists and creators.
  - This differs from some other generative AI image tools, which scrape the whole internet without regard for copyright concerns or permissions.

If students do not have access to Adobe Express, they can use other related platforms, and instructors are encouraged to address these discussions around bias, ownership, and copyright. Note: Other platforms may run the risk of generating other forms of offensive content.

How to Use These Materials

All materials are adaptable to fit teachers' goals and course requirements. Topics can be used wholesale or pieces can be lifted as needed by educators.

Activities are designed to be run in 50-minute class sessions, with suggested modifications and extensions for whole-class and independent work.

*The lessons speak to a rapidly updating and evolving media-technology landscape. The materials here aim to provide a basis in understanding that landscape, and, importantly, they strive to emphasize critical thinking skills that will be useful for students even as the current media ecosystem changes. Educators may elect to adapt the following lessons or add in updated readings, as needed, in response to the evolution of generative AI over time.

Extra Resources for Instructors

As these educational materials are connected to the CAI Media Literacy curriculum and involve activities with Adobe Express, it is important to see how the company describes its development and promotion of generative AI. The following resources help educators to understand that perspective:

Some of these links appear within the educational materials for students to access as well.

- https://blog.adobe.com/en/publish/2023/03/21/responsible-innovation-age-of-generative-ai
- https://main--express-website--adobe.hlx.page/express/learn/blog/beta-announcement
- https://blog.adobe.com/en/publish/2023/06/08/adobe-express-june-2023-release
- https://www.youtube.com/watch?v=BJPrRpmeFfE

A Note on Accessing Assigned Readings

Certain articles recommended below might be available only via subscription to a given publication. Instructors can determine the best way to share those readings, based on their school's subscription to media, for example, the *New York Times*.

About the Authors

Dr. Lauren Walsh is the lead educator who oversaw development of the CAI media literacy curricula with generative AI as a special topic. Dr. Walsh directed the development and design of the middle and high school generative AI lessons.

Rachel Mazor, Master of Science in Education, authored the middle and high school generative AI guide and lessons.
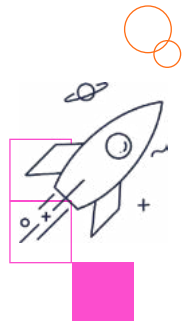
High School Special Topic
Lesson 1. The Basics of Generative AI

Learning Objectives
Students will:
- Define terms used throughout the curriculum to clarify what is included when we use the term "generative AI."
- Understand the basics of how generative AI tools process and learn from existing data to respond to new prompts.
- Consider criteria for detecting the use of generative AI and reflect on the effectiveness of those criteria.

Materials
- Handout: *Defining Generative AI →*
- Worksheet: *Criteria to Identify AI-Generated Texts and Images →*
- Student access to computers tablets, or hard copies of written materials (or any other devices or formats that are standard in the classroom)

Vocabulary[1]

Note: For additional vocabulary terms, including "media," and "media literacy," see *Adobe Content Authenticity Initiative High School Unit 1 Lesson Plans, Lesson 1.*

Artificial intelligence (noun) – a branch of computer science dealing with the simulation of intelligent behavior in computers; the capability of a machine to imitate intelligent human behavior

Generative (adj) – having the power or function of generating, originating, producing, or reproducing

Generative artificial intelligence (noun) – a subset of AI that can learn to create new images, text, or audio using vast amounts of training data

Training data (noun) – the large set of data that is used to teach a machine learning program how to predict and generate new data

Algorithm (noun) – a step-by-step procedure for solving a problem or accomplishing some end

Prompt engineering (noun) – the process of structuring sentences so they can be understood by a generative AI tool; prompts are improved through the process of refining to make responses more accurate

Refining (noun) – the process of improving a generative AI prompt by including more specific terms, providing context, offering examples, and otherwise clarifying desired results

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1 Definitions of terms throughout the curriculum are geared toward the topics of media and news covered in this curriculum. Consult a dictionary for alternate meanings that may be applied to other content. All definitions are adapted from *Apple Dictionary*, available on Apple macOS, and *Merriam-Webster*, available at *www.merriam-webster.com.*

Lesson Outline
Total Time: 50 minutes with optional extensions .

A. Defining Terms: What is Generative AI?
Step 1: What Do we Know About Generative AI? (5 minutes)
- Post the following prompt on the board and ask students to consider the question silently: Have you heard of ChatGPT, DALL-E, or other forms of generative artificial intelligence? What do you know, or think you know, about these tools?
  - Have students share their responses aloud, on slips of paper, or by posting to a Padlet or other shared digital noticeboard.

Step 2: Definitions (10 minutes)
- Distribute or post the handout *Defining Generative AI →* and review the terms.
  - Ask students if anyone can give a brief explanation of how generative AI uses training data to inform its algorithm. If a student has background knowledge about this technology, allow the student to share an overview.
  - If nobody in the class is familiar with this process, ask students how they think it might work.
    - To stimulate thinking, ask students to consider how babies learn to identify what a dog is, using exposure and explicit teaching from others to move from having no knowledge of dogs to having a generalized sense that dogs are furry or move on four legs, and then progressing to a more nuanced understanding of the traits we associate with dogs.
    - Students can consider how that process might be similar and different for a computer program that is "learning" about dogs.
  - Review terms listed in *Defining Generative AI →* handout. Connect these definitions to ideas raised by students in the previous discussion.

Step 3: How Generative AI Works (5 minutes)
- Show the excerpt "How it Works" from the *Vox* video "The Text-to-Image Revolution, Explained" (5:58-9:51), available at https://youtu.be/SVcsDDABEkM (last accessed on 08/06/2023).
  - Return to the question of how babies learn to identify what a dog is; how is the generative AI learning process different?

