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Exploring the Ethics of Multimodal Composition With AI: Student and Educator Perspectives on Evaluating and Using Generative Models in the Classroom

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Generative artificial intelligence (AI) models are increasingly able to produce and combine sophisticated text, image, and audio. These advancements are challenging composers and teachers, as they work to reimagine and resist ways that composition and creative work are changing. This paper reports on one analysis in a larger study on multimodal composition with preservice teachers and other students interested in education. The authors explored ethical issues in multimodal composition, reporting on key themes across participant responses, composing sessions, and instructor/researcher reflections, including concerns and hopes for equitable access, bias and representation, cheating oneself and others, human creativity, and ideas for evaluating AI tools. The article attends to the concerns of future educators in designing recommendations for ways to incorporate (or resist) use of AI models in the classroom. Additionally, the authors propose a tool, the “Model Card for Education” template, and methods to guide evaluation of AI as part of the educational environment but also the broader systems of platform ecologies.

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Advances in the capabilities of generative artificial intelligence (AI) tools, combined with their increasing public availability, have catalyzed both new possibilities and new fears for digital composition and the teaching of it (McKnight, 2021; Singh et al., 2023). The current arguments, both for and against the use of generative AI in composition classrooms, reveal the field's beliefs about what constitutes writing and literacy. Rather than consider how generative AI might expand definitional possibilities of writing, some composition instructors are placing barriers around what counts as writing, or acceptable writing processes and products, to protect them from change.

Multimodal composition already redefines writing by including more than the written word; considering how generative, multimodal AI might alter the composing process and product creates further opportunities (or risks, depending on your perspective) for shifting what counts as writing and authorship. These new possibilities raise questions about the construction of text, what qualifies as authorship, and the ethical use of technology. Not only is the role of generative AI in shaping writing at stake for educators and students, but ethical concerns with AI models, especially generative AI, span a wide range of topics from climate impact to labor concerns (Crawford, 2021). Even when instructors support changes in writing to include a more flexible model of human-AI composing, they may not agree with the practices of the corporations that have built and control the models that can produce or coproduce the most convincing text.

In a larger project designed to explore composing processes with preservice teachers and other students in two English Education courses (Smith et al., 2024), we set out to explore ethical questions about the use of multimodal AI in writing instruction and writing. We were interested in understanding what questions students might pose and how they felt about using a variety of generative AI products. Importantly, we asked students to explore AI tools critically, evaluating them for potential future use in classrooms. We wanted to know what ethical issues were salient for them in making decisions about their (future) classrooms.

This article describes our efforts to scaffold preservice teachers' experiences composing multimodal texts with generative AI. We attend, in particular, to the ethical issues that have been reported in the literature and that arose for students in the process of creating and reflecting on their human-AI compositions.

Literature Review

While writing and what counts as writing have diversified in the past 20 years, much of the writing in schools has remained the same. Bolter (1991) argued that the "shift to the computer will make writing more flexible, but it will also threaten the definitions of good writing and careful reading that have been fostered by the technique of printing" (p. 2). Bolter's argument, though over 30 years old, provides insight into the changes that generative AI might bring to writing and the writing process. The process of writing

— brainstorming, drafting, revising, and so forth — is central to much of the writing instruction that happens in schools, whether it is print-based writing or multimodal writing, and can be reshaped by the use of new generative artificial intelligence tools. AI continues to transform the landscape of composition, prompting researchers to investigate its integration into the writing process.

Writing instruction has been a critical and growing area of focus in teacher education, grounded in foundational research that emphasizes the importance of writing as a process. In 2016, Myers et al. found that only 75% of teacher preparation programs surveyed across the United States had writing methods instruction. Thus, even though K-12 writing demands and high-stakes writing exams have increased, teachers are woefully underprepared to teach writers.

Additionally, teachers report feeling unprepared to integrate more innovative forms of digital writing, including multimodal projects (Hundley & Holbrook, 2013; Stewart, 2023). Preservice teachers' challenges range from effectively expanding their definitions of what counts as writing to include multiple modes in digital environments, to curricular and assessment constraints, and the numerous technical obstacles they encounter (Grapin, 2024; Michalovich, 2024). More recently, researchers and practitioners have begun exploring the potential for AI tools to support students' writing processes (Mushthoza, et al. 2023); however, the inclusion of AI is still in its early stages, with ongoing research needed to fully understand its implications for pedagogy.

Historically, AI's role in writing centered around microlevel writing support, such as grammar and spelling corrections (Adams & Chuah, 2023; Chang et al., 2021; Strobl et al., 2019). Overall, researchers have reported that students perceived AI tools designed to support microlevel aspects of writing as easy to use and helpful (Cavaleri & Dinati, 2016; Zhang et al., 2020). Some students, however, criticized the contextual relevance of feedback provided by AI tools (Zhang et al., 2020).

Examining the composing process, Tambunan et al. (2022) observed that college students learning English as a foreign language proficiently utilized Grammarly for detecting and amending local errors in grammar, spelling, punctuation, and sentence structure in their writing. Studies have found that AI tools, like Grammarly, typically support improvements in writing outcomes with equal or even more significant error reduction in student writing when using AI versus receiving teacher feedback (Chang et al., 2021; Ebadi et al., 2022; Ghufroon & Rosyida, 2018). Ebadi et al. noted that these benefits can be further enhanced when AI tools are integrated with teacher feedback.

The advancement in generative AI tools, notably ChatGPT, has ushered in a shift toward aiding macrolevel facets of writing, like content creation and structural coherence (Salvagno et al., 2023; Su et al., 2023). While these new AI tools surface many ethical and controversial issues, the potential of these tools to enhance learning and writing, when thoughtfully integrated, has been acknowledged by many in the field (Alharbi, 2023; Barrot, 2023; Warschauer et al., 2023).

For example, AI tools like ChatGPT can provide a wide range of information, support writers in developing relevant ideas, and help to organize their thoughts (Barrot, 2023). However, others have noted that ChatGPT is still a tool that lacks human perspective and the ability to self-reflect or be independently innovative (Bishop, 2023). Beyond simply critiquing the capabilities of ChatGPT, Robinson (2023) examined how the shift in writing vis-à-vis AI amounts to a “new autonomous model of literacy, where the practice of writing is reconfigured into editing what an algorithm recommends, where word-by-word writing is ‘low level work’ that distracts from, rather being essential to, writerly insight and aesthetics” (p. 124). This interpretation indicates not only a shift in writing *process* (from human generation to human editing) but also a shift in writerly *values* (i.e., what counts as good writing process and product).

Contrary to beliefs that generative AI saves time, studies indicate the opposite may be true in practice. Students in a 1st-year writing course were reluctant to use AI as they found it time consuming, facing hurdles like technical issues and steep learning curves (Cummings et al., 2024). Writing already is a time-consuming process, further complicated by the use of AI that requires writers to request, evaluate, and refine given outputs (Pigg, 2024). Composing with AI can be even more challenging for students whose first language is not English, as others point out that effective use of generative AI in education requires strong English skills (Warschauer et al., 2023).

While research about multimodal composing with generative AI is nascent, tools that help writers develop text (e.g., ChatGPT and Bard), images (e.g., Stable Diffusion, Craiyon, and Adobe Express), music (e.g., Riffusion, Boomy, and Beatoven), and videos (e.g., Genmo, Kapwing, and Magisto), or even a combination of these modes, exist and will no doubt influence multimodal composing processes, products, and instruction. Inevitably, development of multimodal capabilities and uses of them will outpace the academic literature.

For instance, one of the only current studies compared the processes between monomodal and multimodal composing with generative AI (Liu et al., 2024). The researchers found that those producing multimodal texts created more organized texts and directly incorporated suggestions from Bing Chat more frequently, created image descriptions with ChatGPT, and refined AI-generated visuals with Bing’s advice. But these tools and others are rapidly changing, in terms of both their capabilities and their availability to composers, as companies incorporate AI features into existing products that students, teachers, and the general public already use (e.g., Canva).

Still, our future with AI, as writers, researchers, and teachers, is not foretold. As Warschauer et al. (2023) recently wrote,

Many worry about AI becoming more intelligent and separate from our concerns. Others predict a more benign process whereby humans enhance their potential through AI. In fact, learning to incorporate AI generators in ethically and pedagogically sound ways may be evidence of exactly how this can happen. We all want a future based on our humanity and shared values, not dictated by

algorithms — so the more involved we are in the process, the more likely this will occur. (p. 6)

Since research about multimodal composing with generative AI is still in its infancy, this study aimed to help build a foundation from which future practitioners and researchers can consider how to ethically incorporate AI into ELA classrooms.

AI Ethics and Education

Though there are many worthy questions to ask about multimodal composition and AI (see Smith, et al., 2024), this article focuses on the ethical concerns surrounding the use of multimodal AI in writing and writing instruction. In discussing and defining ethics, we draw on student-generated ideas (concerns and hopes) and on extant AI ethics scholarship. “AI ethics” often refers to a core set of issues that arise during the development and application of AI, including, typically, data privacy, algorithmic bias/justice/fairness, trust and trustworthiness, transparency and explainability, consent and notice, and, less frequently, environmental concerns (Burriss, 2024). It can also refer to a subdiscipline of philosophy that involves a particular way of asking questions and making arguments about topics like (a) the nature and responsibility of humans in relation to AI, (b) what actions and applications of AI are right or wrong, and (c) what concepts like “privacy” and “explainability” mean with AI (see Müller, 2023, for a more thorough list of philosophical AI ethics concerns).

Ethical design and use of AI has become a popular topic of discussion and speculation in popular discourse and academic circles alike. Despite — or perhaps due to — an explosion in attention to AI ethics issues, many parallel efforts to develop frameworks to guide AI design and application and efforts to make laws to govern the uses and development of AI (e.g., see the European Parliament’s AI Act, adopted into law March 13, 2024), there remains little consensus on what this should mean for children and education (European Parliament, 2024).

There are a variety of extant frameworks that vary in terms of technical detail, comprehensiveness, and likelihood of enforceability. One set of ethical principles, the (now archived) White House’s Blueprint for an AI Bill of Rights, is an example of a comprehensive and less technical document that has not been translated into law (White House OSTP, 2022). In this framework, ethical use of AI means the right to (a) safe and effective systems, (b) algorithmic discrimination protections, (c) data privacy, (d) notice and explanation, and (e) human alternatives, consideration and fallback.

There are also education-specific recommendations for ethically developing and using AI in classrooms (Holmes et al., 2022) and in research (Barnes et al., 2024), but the ways these have been or will be adopted by schools and districts is unclear. This lack of guidance, especially in educational spaces, about the ethical use and development of AI, has left many teachers, administrators, and others scrambling to understand, create policies for, and teach with AI. In this study, we aimed to contribute to the literature on AI ethics in teacher education, specifically

attending to the concerns raised by preservice teachers engaged in multimodal composition with AI.

Theoretical Framing

Multimodality and Literacies

This study was guided by a social semiotics (Kress, 2010) view of multimodality that emphasizes how various modes — including but not limited to visuals, sounds, text, motions, and gestures — are integral in meaning-making. By combining, layering, and juxtaposing these different modalities, composers can create complex and synergistic designs. This expanded understanding of meaning-making opens up possibilities for composers to express their identities, reshape classroom spaces, and engage with content and personally meaningful issues (see Smith et al., 2020, for a review).

Social semiotics also helps researchers understand how modes possess specific semiotic resources that provide distinct affordances and constraints for communication (van Leeuwen, 2004). Studies have examined how composers often demonstrate and express different modal preferences (Kress, 2010) for the ways they choose to communicate. For example, one composer might view music as having potential for expressing emotions over other modes, whereas another composer might explain how visuals offer opportunities for conveying abstract concepts over aural or written forms of expression.

AI, Platforms, and Education

These views of multimodality shape our attention to and interest in how students draw on a wide variety of semiotic resources to make meaning, but they do not attend specifically to the role that AI tools, platforms, and other nonhuman technological factors play into these processes. Our views on and interpretation of AI in the classroom and beyond are influenced by platform studies in education (Nichols & Garcia, 2022; Nichols & LeBlanc, 2020; Pangrazio et al., 2022; Williamson, 2017). In particular, the acknowledgement of how “platforms do not just deliver consumer-facing services to their users but simultaneously extract data from these interactions, which their owners can sell or use in future product development” (Nichols & Garcia, 2022, p. 210) is especially apt when considering the intensely data- and profit-hungry AI technologies that generate media.

Although we frequently refer to AI as a “tool” to be used or a “feature” embedded in a larger platform, these words belie the deep interconnections between AI as a technological concept/object and today’s political, economic, and social lives. As AI is increasingly being integrated into technology that teachers and students are already using, in addition to being sought out by students, teachers, and administrators to perform various tasks (e.g., writing support and evaluation, school logistics and performance prediction, and automated safety and surveillance systems), educators must consider the far-reaching consequences and causes of adopting one tool — or subscribing to a particular logic — over another.

In addition to its more (socio)technical definitions, AI has also become a popular marketing term (e.g., see Adobe Express's, 2024, advertisements for "Classroom-ready AI") for educational products. The incorporation of AI capabilities into extant platform environments (e.g., learning management systems), curriculum, and the built environment (e.g., surveillance cameras in schools that supply video streams to gun detection software) reflects a complex entanglement within social, technical, and political-economic systems (Nichols & Garcia, 2022) that exist within and stretch beyond the walls of a school.

This framing is particularly useful for developments in AI systems and models that combine (at various stages in their processes) modes. One example of this is Google's Gemini, which they market as "born multimodal." Gemini's team claimed that "until now, the standard approach to creating multimodal models involved training separate components for different modalities and then stitching them together to roughly mimic some of this functionality," but that, "we designed Gemini to be natively multimodal, pre-trained from the start on different modalities" (Hassabis, 2023, "Next-generation capabilities" section).

As modal choice/mixing is attenuated and power thus consolidated within one model platform, the economic and political motivations and impact of such a shift using the logic of platforms can be traced. In addition — and related — to this platform orientation, we also drew on ideas from critical posthumanist literacy (Burriss & Leander, 2024; Leander & Burriss, 2020) to guide our thinking about critical literacy practice in the age of AI, especially as it has a specific focus on ethics. In a critical posthumanist literacy framing, AI is a part of modern-day literacy practice, shaping how people read, write, and live even as its development and application is shaped.