B. Recognizing Materials Produced by Generative AI
Step 1: Discussion: How can we tell when something has been generated through AI? (10 minutes)
- Group students into pairs or threes and instruct them to discuss the questions on the worksheet: *Criteria to Identify AI-Generated Texts and Images →*. After a few minutes of discussion, ask them to take notes on their responses.
- Regroup as a whole class to discuss their answers. Note, in particular, responses to Question 1, which asks for red flags to identify artificially generated material. Some answers may include: "It's an image of something impossible or that never happened," "The image is warped or just doesn't look right," "The writing is too sophisticated to be written by the supposed author," "The writing seems awkward, like someone wrote it without understanding it," and "It feels impersonal."

Step 2: Test and Reflect (15 minutes)
- Share or project the *New York Times* article, "Did a Fourth Grader Write This? Or the New Chatbot?" Available at *https://www.nytimes.com/interactive/2022/12/26/upshot/chatgpt-child-essays.html* (last accessed 08/06/2023).
  - Instruct students to read the introductory information and take the quiz alone on their devices, by projecting the questions, or by distributing hard copies of the writing samples in the quiz.
  - Discuss not only how many they guessed correctly, but also the criteria they used in determining whether a text was written by a student or by a chatbot. How effective were their criteria in determining the authenticity of a text? Did the discussion of red flags help them identify the AI-generated materials?

C. Closing reflections
Step 1: Instruct students to reflect on the lesson in their class notebooks or in an exit ticket, using any of the prompts below (5 minutes)
1. Was it challenging to distinguish between authentic texts and those generated by AI? What questions does this experience raise for you?
2. What surprised you in today's lesson?
3. What do you want to know more about?

Optional Homework or Class Extensions:
- Students can administer the chatbot quiz to their families or other teachers and write about the results for homework. It may be especially eye-opening to compare the results of professional educators, adults who are not educators, and other teenagers.
- Teachers can share an additional quiz, *Did AI Make This?*, available at *https://www.washingtonpost.com/technology/interactive/2023/ai-quiz-chatgpt/* (last accessed 08/06/2023).
- Students can view the entire *Vox* video "The Text-to-Image Revolution, Explained", available at *https://youtu.be/SVcsDDABEkM* (last accessed on 08/06/2023). The video is approximately 14 minutes long and covers the basics of how generative AI works, ways to refine prompts, and potential dangers of generative AI. Note that the section on "The Controversies" is included in the first session of Lesson 2, but it may be useful for students to preview the entire video independently and then return to this section in class for a more in-depth examination.
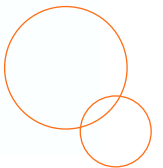
Defining Generative AI

Artificial intelligence (noun) – a branch of computer science dealing with the simulation of intelligent behavior in computers; the capability of a machine to imitate intelligent human behavior
- Artificial intelligence (often abbreviated as AI) performs tasks similar to ones humans perform. AI is used to offer you movie recommendations based on your viewing history, predict phrases when you are texting, suggest corrections when you use a spell-check tool, assist a doctor in identifying a broken bone in an X-ray, or help a driver back into a parking space.

Generative (adj) – having the power or function of generating, originating, producing, or reproducing
- "Generating" means "bringing something into existence"; something "generative" brings something new into existence that hadn't existed before. If you use a search engine to find a photo that appeared in a newspaper 10 years before you were born, the engine is finding something that already existed; if you use a generative tool to create an image of yourself in that historical photo, you are generating something new that didn't already exist.

Generative artificial intelligence (noun) – a subset of AI that can learn to create new images, text, or audio
- Examples of generative AI include Open AI's ChatGPT, DALL-E, and the Adobe Express generative AI features. These programs "learn" to create new images by analyzing patterns in **training data** (see below); while these programs may mimic human thought and creativity, they are not human and do not actually learn in the way that humans do.

Training data (noun) – the large set of data that is used to teach a machine learning program how to predict and generate new data
- Generative AI programs analyze enormous sets of data on the internet to identify patterns that they then use to generate new images, text, and audio. For example, a prompt to "Write a poem about AI in the style of Shakespeare" might result in something like this:
  Oh, AI, thy mind's vast expanse,
  Beyond the realm of mortal glance,
  Thou art a marvel, a mystic dance,
  In thy digits, a magical trance.
  The more data that generative AI programs are trained on, the better they are at mimicking content created by humans. But even with a great deal of data, these programs often make errors. (Note that the prompt was to create a poem in the style of Shakespeare; this stanza, from a seven-stanza poem, does not feature many of the traditional elements of a Shakespearean sonnet, such as ABAB rhyme scheme or iambic pentameter.)

Algorithm (noun) – a step-by-step procedure for solving a problem or accomplishing some end (frequently associated with computer operations)
- A search algorithm determines what kind of information is extracted from a large set of data. As a generative AI program can access more training data, its algorithm becomes more refined and its results become more accurate.

Prompt engineering (noun) – the process of structuring sentences so they can be understood by a generative AI tool
- Prompts are improved through the process of refining to make responses more accurate (see below).

Refining (noun) – the process of improving a generative AI prompt by including more specific terms, providing context, offering examples, and otherwise clarifying desired results
- For example, the prompt "Make an image of a child in the snow" can be refined by adding details such as, "Make a painting of a child playing in the snow in the style of Frida Kahlo," or offering more specifics, such as "Make an image of a ten-year-old boy in the snow."