Attending to the entanglement of humans and AI allows us to explore new forms of critical literacies and what participation in our world might look like as machine and human capabilities evolve. Importantly, reshaping our ideas about justice and ethics — long a feature of critical literacies scholarship — is a central component of critical posthumanist literacy. In particular, we see ethics as, in part, the pursuit of "sociotechnical justice," acknowledging that social justice cannot be achieved without addressing entangled technical phenomena. In this case, those entangled phenomena include rapidly developing generative AI tools that work within and across various modes.

Method

Research Questions

In this analysis, we centered the ethical dimensions of using generative AI to create or cocreate multimodal texts, asking the following research questions:

- What ethical issues did university students completing education coursework identify or experience as they used different AI tools for multimodal composing?

- What ethical issues did university students in education coursework raise as they reflected on both the process of creating the multimodal composition and the products they made, especially when considering future classroom practice?
- How did participants evaluate AI tools for classroom use, attending specifically to ethics?

These questions and our analysis to answer them were informed by our theoretical grounding in the importance and interpretation of multimodal text composition, the broader, ecological view of platforms as sociotechnical systems, and a critical posthumanist orientation toward ethical inclusion of AI as a key modern-day literacy practice.

Study Design, Context, and Data Sources

This study took place at a private university in the southern region of the United States. Participants included 31 students taking one of two English education courses, with 14 undergraduate students and seven graduate students who completed both pre- and postsurveys and 10 additional students who completed only the presurvey. Participants ranged in age from 18 to 42, and most were studying education in some capacity (see Table 1 for demographic and other participant information).

A subset of the authors codesigned the sessions, which started with a brief lecture on multimodal composition, AI in education, and ethics. During a 3-hour class session, participants were asked to retell a text they had read in their class by creating a multimodal composition through the use of generative AI (see Figure 1 for the task instructions). Each participant had a choice to work alone or in a group and also had complete control over what generative AI they used to create their composition. These participants were students in one of two English Education courses, one focused on supporting readers of both print and digital texts and the other focused on young adult literature. Students were given a detailed list of tools and encouraged to explore the AI tools before their composing session, and both classes had already read and discussed the texts they would respond to in the multimodal composing task.

To ensure equitable access to AI composition products, we provided students a list of free, easily accessible multimodal AI tools (e.g., ChatGPT, Stable Diffusion, Craiyon, Riffusion, and Kapwing). The list was created through trial and error by a member of the research team who explored a variety of tools but included only tools on the list that were free for at least a trial period. Further, the team created how-to videos for each tool to support participants' use of the tools. During the process, students could also select their own tools to use that were not captured in the list.

Table 1
Participants, Demographic Information, and Prior AI Experience

Pseudonym	Demographic Information (Self-Written)	Undergraduate or Graduate Student	Prior AI Experience
Ally	19-year-old White female	Undergraduate	Text-based AI only
Andrea	18-year-old African American female	Undergraduate	None or minimal use
Ben	19-year-old White male	Undergraduate	Text-based AI only
Caroline	24-year-old White female	Graduate	Text-based AI only
Emily	21-year-old White female	Undergraduate	Text-based AI only
Esther	20-year-old Chinese American female	Undergraduate	Text-based AI only
Francie	23-year-old White female	Graduate	Text-based AI only
Gail	27-year-old White female	Graduate	None or minimal use
Gina	20-year-old White female	Undergraduate	None or minimal use
Jade	20-year-old White female	Undergraduate	None or minimal use
Kara	23-year-old White female	Graduate	Text-based and beyond
Kashvi	42-year-old Indian female	Graduate	Text-based AI only
Kelly	20-year-old East Asian female	Undergraduate	Text-based AI only
Lacy	18-year-old Asian American nonbinary	Undergraduate	Text-based AI only
Lyle	18-year-old Caucasian male	Undergraduate	Text-based AI only
Molly	21-year-old White female	Undergraduate	None or minimal use
Nancy	20-year-old Caucasian female	Undergraduate	Text-based AI only
Ophelia	22-year-old Black woman	Graduate	None or minimal use

Pseudonym	Demographic Information (Self-Written)	Undergraduate or Graduate Student	Prior AI Experience
Sonny	19-year-old South Asian male	Undergraduate	Text-based AI only
Tara	30-year-old Biracial female	Graduate	Text-based AI only
Theresa	22-year-old White female	Undergraduate	Text-based AI only

Note. This table includes all participants who completed pre- and postsurveys. An additional 10 participants, who completed presurveys only, are not listed. All names are pseudonyms, and demographic information is presented the way participants wrote about themselves.

Figure 1
Instructions for AI Writing Task

Multimodal Composing with Artificial Intelligence (AI)

For this in-class activity, you will experiment with different AI tools to retell a key scene from a novel you read for class this week. A *retelling/remix* is a new version of a story and can include the following:

- Updating the scene you are retelling for a new time period or setting
- Extending the scene to involve new information, perspectives (genders, race, language, etc.), characters, or settings
- Remixing the genre of the original text and adding multiple modes (visuals, sounds, text, and movement)

When retelling your scene, think about how you can creatively use the AI tools and multiple modalities to extend the original text. You have lots of freedom with this activity and how you use tools and modes. Your final retelling can take a variety of forms:

- **Option #1:** A short video (1-2 min) either created with an AI video tool or a combination of tools that work in different modalities (sound, text, image).
- **Option #2:** A multimodal presentation (using Google Slides, Canva, PowerPoint, etc.) that incorporates several digital artifacts you've created.
- **Option #3:** Your choice! Let us know if you have another idea for the final product of this activity.

Multiple data sources were collected to understand students' processes and experiences (summarized in Table 2), including 10 screen recordings of participants' laptops and video recordings of individuals and groups captured with stationary cameras. To understand participants' perspectives, we conducted pre- and postsurveys, as well as postcomposing interviews. Both the surveys and interviews were designed to elicit participants' perspectives on their multimodal composing process and their ethical considerations for the use of generative AI in the classroom.

The survey asked participants to describe their composing process and to reflect on whether their views on AI in K-12 contexts had shifted after creating a multimodal project with generative AI. Similarly, during the first half of the interview, participants reviewed their completed work and explained which AI tools they used and how the AI had influenced both their process and products. Then, during the second half of the interview, participants were asked to reflect on the benefits, challenges, and ethical tensions they felt when considering the use of generative AI in educational contexts.

Table 2
Data Sources

Name	Quantity	Description
Screen recording	10	Screen and audio recording on research laptops provided for students to work on during the composing session
Video recording of table groups	5	3 table group recordings from one English Education class and 2 table group recordings from the other, showing students' collaboration in the space of the classrooms
Presurvey	31	31 completed pre-surveys where we asked for demographic information, familiarity with AI, initial ethical concerns, and other questions
Postsurvey	20	20 completed post-surveys where we asked about changes in views on AI, reflections on their composing process, and other questions
Interviews	7	Approximately 20-minute Zoom post-composing interviews with volunteering participants, following a protocol asking about the composition process (including explaining/responding to their creations) and questions about ethical concerns
Instructor/researcher reflections	4	Reflections from study instructors/researchers responding to questions about major concerns, changes in views during and after study
Final compositions	10	Copies of student artifacts produced during the session, including sound, text, image, and video creations

Data Analysis

Data analysis for this study involved several stages to address the research questions. For RQ1, using screen recordings and video recordings of participants, we conducted a multimodal interaction micro-analysis (Jewitt, 2008; Norris, 2004) to create time-stamped logs of participants' composing processes. In the interest of understanding the impact specific platforms/tools can have in shaping the composing process, the analysis focused on the generative AI tools participants used, the actions participants took while using the tools, and the interactions they engaged in throughout their process, which included noting which modes participants were using to compose throughout. These timestamped logs were then triangulated (Shipman, 1981) with participants' postsurveys and postcomposing interviews, to more deeply understand the intentions behind their composing choices and the ethical dilemmas participants faced during their process (for example, see Figure 2 for an instance where students discussed the hindrance of a paywall). The team coded instances where students noted that the AI created output that was biased. Finally, our team independently returned to the data analyses and conducted open and axial coding (Corbin & Strauss, 2015; Saldaña, 2021) to identify

themes in terms of the ethical considerations for using generative AI tools to compose multimodally in educational contexts.