Criteria to Identify AI-Generated Texts and Images

Discuss the following questions with your partner(s) and take notes on your answers.
You may write in bullet points.

1. How do you tell the difference between something that has been generated by AI and something that has been generated by a person or has actually occurred? What criteria do you use? Are there any red flags or obvious clues that let you know that text, an image, a video, or an audio recording was generated through artificial intelligence?

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2. Is it easier to identify text that has been generated with AI or images or videos that have been generated with AI? Why? Are certain types of texts or images easier to distinguish from those that were not generated artificially? Why do you think that might be the case?

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High School Special Topic
Lesson 2. Concerns About Generative AI

Learning Objectives
Students will:
- Debate some of the ethical, legal, and practical concerns around generative AI, as well as potential benefits offered by this technology.
- Reflect on how these concerns relate to them as students and consumers.

Materials
- Worksheet: *An Ethical Use of ChatGPT? →*
- Handout: *Concerns, Challenges, and Controversies Surrounding Generative AI →*
- Resource: *Suggested Articles: Concerns, Challenges, and Controversies Surrounding Generative AI →* (for distribution or for teacher's use)
- Worksheet: *An Open Letter to Adults About Generative AI →*
- Student access to computers (or any other devices or formats that are standard in the classoom)

Vocabulary[2]

Note: For additional vocabulary terms—including "bias," "credible," and "misinformation,"—see *Adobe Content Authenticity Initiative High School Unit 2 Lesson Plans, Lessons 1 and 2*.

Ethical (adj) – conforming to accepted standards of conduct; synonyms include "honorable," "moral," and "righteous"

Lesson Outline
Total Time: 3 50-minute sessions with optional extensions

FIRST SESSION:
A. **First Session: Warm-up / Review**
   Step 1: Review terms (5 minutes)
   - Post the vocabulary terms from Lesson 1 and ask students if they need clarification on any of them:
     - Generative artificial intelligence
     - Training data
     - Algorithm
   Step 2: Briefly clarify questions from the previous lesson if necessary.

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2 Definitions of terms throughout the curriculum are geared toward the topics of media and news covered in this curriculum. Consult a dictionary for alternate meanings that may be applied to other content. All definitions are adapted from *Apple Dictionary*, available on Apple macOS, and *Merriam-Webster*, available at www.merriam-webster.com.

B. First Session: Identifying and Evaluating Positive Uses of Generative AI
  Step 1: Brainstorm (5 minutes)
  - Ask: "What are some positive ways people can use generative AI?" List them on the board.
    - If students need help generating this list beyond "having fun," offer the following suggestions:
      - Generative AI can provide descriptions for people with vision impairments. (Read the story at: *https://the-decoder.com/how-gpt-4-is-helping-the-blind-to-see/* — last accessed 08/06/2023.).
      - Nervous best men and maids of honor can use text generators to help them write toasts for a wedding reception.
      - Teenagers can use generative AI to create realistic images of their plans to redecorate their bedrooms.
      - Police can generate images of missing people to predict how they might look years after a photo was taken.
      - Salon customers can try out new hairstyles before committing to a drastic cut.

Teacher note: If necessary, clarify that you are looking for prosocial, legal, ethically sound ways to use this technology.. For example, while it may seem "helpful" for a student to use ChatGPT to write an essay for a class, that use is likely not authorized by the teacher giving the assignment and does not meet the standards of academic integrity.

  Step 2: Ethical questions (15 minutes)
  - Distribute the worksheet: *An Ethical Use of ChatGPT? →*
    - Students can complete this worksheet independently, in pairs, or in small groups.
  - If time allows, regroup and have students share a few thoughts.
    - If time does not allow for a full group share-out, students can also return to this question later in the unit and reflect on their changing perspectives.
  - Note that the question here addresses ethical concerns, not disciplinary or legal considerations of the use of generative AI to produce written material. Also note that there are disciplinary and legal ramifications for presenting the writing of others as one's own; as needed, review your school's policies concerning plagiarism and consult a resource such as Adobe's Preventing plagiarism: a guide for students and educators, available at *https://blog.adobe.com/en/publish/2021/11/24/ preventing-plagiarism-a-guide-for-students-and-educators* (last accessed 08/13/2023).

C. First Session: Considering Concerns, Challenges, and Controversies Surrounding Generative AI
  Step 1: Introduction (15 minutes)
  - Post the following prompt on the board: What are some aspects or uses of generative AI that people are concerned about? Can you think of any specific examples of controversies surrounding the use of generative AI? List student responses. Some may include:
    - Plagiarism and cheating on written assignments
    - Fake news, misinformation, disinformation, and deepfakes
    - Putting people out of work / mechanizing jobs
    - Can't tell what's real and what's not / contributing to climate of mistrust
  - Project the *Vox* video, "The Text to Image Revolution, Explained" available at *https://youtu.be/ SVcsDDABEkM* (last accessed 08/06/2023), and show "The Controversies" (10:20-12:14).

- Briefly discuss some of the concerns raised in the video and connect to any points previously raised by students.
- Note: If students have already viewed the video independently prior to this lesson (see Lesson 1 Extensions), teachers may wish to simply review the main points, or they may find it helpful to screen this section in its entirety.
- Distribute and/or project the handout *Concerns, Challenges, and Controversies Surrounding Generative AI →* and review as a class.

Step 2: Assignment (15 minutes)
- Divide students into partners or groups of three and distribute the sheet *Resource: Suggested Articles: Concerns, Challenges, and Controversies Surrounding Generative AI →*. (Teachers should feel free to substitute more current articles or topics of local interest.) Instruct students to select one or more of the articles listed.
    - Alternatively, students can be assigned topics from the list of suggested articles and be instructed to seek out articles related to topics of their interest.
- Ask students to review their assigned article and prepare a summary for the next class. Summaries should include a brief overview of the main points raised in the article, the area(s) of concern or challenge represented by this issue, and any suggestions or recommendations to address the issue.
    - Students who need additional scaffolding can use the worksheet: *Case Studies: Concerns, Challenges, and Controversies Surrounding Generative AI →* in the CAI Special Education Topic: Generative AI Supplement for middle school students.
    - For homework or enrichment, students can seek additional articles related to their selected topic.

SECOND SESSION:
A. Session: Warm-up / Preparation
   Step 1: Check-in (5 minutes)
   - Instruct partners to meet to review their article summaries. If there seem to be major discrepancies between responses to the same article, direct students back to the source material to check their information.
   - Partners should also prepare to present their perspectives on the issues raised in the article or resource.

   Step 2: Preparation (5 minutes)
   - Students should prepare to share their findings with the rest of the class.
       - Remind students that each group should present a brief overview of the main points raised in the article, the area(s) of concern or challenge represented by this issue, and any suggestions or recommendations to address the issue as well as the partners' perspectives on the issue.

B. Second Session: Presentations
   Step 1: Presentations (25 minutes)
   - Instruct students to take notes on one another's presentations.
       - Teachers may wish to collect annotation sheets or develop brief quizzes to check for accountability in note-taking during the presentations. Students who are absent will need to complete an alternate assessment in this case.

- Students who require additional scaffolding can use the Note-taking Sheet: Presentations of Case Studies: Concerns, Challenges, and Controversies Surrounding Generative AI included in the CAI Special Topic on Generative AI for middle school students.
- Direct each group to present its findings to the rest of the class.
  - Remind students to note their questions or reactions to the issues presented by their classmates.
- If necessary, step in to briefly clarify or correct inaccurate or unclear information presented by students.
  - If time allows, students can raise their unanswered questions to be addressed by the presenters or by the teacher.
  - Alternatively, students can submit questions to be addressed at a later time.

Note to teachers: While it's important to honor students' voices, it's also essential to clarify and correct any misinformation that students may share during a presentation. Educators shouldn't hesitate to intervene when students present information that is false or reflective of prejudice. This is, of course, especially important in a curriculum that aims to teach students to identify and resist misinformation and disinformation in the media.

Step 2: Discussion (15 minutes)
- Put students in mixed jigsaw groups to discuss the issues raised in the presentations and debate their perspectives on the issues. (See Jigsaw Classroom, *www.jigsaw.org*, for additional information on this teaching strategy.) They may wish to discuss one issue in depth or consider the overall impact of these varied concerns.
- At the end of the discussion period, regroup and allow some students to share points raised in their discussions.

THIRD SESSION:
A. Third Session: Warm-up / Discussion
Step 1: Reflection (5 minutes)
- Have students review their notes from the previous session's presentations.
- Instruct students to respond to the following prompt in their class journals:
  - Which of the concerns about generative AI presented by your classmates are the most important to you? Why?
  - Do any of the issues presented seem relatively unimportant to you? Why?

Step 2: Discussion (20 minutes)
- Regroup and ask students to share some findings. List some responses on the board. It may be helpful to categorize responses as high/medium/low priority or important/unimportant, depending on students' responses.
  - If no student makes specific reference to one of the topics presented by classmates in the previous session, raise the topic and ask students to weigh in. It may be interesting to consider why they did not choose to raise this issue on their own.
  - To push the discussion further, pose the following questions: Do certain concerns about generative AI seem more pressing than others? Which concerns, if any, seem to be overblown or likely to resolve themselves with improved technology, and which suggest even more complex challenges to come in the future?
- Reflect back on the list and discuss which of the issues presented by their classmates seem especially relevant or concerning to them as students (such as concerns about the use of generative

AI in writing college application essays), in contrast to issues that may affect them more indirectly (such as concerns about the use of background actors' images in movies.)

- It may be helpful to prompt students to think further about direct and indirect impacts of generative AI challenges. For example, a student may claim that inaccurate travel guides written by generative AI won't affect them because they do not use travel guides. Teachers can then point out that similarly inaccurate information about health and wellness can also be produced by generative AI, which may have more direct consequences for young people who seek medical and fitness advice from those claiming to be experts. Students who do not generally fear being incorrectly accused of crimes may need to be prompted to reflect on the fact that faulty facial recognition tools disproportionately harm darker-skinned people more than those with lighter skin.

B. **Third Session: Writing**
   Step 1: Independent Writing (20 minutes)
   - Distribute the worksheet: *An Open Letter to Adults About Generative AI →*. Students can complete this by hand or on a computer.
   - While students are writing, circulate to answer questions and help prompt further thinking.
   Step 2: Sharing (5 minutes)
   - Allow students to read their letters aloud to the entire class or in small groups to one another.
   - Conclude with a brief discussion of patterns and themes that emerged from these letters. What do young people seem to want adults to know about generative AI and its impact on their lives?