For RQ2 and RQ3, we used the pre- and postsurveys and interviews to conduct open and axial coding (Corbin & Strauss, 2015; Saldaña, 2021) to determine themes in educators' perspectives on potential ethical concerns and how to evaluate AI tools for classroom use. Similar to the analysis for RQ1, we returned to the screen recordings and video recordings to triangulate (Shipman, 1981) the themes with instances in participants' composing processes in which they discussed or experienced affordances, tensions, and ethical issues. For example, if participants noted their products were limited because of paywalls, when returning to the screen recordings and video recordings the team made note of instances in which participants were required to navigate payroll issues.

We organized the data in two ways — by case, collecting all of the data sources for a single participant, and by source type — and reviewed the corpus, individually and as a team, both ways, gathering instances relevant to our research questions. A subset of the research team met to discuss initial themes in the relevant data, then group data pieces by these themes for further discussion.

Figure 2
Sample Transcript and Corresponding Still of a Screen Recording

Time	Tool	Codes	Descriptions	Interactions/Noticings
43:33:00	Murf	REVISE AI VOICE OVER (speaker) (voice style)	They scroll through speakers and select Carter, who has a documentary tone, which they select	
	Murf	REVIEW AI VOICE OVER	presses play to listen -- The AI voice over literally makes them LOL	
44:10:00	Murf	REVISE AI VOICE OVER (speaker) (voice style)	They scroll through speakers, then they notice they can choose a voice style -- they choose angry, then scroll through the voices and listen to Miles, then Ronnie, but they don't like the voices. SO they filter for inspirational tone, then furious and listen to Ken -- which is funny. They refilter for inspirational, and listen to Naomi, then Terrell, and increase pitch by 15 and speed by 20	they are having a discussion about the pronunciation of Terrell
45:55:00	Murf	REVIEW AI VOICE OVER	presses play to listen -- they think it is good,	
	Murf	REVISE AI VOICE OVER (pitch)	adjusts the pitch to be slightly lower to 10	
	Murf	REVIEW AI VOICE OVER	keep listening -- they discuss how it would be cool to mix anger and inspirational voice styles and they think you probably can but that you have to pay for it.	
47:14:00	Kapwing	PLAN FINAL COMPOSITION	they discuss putting this voice over into a thing and put clips over it.	
	AI Tools	REVIEWS TOOLS	scrolls through the tools, specifically for video tools or sounds	
47:40:00	Riffusion			
	Murf	CHECK ABILITY TO DOWNLOAD	They discuss Murf with other groups. But they think they can't download their AI voice over without paying.	

Findings

Overview

Perhaps it should not have surprised us, given that these students had enrolled in English education coursework and many were preparing to be professional educators, that participants expressed few concerns with AI that were not directly linked to their ideas about teaching and learning. However, we were struck by just how infrequently participants referred to broader ethical concerns with AI. Even with (albeit brief) attention to a range of potential ethical issues in the minilecture beginning the session, few students mentioned many concerns in postsurveys or one-on-one interviews, even when prompted to discuss them.

No students raised substantive concerns about, for example, corporate intrusion, climate impact, or AI governance, and only one mentioned unethically sourced training data. However, many participants were deeply concerned about how AI might affect the teaching profession and their future students.

These concerns — and hopes — included discussions about access and equity vis-à-vis AI, bias and representation in AI products, and the potential for diminishing human creativity and critical thinking skills/opportunities for students. One of the most enduring, often repeated concerns was with plagiarism and cheating using generative AI. Though passing off AI-generated work as one's own was a concern, it was not the only way that participants feared student cheating. Many participants were worried about (future) students depriving themselves of opportunities for deep thinking. Participants were divided on whether AI would damage or expand human capabilities, especially with regard to creative endeavors, and many shifted their view of the creativity required when using AI after they composed with it themselves.

Both participants and researcher-instructors also wondered specifically what future educators would want or need to know about AI to be able to evaluate it for use in the classroom. As researchers, we considered the questions raised by participants and synthesized their responses to the direct question we posed, along with our observations of participants' composing processes, and our (researcher-instructors') own reflections on planning and implementing the activity.

Though we divided our findings into five themes, each theme maps most closely onto one of our three research questions: what students and instructors learned as they used the AI tools themselves (themes 1 and 2, equitable access and bias and representation), what students expressed as they reflected on the process and product of AI-enabled multimodal composition, especially with an eye toward their future practice (themes 3 and 4, cheating oneself and others and human creativity, art, and work); and what students identified as ways they would want to evaluate AI before use (theme 5, ideas for evaluating AI).

Theme 1: Equitable Access

Participants experienced frustration with the quality of the products they were able to make with many of the free and readily accessible tools we had recommended (but not restricted them to). Caroline, for example, described in her interview hitting a paywall that prevented her from downloading her creation for inclusion in her multimodal product. She switched to another tool without a paywall, but lamented that “the quality just wasn’t great, like, I didn’t really, like, enjoy the songs that they had.” This was a problem for several groups, especially as some tools allowed them to create media for free but not download without paying. One group, in particular, spent a significant amount of time tinkering with their AI voiceover to get a product they liked, only to be stymied by not being able to download and add the soundtrack to their multimodal composition.

This was not only an annoyance during the composition process but also seen as a potential equity issue for (future) students. In her interview, Kara wondered,

If some students are accessing the paid version of stuff, they’re gonna have access to way more advanced things and be able to create way more advanced things since you don’t. And that’s not really fair. So, there’s another equity issue. Absolutely, that’s gonna happen. And it’s, I feel like, even more [with AI].

Ophelia also expressed concern about students who might not have access to required infrastructure (e.g., Wi-Fi) or hardware (e.g., computers) at home, even if they are able to access them at school:

Thinking about it in the classroom definitely is, like, what do students have at home is the first thing. And if you really want to give this lesson, but some of your students don’t have access to strong Wi-Fi or computers, tablets, things like that of differentiating when you give something as an at-home tool versus an in-the-classroom tool. I think that’s super important for teachers to know their students and understand what is and isn’t feasible for them. (interview)

On the other hand, several students mentioned positive ways AI could help students access educational materials in their presurveys, including producing text at different reading levels and in different languages for language learners.

Interestingly, students differed in their views about the right way to expose students (or not) to AI. Some believed that it was part of an educator’s duty to use AI in school to prepare students for future work and responsible use of AI. Nancy argued that using AI in schools was important

because it is the future of the workplace. ChatGPT is taking over all sorts of work settings, and can be used as an asset. It makes sense to teach students how to use it safely so they are prepared to use it in the future workplace. (presurvey)

This idea was echoed by other participants, like Ophelia, who wrote in her postsurvey, “As the world begins to utilize AI more and more, it is our responsibility to teach students how to use it efficiently, effectively, and ethically.” Others, like Andrea, disagreed, arguing that using AI in school might be harmful: “I think children should be exposed to traditional teaching and methods of learning. From my experience, learning from/with technology was not helpful and lacked the emotional connection needed for understanding” (presurvey). While some saw it as an educator’s duty to prepare students by using AI, others felt that it was an educator’s duty to protect them from it.

Theme 2: Bias and Representation

Participants also experienced and worried about biased representations produced by AI tools, both in terms of race and censorship or refusal to provide certain results. In her postsurvey, Tara described how she

was worried that the AI generated racial biases where police officers were predominantly white men and the gang members were predominantly persons of color. We [received] various clips to choose from. However, it was up to us to select those ones or choose to go with continuity.

Even when there were choices, it presented a problem for the students telling stories in multiple images to find representations that were consistent enough to create continuity in their story. Tara also mentioned another problem her group encountered when using ChatGPT:

We had to work around the word gang because they are like, “We do not condone any negative or antilaw enforcement kind of agenda.” And so, there’s a lot of, like, limitations that ChatGPT did ethically. That we’re like, okay, how do we, how do we reword this so that we can get the scene, but without breaking like ChatGPT’s moral code cause, I think one of the, like, the scene was, like, the first part of *Romeo and Juliet*, and it was, like, “Do you bite your thumb at me, sir?” Which is a hand gesture that is supposed to be an insult. And so I was like, “Okay, what kind of gang affiliated hand gestures can we use?” And it was like, no, we do not provide any of that. (interview)

It remains unclear how the guardrails in these systems operate and whether or how they improve the safety of students and teachers or pose a threat of unreasonable censorship. Furthermore, this kind of a statement of refusal from ChatGPT, while sometimes couched in language claiming that ChatGPT cannot or will not take a position, is reflective of *someone’s* values being encoded into the platform — but whose values is unclear.

On the other hand, some participants saw an opportunity for AI to enhance multicultural representation in texts and art. Tara, who described her group’s struggles with AI-generated representations of “police” and “gangs,” also said in her interview,

I’m from Hawaii, and storytelling is a really huge part of our language and our culture, and I could just see my students really

wanting to have visual aspects to have oral aspects included with the textual. So I feel like AI kind of gives people the tools that they need to express themselves a little bit more clearly.

Ophelia thought generative AI might “offer opportunities to think through the literature in different ways” in cases where teachers “have to teach ... like, *Romeo and Juliet*, like, different classics like the Western Canon, where not all students really enjoy the way that literature is written, and don’t feel represented by it” (interview). She also saw it as an accessibility tool in disciplines that have historically been hostile to women and people of color:

Where especially, like, for students of color and women students were taught, like, they are not math people. They are not science people. Giving them the support that can make them think, like, “Okay, you’ve been taught these different things, but we have the tools to help you and to show you that that is not the case. Anyone can be a math person. There’s no such thing as a math person.” (interview)

Participants like Tara and Ophelia, both students of color themselves, saw great potential in certain applications of AI for benefiting students of color, but were “nervous” (Ophelia) or “worried” (Tara) about others. This kind of hopeful imagination mixed with critique and concern was characteristic of those students who we might describe as falling into a “Goldilocks zone” (Hundley et al., 2024) in their stances toward AI. They were open to both exploration and critical evaluation, and their previously formed views about AI did not prohibit them from deeply considering arguments about whether and when using AI is appropriate or desirable in the classroom. This orientation does not foreclose taking strong stances, but those stances were contingent upon careful deliberation and openness to considering other views rather than dogmatic beliefs.

Theme 3: Cheating Oneself and Others

Echoing trends in popular discourse around AI in education, concerns about plagiarism were often top of mind for our participants. Using AI as a shortcut, without proper attribution, or for cheating remained a major concern for many students. However, several students described how their views on the severity or nature of this concern changed after they composed with AI themselves. Ally said in her presurvey,

I do have some ethical concerns with AI in the classroom. I simply don’t want my students to be using it as a way to avoid doing their school work instead of using it as a valuable tool to better engage with particular texts or themes.

This same participant described a change in her views on AI in the postsurvey, recognizing how she was assuming the worst of her (future) students:

They have changed a little bit. For some reason with AI, I automatically assume that the students would use it in order to do

something nefarious instead of allowing it to open doors to creative endeavors that they would not have thought possible.

While some participants expected this kind of “nefarious” passing off of AI-generated texts as solely the work of the student, others worried more about the ways that AI might deprive students of opportunities to think critically, diminishing their autonomy and increasing their reliance on AI. Esther wrote that, in her view,

The biggest topic of discussion that is circling around the topic of AI in literature is the damage it could produce on students’ idea forming and critical thinking abilities. I can see how AI has the potential to strip much of that away and students would lean on AI to do the original thinking and learning for them. (presurvey)

Lacy wrote that “...the convenience of ChatGPT creates a culture where these skills aren’t being built. Kids are so blindsided by the convenience of it that they aren’t given the opportunity to discover the value in doing hard things and struggling” (presurvey). Some participants feared that AI’s facility with generating text might be an overwhelming temptation for students, denying them the opportunity to develop important — and sometimes painfully won — skills.

Theme 4: Human Creativity, Art, and Work

While many participants saw AI as a potentially harmful shortcut for students that would foreclose opportunities to think deeply, others saw ways that AI might enhance creativity — especially after their own experimentation with AI composition. Molly said,

My ethics regarding the use of AI has changed because I have realized that AI could actually be used for something beneficial and providing new perspectives and ideas. Instead of just using it as a shortcut for information, it can be used as a platform for creativity and imagination. (postsurvey)

Esther echoed this sentiment, also bringing in the idea of critiquing AI-generated media as a form of enhancing creativity:

I think it has changed my thinking — I had originally thought AI would limit students’ creativity in the classroom, but this activity changed my thinking and made me realize that using AI can actually boost students’ creativity as it gives them media to disagree with or see their visions differently. If I were to create a project that involves a creativity portion, I would invite my students to try using AI and decide for themselves if they want to keep it or create their own based on their experience/ products. (postsurvey)

As with other themes discussed here, this belief in the creativity-enhancing potential of AI, too, was far from uncontroversial. Several students also felt strongly that art/creative pursuits should be left to humans, arguing that “Creativity should come from people. That’s the whole beauty of it — human expression” (Jade, presurvey) and that “art is inseparable from

culture, emotion, complexity, and humanity” (Lacy, postsurvey). Lacy was also the sole participant who raised questions about unethically obtaining training data for models in their responses. One participant voiced concerns about AI reducing opportunities for human employment in creative realms after being alarmed by how quickly the AI produced images (Andrea, postsurvey). These participants show how disagreeing with the use of AI could come with many different justifications, from a philosophical opposition to the potential for machine creativity to training data and labor concerns.

Theme 5: Ideas for Evaluating AI

In an ongoing effort to identify and communicate those features and applications of AI models that might be useful to an educator’s decision whether or how to incorporate a particular AI tool or model into classroom practice, school policy, or curriculum, we asked interviewees what they would want to know about an AI before using it in their classroom with their students and what they would want or need to know about the tool to feel that it was *safe* to use with students. We also reflected on our own ideas about what might be included in a set of questions or a guide for evaluating an AI.