Alternatives and Optional Homework or Class Extensions:
   - If time doesn't allow for three full class sessions for this topic, teachers may instead select one or two articles provided to share with students as a whole class and offer the other articles for independent work or enrichment. Session Three may also be adapted to independent work or homework.
   - Students can write about their own ethical dilemmas around generative AI and present them to classmates for consideration, following the model of Advice Roulette (available at *https://www.wqxr. org/story/advice-roulette/*): a student presents a dilemma, which the next student must respond to before presenting their own dilemma for the next student to address.
   - Students can prepare editorials for their school newspaper proposing modifying the current Academic Honor Code to reflect specific concerns about the use of generative AI for school assignments.
   - Students can write journal entries from the perspective of any of the following:
     - A student considering using generative AI to complete an assignment or write a college application essay
     - A teacher who suspects a student may have used generative AI on an essay
     - A parent who works in generative AI and discovers their child has been accused of using the technology to cheat on an assignment
   - The class can debate a specific aspect of generative AI concerns, either in an informal discussion or through a formal debate (e.g., "Resolved: film studios should not produce motion pictures based on scripts developed by generative AI.") For a suggested debate format, *see here*.

An Ethical Use of ChatGPT?

Kwame Anthony Appiah, a professor of philosophy at NYU, writes a *New York Times* column called *The Ethicist* where he answers questions from readers about ethical dilemmas they face. **Ethical** (adj) means "conforming to accepted standards of conduct"[1]; synonyms include "honorable," "moral," and "righteous." Below, read an excerpt from a letter sent in by a reader concerning the ethical use of ChatGPT to complete boring parts of their job:

> Can I Use ChatGPT for the Tedious Parts of My Job?, available with subscription at *https://www.nytimes.com/2023/07/07/magazine/artificial-intelligence-workplace-ethics.html?searchResultPosition=3* (last accessed 08/06/2023).

In the first column below, list reasons this use of generative AI may be considered ethical; then, in the second column, list reasons it may be considered unethical. An example for each reason has been provided:

Reasons why this may be considered ethical	Reasons why this may be considered unethical
• The quality of the writing style doesn't matter in a budget report—the point is to share information, not write it in an original way. • ...	• An English professor is expected to be an excellent writer and should set a good example for the students in the department. • ...

Are there other questions that need to be considered to determine whether or not this is an ethical use of generative AI?

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1 Definitions are adapted from Apple Dictionary, available on Apple macOS, and Merriam-Webster, available at *www.merriam-webster.com*

Read the Ethicist's response to the query. What do you think of Appiah's response? What are his most compelling points? Which points are less persuasive?

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Other readers wrote in the following week to share their views, including some of the following:
• "It is a bliss to have access to a technology capable of easing our daily struggle in any task that doesn't require human intuition or originality. What makes us proud as human beings is not the fact that we can fulfill tasks mindlessly, but to be able to create something new and unique."
• "I see no ethical issues in using ChatGPT without citing it for annual reports. However, in his answer Professor Appiah did not consider the possibility that the letter writer might include confidential information when prompting ChatGPT to provide drafts. That information will remain stored on ChatGPT servers indefinitely. Without a doubt, your university has a policy against sharing confidential information with third parties. Make sure you abide by that policy."
• "Because the language in these reports is not fully the letter writer's own, it could technically be considered plagiarism."

"Readers Respond," *The New York Times*, July 12, 2023[2]

How do these responses affect your thinking about this issue?

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Is there a difference between an English professor using ChatGPT for administrative tasks and a high school student using it for an English/ELA assignment? Why do those differences matter?

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2 Available at *https://www.nytimes.com/2023/07/12/magazine/celebrity-marriage-ethics.html* (last accessed 08/06/23).

Concerns, Challenges, and Controversies Surrounding Generative AI

The use of generative AI raises a number of concerns, challenges, and controversies, many of which fall into several broad categories:

1. **Plagiarism or misrepresentation of original work:**

   People can use generative AI to create text or images that are not their original work and pass them off as their own, as when a student uses GenAI software to complete a research paper. Most generative AI tools access training data without getting permission from the original content creators or crediting their work, for example by using an artist's body of work to produce new images based on their distinctive style.

2. **Misinformation or disinformation (unintentional or intentional):**

   Generative AI can be used (unintentionally or intentionally) to create convincing "evidence" of events, statements, and actions that never really occurred, as when someone uses it to create a photo of a politician meeting with a notorious figure they never actually met. (For more information on misinformation and disinformation, see *Adobe Content Authenticity Initiative High School Unit 2 Lesson Plans, Lessons 1 and 2*.)

3. **False accusations, slander, libel, and damage to reputation:**

   Like disinformation, false accusations (including slander, libel, and damage to people's reputations) can arise when generative AI is used to create images, text, or videos that make it appear that a real person is engaged in an illegal or unauthorized activity. For example, a user could create a fake security camera video showing someone of a particular ethnic group stealing from a convenience store, when in fact the suspected thief doesn't look like someone of that ethnicity.

4. **Mechanization / replacing human workers:**

   As generative AI technology improves, it will become more feasible to generate work long performed by human beings, ranging from writing scripts for television programs to actually performing in those programs.

5. **Unauthorized use of personal information, image, voice, appearance, etc.:**

   In a related concern, generative AI can open the door to the unauthorized use of someone's image, voice, or other personal traits and information, such as when it's used to create a video of a deceased celebrity advertising a new product in a commercial.

6. **Amplifying bias:**

   Because generative AI trains on data available without the ability to evaluate that data the way a human would, there is a great risk of amplifying or increasing, bias (prejudice) that already exists on the internet. For example, a generative AI tool searching for images of a professor may encounter an image that features a middle-aged white man and then reproduce it to create an image of a professor, reinforcing racist and sexist stereotypes.

7. **Contributing to a climate of mistrust:**

   With the fast-paced improvements of generative AI technology, many people understandably fear that they can't trust any information, even from sources they previously considered to be reliable. This can cause them to mistrust even accurate information, especially when the information doesn't conform to ideas they already believe.

Resource: Suggested Articles: Concerns, Challenges, and Controversies Surrounding Generative AI

The following resources may be used by teachers and/or shared with students as case studies in concerns, challenges, and controversies surrounding generative AI. Teachers are encouraged to supplement this list with current examples or issues of particular interest to the local community. All resources listed were last accessed on August 6, 2023.

Can I Use ChatGPT for the Tedious Parts of My Job?, available at *https://www.nytimes.com/2023/07/07/ magazine/artificial-intelligence-workplace-ethics.html?searchResultPosition=3*
• Ethical dilemma addressed in Lesson 2, First Session

The Text-to-Image Revolution, Explained, available at *https://youtu.be/SVcsDDABEkM*
• Video clip used in Lesson 2, First Session

Actors say Hollywood studios want their AI replicas – for free, forever, available at *https://www.theverge. com/2023/7/13/23794224/sag-aftra-actors-strike-ai-image-rights*
• Overview of 2023 screen and television actors' and writers' union strikes and concerns about use of generative AI to replace background actors, screenwriters, and others

Watch Out for the Fake Tom Cruise, available at *https://www.nytimes.com/2023/07/15/opinion/writers-actors-strike.html?searchResultPosition=4*
• Opinion piece about 2023 actors' strike

A.I. has a discrimination problem. In banking, the consequences can be severe, available at *https://www. cnbc.com/2023/06/23/ai-has-a-discrimination-problem-in-banking-that-can-be-devastating.html*
• Overview of effects of algorithmic bias on discriminatory lending practices

Here's What Happens When Your Lawyer Uses ChatGPT, available at *https://www.nytimes.com/2023/05/27/ nyregion/avianca-airline-lawsuit-chatgpt.html?searchResultPosition=2*
• Article about a lawyer whose ChatGPT-generated court filing included invented cases as evidence

Sarah Silverman and novelists sue ChatGPT-maker OpenAI for ingesting their books, available at *https:// apnews.com/article/sarah-silverman-suing-chatgpt-openai-ai-8927025139a8151e26053249d1aeec20*
• Brief overview of lawsuit alleging copyright infringement by authors whose works have been used as training data by OpenAI

International Community Must Urgently Confront New Reality of Generative, Artificial Intelligence, Speakers Stress as Security Council Debates Risks, Rewards, available at *https://www.nytimes.com/2023/07/18/world/ un-security-council-ai.html?searchResultPosition=3*
• Statement from United Nations Security Council meeting to discuss dangers of generative AI

AI and College Admissions Essays: Don't Rely on ChatGPT to Write Your College Essay, available at *https:// www.teenvogue.com/story/ai-college-admissions-essays-chatgpt*
• Advice column highlighting the risks of relying on generative AI for writing college application essays

Alarmed by A.I. Chatbots, Universities Start Revamping How They Teach, available at *https://www.nytimes.com/2023/01/16/technology/chatgpt-artificial-intelligence-universities.html*
- Article about how universities are responding to the use of generative AI by students

How Easy Is It to Fool A.I.-Detection Tools?, available at *https://www.nytimes.com/interactive/2023/06/28/technology/ai-detection-midjourney-stable-diffusion-dalle.html*
- Article about inability of AI detection tools to correctly distinguish between real and generated content (includes many images)

What Can You Do When A.I. Lies About You?, available at *https://www.nytimes.com/2023/08/03/business/media/ai-defamation-lies-accuracy.html?smid=nytcore-ios-share&referringSource=articleShare*
- Article about risks of generative AI creating and spreading false information

Turnitin's new AI detection causes issues for BU students, available at *https://dailyfreepress.com/2023/04/25/turnitins-new-ai-detection-causes-issues-for-bu-students/*
- Article from Boston University newspaper about how students' essays have been inaccurately tagged as AI-generated

Detroit mother files lawsuit over facial recognition arrest, available at *https://youtu.be/4X263WswGaI*
- Short television news report about a woman inaccurately identified by police facial recognition tools