Participants most commonly mentioned data privacy concerns for students in response to this line of questioning, which they typically did not bring up elsewhere in surveys or during the course of composition. We had discussed children’s data privacy in the introductory minilecture, and Gail referred back to that, saying,

I know we talked in class about, like, using children's data. I mean, I don't know a lot about that, so I would ... probably need to research, you know, what the ethics are of that. But I think they would definitely need, like, their parents would probably need to consent.

Kara expressed a similar concern “about how much data they are collecting from students,” but continued by saying, “But that is applicable to many other apps and sites that teenagers are already using as well.”

Some concerns were both privacy related and logistical, as Caroline mentioned,

I would also be wary of asking middle or high school students to create lots of accounts online for a single project. I had to create multiple accounts in order to create downloadable content, even for the ones that said they did not require a login.

She also linked account creation to privacy concerns, saying,

So even just, like, having students have to create, like, an account with something I'd be, like, “Well, okay, what is their information being used for?” Like, where is this profile going? Is it like just on this account, or because we don't really do things in school that require students to create, like, a separate account sent to, like, a separate email, you know. Like, it's kind of all school based. So,

like, could we do that through the school information that they have, like, their profile with the school? (interview)

The desire for controlled access also manifested as calls for “guardrails” and constrained choices in the tools students could use. Though some trusted tools like ChatGPT to keep students safe from harmful responses (like Tara), others wanted more assurances that students couldn’t abuse or misuse the tools.

One thing we noticed during the composing sessions and that participants brought up in their interviews was that there were too many choices for tools on our suggestion list, and many of them produced jarring or poor-quality media. We had selected these tools specifically to be free and easily accessible to students, but they produced texts that were consistently less convincing, bizarre, or harder to manipulate. Although we selected the featured tools for accessibility and provided brief notes about their strengths and features, we also did not provide ethical evaluations of the tools in this exploratory study.

Creating our own evaluations as teacher educators (e.g., see the “model cards for education” section that follows) and guiding other educators in finding and interpreting information for ethical evaluation will be crucial before designing a K-12 classroom activity or a school policy. For example, although it was seldom discussed by students, our (researchers’/teacher educators’) own reflections involved deep concern about training data and processes used by AI models, including questions like the following: How might AI models reflect and perpetuate biases in their training data? How can we know, when companies don’t share what training data they used, or how they obtained it?

We also wanted to know more about how our own or our students’ uses of these tools fed into larger platform ecologies/economies: Who was being enriched by our uses of them, and how were they making money? How does this model of profit and surveillance differ from others present in schools? How do our uses of AI in the classroom impact the climate? The additional things we included in our researcher/instructor reflections tended to be more focused on systemic concerns (economic and environmental), perhaps to balance out the prevalence of student responses about individual privacy and cognitive development.

Discussion

There is such a wide range of ethical concern — from questions about employment (e.g., threat of teacher or artist job loss or deskilling), bias (e.g., generating stereotypical representations), and the environment (e.g., carbon impact of these models) all the way to deeply philosophical questions about the nature of human authorship, creativity, and thinking ability — that it seems we might only feasibly attend to those that are most salient at any given time. This certainly seemed to be the case with our participants, many of whom were keenly attuned to the demands of the classroom. However, given our theoretical grounding in platform ecologies and critical posthumanist literacy, which call for wider systemic analyses of sociopolitical and human-nonhuman entanglement, this narrow attunement meant that many of our systemic concerns were left

unexamined by the participants. Furthermore, given this wide range of consequential topics, it is important that we understand generative AI ethics as more than discourse around plagiarism and cheating.

Particularly relevant to the focus of this study, as well, is that the introduction of different modes of composition with generative AI has implications for the types of ethical issues that arise. Take theme 2, for example, where participants were concerned about generating images that reinforced racial stereotypes, visually. In order to think critically about this application of generative AI in their classroom, educators must have culturally responsive pedagogical skills/knowledge (i.e., identifying potential impacts of racist stereotypes on students encountering multimodal texts), ethical reasoning habits (i.e., reasoning about potential harm and benefit), and technical knowledge (i.e., understanding the risks of the technology and why they exist).

So what does this mean for our writing, and our teaching of writing, ethically? In the following section, we elaborate on implications for ELA and teacher preparation. We conclude by offering tools—designed with lessons learned from this study—and techniques for teachers to evaluate AI composition tools and tasks before implementing them in their classrooms. Finally, we point to ways of incorporating students in the evaluative process as a form of critical AI literacy pedagogy.

Implications for ELA/Teacher Education

Considering the potential changes to both the composing process and product creates challenges for writing instructors. In this study, we examined potential areas of concern for implementing a multimodal AI writing task, asking students to share their composing products and processes, along with their reflections. In our findings revealed that participants saw both risks and promise in using AI tools for multimodal composition. In this section, we offer ideas for shaping teacher education based on these findings.

Focusing on the ethical issues that arose in the composition process or student reflections gives us one way to open the discussion about what role AI should or could play in writing and the teaching of writing. For example, when thinking about writing authenticity and plagiarism (as was a major concern for many participants in our study), we might prompt (future) educators to ask, “How do I consider authorship when a generative AI tool created a product in response to a student-designed prompt? Which piece counts as the composing product? How might the creation of prompts become part of the composing process? What should/could this look like in the classroom?”

Some participants drew their ethical line in the sand more conservatively, arguing that AI should not be a part of writing instruction at all. Interestingly, almost none of these participants used illegal or unethical training of these models, a major concern in AI ethics discourse writ large (e.g., see Heikkilä, 2024) or environmental impact (Bender et al., 2021; Crawford, 2021), as their reasoning for this stance. These remain thorny issues, with some arguing that using generative AI tools is categorically unethical for these reasons. It is also an area of active litigation in many

modes, as artists and writers are arguing their cases against AI companies like OpenAI (e.g., Milmo, 2024).

These issues are worth following closely and discussing with our students. However, writing teachers cannot choose to avoid considering the opportunities and challenges that generative AI brings to the writing classroom. To ignore or try to “AI-proof” writing assignments does a disservice to students. This stance relates back to our theoretical grounding in platform ecologies and critical posthumanist literacy, where students, teachers, and writing are seen as intertwined with broader social, technical, political-economic, and environmental systems. If educators try to shield students completely from AI instead of critically addressing its use, they run the risk of ignoring the ways that AI is already present in many areas of their lives and, perhaps, missing opportunities to engage students in critical, informed reflection about it.

However, this does not indicate that we advocate for a wholesale embrace of AI and generative AI, in particular, for writing inside or outside the classroom. Indeed, principled resistance has an important place in the pursuit of sociotechnical justice (see Nichols et al., 2025 for more detailed analysis of this kind of stance). Furthermore, as technologies evolve so, too, may ethical objections. We may support critical exploration now and still hope — and, importantly, advocate — for changes to AI governance, the protection of privacy, and minimizing environmental impact of generative AI.

What we must consider as instructors is what our students need as thinkers, communicators, and writers in our content area. Our findings revealed that direct experience with multimodal AI composition shifted, in many cases, the ways our participants viewed AI for multimodal composition, seeing both new potential and new risks. This lesson must extend to educator thinking about teaching writing, in that scaffolded, critical exposure is crucial for our and our students’ growth as composers and as participants in an AI-rich world. Instead of asking, “How can I prevent students from using these tools?” the key questions should be shifted toward, “What is it that our students need to understand to use generative AI critically and in many modes? How might it serve as a support rather than a replacement for their thinking?” The goal for teachers is better instruction and better assignments, not merely instruction or assignments that include engaging new technology but lack clearly defined instructional purpose.