A New Frontier for Travel Scammers: A.I.-Generated Guidebooks, available at *https://www.nytimes.com/2023/08/05/travel/amazon-guidebooks-artificial-intelligence.html?smid=nytcore-ios-share&referringSource=articleShare*
- Article with interactive features highlighting prevalence of AI-generated travel books
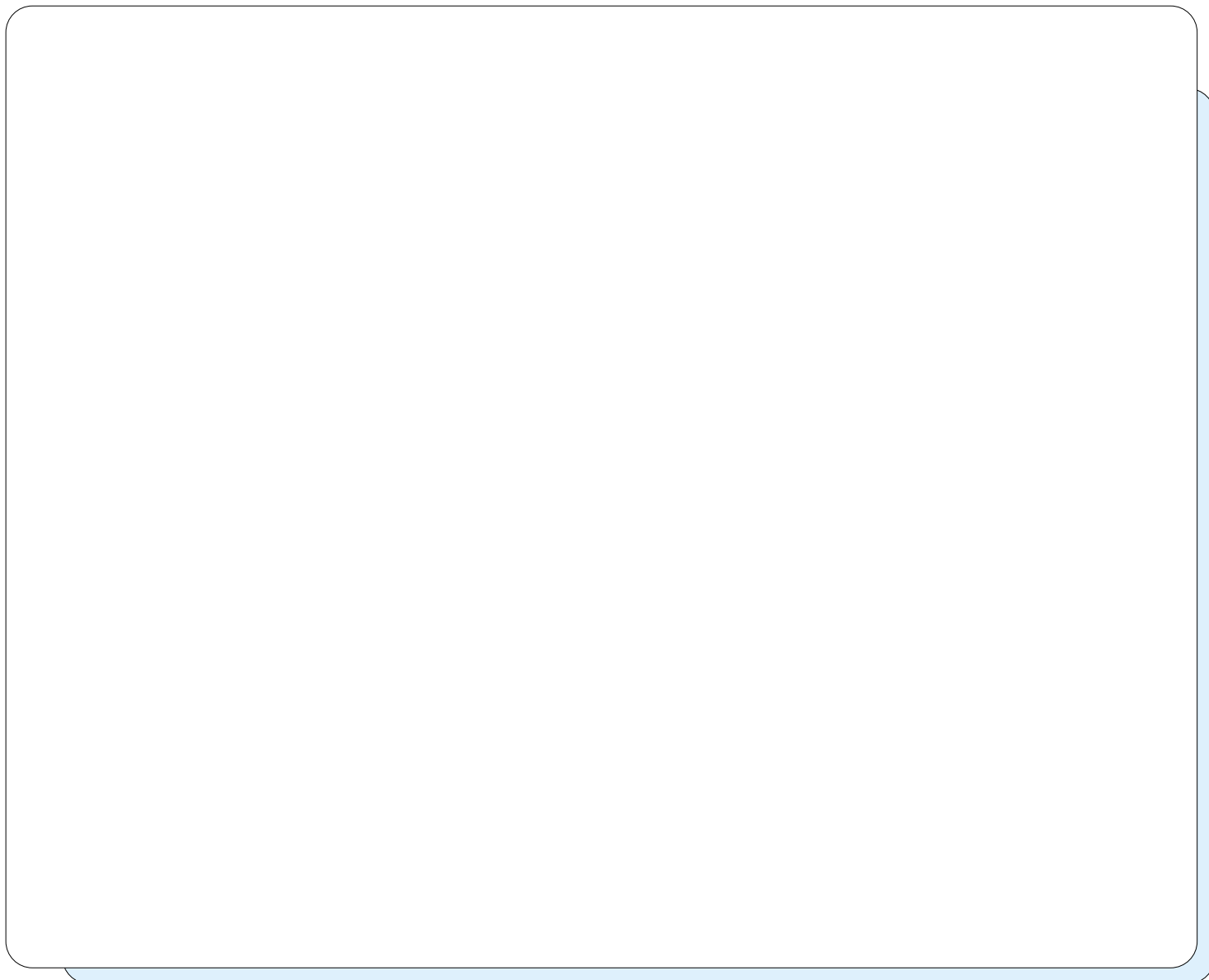
An Open Letter to Adults About Generative AI

Now that you've begun to understand the fundamentals of generative AI and explored some of the challenges and controversies arising from this new technology, you've probably developed strong opinions about how it's affecting your life now and how it will affect it in the future. In the space below, write an open letter to the adults in your life explaining what you think they need to know about your feelings—the things you appreciate about this technology, the things that concern you, the questions you may face as you consider when and how to use generative AI, and so on.

If you wish, you may direct this letter to a particular group of adults, such as teachers, parents, or members of Congress. Give these adults specific suggestions of what they can do to make sure that generative AI is used fairly, ethically, and effectively, and cite examples from your classmates' presentations to support your claims.

High School Special Topic
Lesson 3. Hands-on Practice with Generative AI

Learning Objectives
Students will:
- Review main concepts introduced throughout the unit.
- Experiment with an AI generator to create, refine, and evaluate images and text.
- Consider future applications of generative AI tools in their courses.

Materials | Resources
- Student access to computers ortablets. (Alternatively, teachers can project the generative AI software to enable completing the activity as a class.)

Vocabulary[3]
- As needed, please refer to vocabulary terms from previous lessons.

Lesson Outline
Total Time: 50 minutes with optional extensions

A. **Opening Discussion**
   Step 1: Reflection (5 minutes)
   - Share the following prompt for students to respond to silently via a Padlet or other discussion board:
       - What are some of the main points that stand out to you from our lessons about generative AI?

   Step 2: Setting Norms (5 minutes)
   - As a whole class, go over some of the responses. If necessary, clarify any misconceptions.
       - For example, responses may include:
           - Generative AI presents a lot of ethical challenges and potential problems.
           - There's a lot we don't know or understand about generative AI, and people are scrambling to keep up with the changing technology.
           - Generative AI is going to completely change how we think about almost everything in the future.
           - Generative AI is really dangerous.
           - Generative AI is really amazing.
   - Bring this part of the discussion to a natural close by noting that there are both positive and negative outcomes for using generative AI, and that the technology is likely to play an ever-increasing role in their lives going forward.

   Note to teachers: If students' responses have focused exclusively on either the benefits or the drawbacks of generative AI, offer counter-examples before moving on to the next part of the discussion.

   - Pose the following question for a whole-class discussion: Given both the benefits and the potential problems that arise from using generative AI, what are some norms we can set in our classroom to make sure our use of generative AI is safe, ethical, and effective?