Changing instructional practices can be challenging and overwhelming for teachers to embrace, as there are so many facets to consider and new terrains to cross. Across the themes mentioned earlier in this chapter, we advocate for educators effectively leveraging AI for themselves and with their students. This first entails creating an equitable and flexible AI policy for the district, school, or at the very least, the content department within the school.

As recently as February 2024, *Education Week* reported that 79% of teachers claim that their schools do not have clear policies on the use of AI (Klein, 2024). This circumstance is problematic, as it means that some teachers more freely allow or encourage the use of AI while other teachers strive to make assignments un-AI-able by resorting to paper and pencil.

AI policies need to include components of critical thinking, accountability, authenticity, audience orientation, and authorial agency. Policy writing will be challenging, as there are competing views on how and when AI should and could be used. Another pressing question therefore is, “How do districts/schools write policy that fits into the Goldilocks zone of critical AI use while ensuring a fair, equitable usage amongst students?”

In other work, members of this research team have described this kind of Goldilocks zone for productive critique of AI as “where students’ approaches were ‘just right’ for productive AI work, not so firmly entrenched in their beliefs about a topic that they are not willing to change their mind and are able to engage in thoughtful participation and critique” (Hundley et al., 2024, p. 148). Applying that idea to this study, we might locate three participant responses along a continuum of stances toward AI. A student response like the following might fall somewhere toward the “AI is categorically bad” end of the spectrum:

No, [AI tools should not be used in the K-12 classroom]. I think children should be exposed to traditional teaching and methods of learning. From my experience, learning from/with technology was not helpful and lacked the emotional connection needed for understanding. (Andrea, presurvey)

A response like the following might fall toward the “AI is always good” end of the spectrum:

I think AI should be used in the classroom. It provides a means for better understanding of some information as well as answering questions. If I were an educator, I would try to integrate it if possible, mostly because of the potential uses for it in the future. (Lyle, presurvey)

A response like the following might fall in the Goldilocks zone for critical literacy instruction with AI:

I do [think AI tools should be used in the K-12 classroom]. ... depending on what it is being used for and how it is being used. I have witnessed the powers and benefits of AI for various fields, but I can also envision the harm and risk it can produce. (Esther, presurvey)

Importantly, this is not a judgment of the student as a person or a representation of any stable characteristic. Rather, it is an in-the-moment snapshot of a stance that a student may take toward AI that can influence their openness to either resisting OR embracing it. These stances can — and should — change across contexts and within individuals as they grow and gain experience. Recognizing that students can embody a wide, changing range of views toward AI might help educators tailor instruction. Asking students to reflect on their stances might give them insight into their own practices. For example, in several other research and teaching settings, we have asked students to locate themselves — and different views (e.g., a statement like, “AI will decrease human creativity”) — along a spectrum. Then, we held a discussion where students could volunteer to explain, qualify, or change their location on the spectrum at that moment.

In addition to this type of reflective activity, we also offer other ideas for incorporating AI into teaching practice, including a set of guiding questions for educators to match their learning goals to the technology they might use and specific supports for students and educators to critique AI-generated products. As AI comes with risks and costs (like any educational tool, including traditional curriculum and materials), it is important to weigh these risks and costs with the potential benefit from using the technology.

Teachers should start by (a) defining the instructional situation (i.e., what is the content or skills that need to be learned? Who are my students, and what do they need? What is my school context, including any relevant policies and infrastructure considerations? How much time do I have with students, and how much time can I devote to supporting them?); then (b) evaluating the risks and benefits of using AI (i.e., How might a generative AI tool support that learning? What would using a generative AI make possible that wouldn't otherwise be available/accessible to students? Do these benefits outweigh the environmental cost, financial cost, risk of supporting unethical business practices, risk of marginalizing students, etc.); and finally (c) revisiting assignments and assessment plans to make sure that possible uses or prohibitions of AI contribute to student learning goals.

Once this planning and analysis are complete, and if using AI is deemed appropriate and advantageous to students' learning, educators must also provide adequate support for using the tools in a thoughtful, critical way. Far from being a way to make product creation more efficient, this approach requires additional time and planning for educators. Though AI is often seen as a shortcut, teaching responsibly and critically with AI is no such thing.

For example, every opportunity to use AI in the classroom could also be an opportunity to teach about it, exploring important features of how the model works, how it was trained (if that information is available), and why it might make the predictions and products it does. Educators might lead students through the process of generating prompts and critiquing both the prompts and the products the AI generates in response. In critiquing the content that is generated, teachers might ask students to verify the accuracy of the text (i.e., are there factual inaccuracies), identify strengths and weaknesses of the drafts created, think about how they would improve the draft generated by AI with and without AI support, and attend to any possible biases in the generated content. This should include specific support for attending to how these critiques might vary across modes. For example, students should consider how biases might appear, or sound, different when generating an image or text versus (or in combination with) an audio file.

This came up in our study when students critiqued both the appearance (e.g., attending to race in generated images) and the sound (e.g., attending to how the AI produced an American accent) of AI-generated products. In the following section, we offer additional ideas for educators to evaluate AI tools and models for classroom use: a specialized form of a "model card" (e.g., Mitchell et al., 2018) for education and training for teachers that attends to pedagogical, ethical, and technical concerns.

Evaluating AI for Education: Ethics Model Cards and Training for Educators

Our third research question focused on participants' ideas about what would be useful and necessary for evaluating AI tools for classroom use. The responses we received, along with our analysis of the multimodal composition process, informed the development of a prototype tool to guide teachers' analysis. In particular, we saw how attuned our participants were to issues of pedagogical import (like equitable access), but how little they discussed or questioned other ethical and technical aspects of the AI models.

We propose here a prototype for a "model card" (e.g., Mitchell et al., 2018) designed specifically for educators to evaluate AI tools and models for use in educational contexts. This is based on the findings reported here, which include a deeper understanding of future educators' hopes and concerns regarding AI, alongside our own as researchers and teacher educators. Our proposal is motivated by the review of extant tools for evaluating and communicating about AI models--from the classic text-based model card (Mitchell et al., 2018) to Crawford and Joler's (2018) artistic rendering of the "Anatomy of an AI System" involved in an Amazon Echo. We saw the development of this kind of education-specific tool as necessary, given that these study participants, alongside other educator colleagues, emphasized different ethical issues (e.g., equitable access at school and home) than are often the focus of discipline- or context-agnostic AI ethics frameworks (e.g., the White House's Blueprint for an AI Bill of Rights).

This tool draws on ideas about AI as enmeshed in platform ecologies (Garcia & Nichols, 2021) that require educators to see ethical impacts as dependent upon multiple interwoven domains. In particular, we see technical, ethical, and pedagogical concerns as necessary to consider when deciding to use — or not to use — particular AI tools, features, or models. This emphasis on evaluation as reliant on interdisciplinary expertise is both grounded in our theoretical commitments and upheld by what we have learned from (future) educators.

From critical posthumanist literacy, we drew on ideas about the importance of ethical engagement and the pursuit of sociotechnical justice when considering if and how AI tools and features should be used in the classroom or for composing. From platform ecologies theory, we drew on ideas about the importance of considering factors (that may seem) outside of the classroom, including questions about the interconnections among social, technical, and political-economic dimensions.


For example, we included discussion of privacy policies, algorithmic bias, and cost structures as critical pieces of our model card tool. Just as these dimensions are connected in platform ecologies theory, although they are broken into three separate headings for the sake of organizing the template, they are overlapping and interdependent in practice. Evaluating a model like ChatGPT for use in the classroom relies on an understanding of key ethical principles (e.g., minimizing harm from bias present in generated text); technical ones (e.g., how the model was trained and tested); and pedagogical ones (e.g., how to equitably address the needs of particular students as they compose) simultaneously.

This template is intended to be responsive to our findings here, flexible for use with other populations of students and teachers, and grounded in theory. Our theoretical grounding impelled us to consider how social and technical expertise intertwine, broadening an evaluation process from only what a teacher, ethicist, or a technician might consider to a combination of these perspectives. Taking up the example of the fear of racist stereotypes in generated images previously noted, we considered how evaluating generative AI for classroom use drew on all three of these lenses. We also identified that the latter, more technical perspective was often the least salient for our participants, who tended to focus — unsurprisingly — on learning and equity for their future students.

We offer a prototype version of an evaluative tool and hope it also might serve as a touchstone for the creation of teacher training on AI ethics with a focus on evaluating AI for education. This teacher training must both acknowledge the expertise of and meet the specific needs of educators, while also bringing in domain expertise from ethics and from computer science. In our study, we saw that our student participants were highly attuned to issues of equity (e.g., as we explore in Theme 1) and pedagogical value and integrity (Theme 3), but were less attuned to other potential ethical issues and their connections to the technical functioning of AI models. This result tracked closely with what we would expect based on their participation in teacher preparation coursework that focused on equity and pedagogy. Their focus indicated a need for a bidirectional sharing of expertise and learning from and with educators: Not only do educators and educators-in-training need quality AI ethics training that takes into account both their needs and expertise, but those evaluating or designing AI for education must also incorporate teacher insights into their products, frameworks, and assessment criteria.

When expanding meaning-making with generative AI to multiple modalities — including visuals, videos, and music — new questions and opportunities arise. Composers are not required to be as skilled with the technical aspects of creating digital products or combining modalities for their intended effect; however, they need to hone new skills, including effective prompt engineering and critically evaluating image bias and representation. As such, teacher educators are faced with the new challenge of helping future teachers learn to closely analyze the multimodal messages generated with AI. Another unique challenge is to help students understand the new grammars and logics embedded in generative AI (Cope & Kalantzis, 2024) that raise ethical dilemmas for composers, while also appreciating the uniquely human aspects of multimodal composing with AI that remain (Daniels et al., 2023; Gee & Archer Zhang, 2024).

Figure 3
Model Card for Education Template

Model Card For Education Template <i>AI Model/Tool/Feature Title</i>		
<p>Pedagogical Evaluation <i>This section uses learning goals and contexts as an entry point for thinking about the function and application of a model.</i></p> <p>Learning Goal Alignment: How does this technology support my learning goals for students? What are the affordances and risks of using this tool compared to others?</p> <p>Learning Context: How/where will the model be used? Does this match with the developers' intended use? Does the training data reflect the learner population? If historical training data was used, how might this perpetuate bias for some learners?</p> <p>Logistics & Material Requirements: How easy is it to log in? Do students need to create accounts? Is this blocked by your district? Are there age restrictions? What resources (internet, devices, plugs, etc.) are required to use it, and do you currently have them?</p> <p>History of (educational) use: Has this tool been used and/or researched in educational settings? What have others reported about it? Are any sample use policies available?</p> <p>Technical Education/AI Literacy: What should students and teachers know about how this tool works in order to use it critically and effectively?</p>	<p>Ethical Evaluation <i>This section uses the 5 principles in the White House's Blueprint and applies them to teachers, students, and educational contexts.</i></p> <p>Safe & Effective Systems: Is the tool safe and effective for students and teachers? Do the benefits of using the tool for the learning goal outweigh the risk of harm?</p> <p>Algorithmic Bias Protection: Have adequate measures been taken to reduce bias (racial, linguistic, ability, etc.) in the performance of the tool? What plan is in place for mitigating harm from bias?</p> <p>Data Privacy & Surveillance: What data does the model need to operate, and how is it stored? How are students surveilled, and where does this information go?</p> <p>Notice & Explanation: Have students, families, and teachers consented to using the tool (including any surveillance necessary for its operation)? Do they understand important information about how it works and why it's being implemented?</p> <p>Alternatives & Fallback: How can students and educators opt out of using the tool or challenge its results/predictions? Could using this tool take away opportunities for human engagement (with peers, teachers, others) or critical thinking in ways that other methods may not?</p>	<p>Technical Evaluation <i>This section reports on technical function and benchmarks relevant to ethical and effective implementation in educational settings.</i></p> <p>Training: What data was used to train the model? How was the data obtained? Does the training data reflect the population using the tool?</p> <p>Version Information: Is the tool in Beta (trial)? Is this a rebranded version of a foundational model? Was the feature automatically pushed out in an update to currently used software?</p> <p>Cost: How does the tool make money (e.g., licensing, subscriptions, advertising), and for whom? Does the payment structure or access change over time (e.g., free trials, free for use but not download)?</p> <p>Developer: Who made the tool, and why? Did they consult educators and students in the design process?</p> <p>Benchmarking: What measures of model performance, especially related to bias/fairness, are available?</p> <p>Explainability: How does the model work? Can humans explain its results?</p> <p>Environmental Impact: What are the environmental costs of training and running the model?</p>
 <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>Card compiled by: Date created/updated: Sources/Further Reading:</p> </div>		

Note. Reproduced with permission from EngageAI Institute. See also Barnes et al., 2024, for more detail on how this model card fits into AI education research.

Conclusion

As technology changes, it creates new challenges and opportunities for teachers and students. The tools that we use communicate change, and as they change, our practices change with them. What does not — or should not — change are the communicative goals of teachers' instructional practices. The writing product may take many forms, whether it is a print essay or a cocreated AI multimodal poem, but the goal of communicating ideas for a purpose to an audience does not change. The literacy skills used to accomplish that goal may shift and expand to include critique, curation, and combination of modes, but the skills needed in print writing are still needed even as they are expanding.

The ethical considerations and implications of composing with AI also impel educators to ask new questions, weighing the affordances and risks of using — or not using — AI, speculating about the future of work and the world for our students, and the sometimes-opposing duties to prepare and protect students. In this paper, we described some of the ethical concerns that were most salient to future teachers and others in two education courses, then we offered ideas for planning for meaningful, ethical, and critical interactions with AI, like reflecting on student stances and values,

intentionally planning and calculating risk-benefit, and using specialized model cards for evaluating and communicating about AI for educational use.

Our aim here was neither to romanticize or demonize AI, but to learn about it through scaffolded practice and critique. By doing this, we hope to better serve our students, preparing them for critically evaluating AI in our classrooms and beyond. We recognize the enormity of this task, especially when considering classroom technology as part of a larger system of logic and power that travels within and outside of schools, influenced by and influencing social, political, economic, and technical factors. It is an especially daunting mission when the subject of critique is AI, a shapeshifting, consequential, and often opaque phenomenon. For this reason, we hope that our initial foray into teaching critically with multimodal AI, the feedback we received from our students/future educators, and the tools and strategies we suggest in response, will lead to productive engagement with AI in literacy praxis.

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