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3 Definitions of terms throughout the curriculum are geared toward the topics of media and news covered in this curriculum. Consult a dictionary for alternate meanings that may be applied to other content. All definitions are adapted from *Apple Dictionary*, available at Apple macOS and *Merriam-Webster*, available at *www.merriam-webster.com.*

- Responses may include:
  - Check every image, video, audio recording, or piece of text for authenticity, and approach materials with healthy skepticism, especially when they seem implausible or contrary to well-established ideas.
  - Construct prompts with care so as to elicit the most precise and accurate results. Refine, refine, refine!
  - Before using generative AI for schoolwork or other tasks, be sure the use is authorized. If it hasn't been explicitly authorized for use, assume it's unauthorized.
  - Indicate clearly when we have used generative AI and credit any source material or training data consulted whenever possible.
  - Check for results that replicate or amplify prejudiced or inaccurate concepts, and interrogate responses for implicit bias.
  - Report inaccurate, biased, offensive, or otherwise faulty responses to generative AI prompts so the AI can "learn" from these mistakes. (Note that most AI generators allows users to give feedback on results, often in the form of a thumbs up, thumbs down, or flag icon, with space to specify concerns.)
  - When in doubt, ask a teacher or tech integrator for help.
- As needed, add to the class list of norms and post in a prominent location in the physical classroom or on the class web page.

B. Hands-on Practice with Adobe Express
   Step 1: Introducing Adobe Express (10 minutes)
   - View this step by step guide to learn how to add students to Adobe Express at _https://helpx.adobe.com/enterprise/using/edu-deployment-guide.html_ (last accessed 08/06/2023).
   - Introduce the generative AI features in Adobe Express by projecting the Adobe Express web page, available at _https://new.express.adobe.com_ (last accessed 08/06/2023).

Note to teachers: Check school policy regarding student registrations. Generative AI features are available and on by default, but access to features is configurable via toggle in Admin Console. Ensure your admin has Generative AI features enabled, if allowed by your school's policy. (The following activity can also be completed with any other AI text-to-image generator.)

Teachers are encouraged to explore the software before presenting it to students. This lesson plan does not include detailed directions for navigating the site.

- Sign in and scroll to the Text Effects feature. Demonstrate ways to use this tool.
  - For example, ask the class to provide a suggestion for a text style (e.g., "basketball," "ancient Sumer," or "wombat") to use with their name.
  - Demonstrate how to refine feedback on results.
- Go back to the main screen and scroll down to the Text to Image feature. Demonstrate ways to use this tool.
  - Demonstrate different options, including content type (such as "photo.")
  - Again, demonstrate how to refine undesirable results. For example, the prompt "a teacher and her cat" may result in a drawing of a man with a cat, standing in front of a blackboard with nonsensical writing on it.

Step 2: Hands-on Practice (20 minutes)
- Instruct students to log in to Adobe Express.

Note: If school policy doesn't allow students to sign up for memberships, teachers can modify the plans by projecting the following activities and taking suggestions from the whole class.

- Group students in partners to complete one or more of the following tasks:
  - Create a text effect that reflects an element of our school's mission. Use it to make a new brand identity for the name of the school.
  - Create a text effect that reflects an important symbol or theme from a book you have read. Use it to write the name of the title of the book.
  - Create a text effect that reflects an important aspect of a philosophical or political movement you have studied this year. Use it to write the name of that movement.
  - Create a text effect that conveys the meaning of a vocabulary word you have learned this year. Use it to write the word.
  - Create a text effect to use for a sign or poster advocating an issue of great importance. Consider how the text effect can convey messages about this issue, while still being legible.
  - Use the Text to Image feature to make a picture of the home of a character from a book you've read in class.
  - Use the Text to Image feature to make a picture of something you ate for lunch, done in the style of an artist you have studied.
  - Use the Text to Image feature to make a satiric photo of a historical figure doing an activity they would be unlikely to engage in.
  - Design an activity you would assign to classmates that involves using the Text to Image feature in Adobe Express. Include a rationale for this activity and state what you would hope students would learn from it.
- Encourage them to try refining their prompts, as well.
- If possible, have students print the best results and display them in the classroom.

Step 3: Sharing and Future Applications (10 minutes)
- Regroup and have students share some thoughts about their experiences with generative AI. Some questions to prompt discussion:
  - Which aspects of the software did you like experimenting with?
  - What was challenging about using this software?
  - What did you think of the results you got from your prompts? Did you figure out ways to get better results?
  - Did you encounter any of the challenges we've discussed, such as biased or inaccurate results? How did you deal with them?
  - How might you use these tools for school projects in the future? Are there any we could use for a unit we're working on now?
  - Did you confront any legal, disciplinary, or ethical concerns in this process? If you did, how did you address those concerns? If you didn't, where might you encounter these concerns in future applications of this technology?

C. Exit Ticket (5 minutes)

Recap this lesson by posing the questions below to summarize your learning.
1. What was one thing that surprised you in using generative AI tools?
2. How did our discussions of the benefits and challenges of generative AI affect your experience of working with these tools yourself?
3. How did your experience of working with these tools affect your thinking about the legal, disciplinary, and ethical considerations of using generative AI to create content?
4. Do you have any further questions about generative AI? If so, share them here.

Alternatives and Optional Homework or Class Extensions:
- Students can extend their explorations with the Text Effects and Text to Image features for homework, refining a prompt and writing a paragraph explaining their rationale for the artistic choices they made in developing the prompt.
- Students can write journal responses to the following prompt: In what ways is generative AI text-to-image technology a form of art? In what ways is it different from analog visual arts, such as painting, drawing, or sculpting? How do questions of ownership and appropriation affect the use of generative AI image-creation?
- Students can propose ways to incorporate generative AI tools into projects in any of their subjects and practice indicating how generative AI has been used. For example, for a comparative historical research project, a student can generate an image of Frederick Douglass and Booker T. Washington playing chess and note, "This image has been created using Adobe Express Text to Image feature."
- Students can design an activity that introduces middle school students to the basics of creating and refining prompts for text-to-image AI generators. Students can then prepare and present these activities to groups of middle school students in the community.