Summary

Since the public release of OpenAI’s ChatGPT on November 30, 2022, questions and concerns have rapidly circulated concerning the role of generative artificial intelligence (AI) in higher education, particularly in instructional or curricular contexts. While ChatGPT and other large language model (LLM) generative AI tools produce text-based output, other generative AI can output text, data, images, sound, video and mixed media formats. More recent developments have seen generative AI integrated into existing software platforms.

The International Association of Privacy Professionals defines generative AI as “[a] field of AI that uses machine learning models trained on large data sets to create new content, such as written text, code, images, music, simulations and videos. These models are capable of generating novel outputs based on input data or user prompts.”

Sidney Dobrin, author of *AI and Writing*, explains that “[w]e can think of a GenAI as participating in a rudimentary conversation with a user” who “ask[s] the AI to create a specific deliverable — an essay, a song, an image, the solution to a math problem or so on. The AI then scrubs through all of the data available, looking for patterns and recurring information about the requested task. It then reorganizes that data into a pattern that it deems to answer the prompt.”

Over the past year, access to generative AI technologies has expanded rapidly from ChatGPT to a range of tools such as ChatGPT Plus, Google Bard/Gemini, Microsoft/Bing Copilot, Anthropic’s Claude, Perplexity, xAI’s Grok, Meta’s Llama (with its open-source modifications), and more. Access to these tools ranges as well, from pay-based subscriptions to free accounts, open use (i.e., no account needed), and open source. In addition, generative AI is increasingly embedded in software such as media production and office productivity suites. LLM-based generative AI

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1 IAPP 2023.
2 Dobrin 2023.
tools have gained multimodal capabilities; some can interpret and/or produce images as well as other artifacts such as spreadsheets and HTML files. Others can access the world wide web.

In June 2023, the University of Kentucky empaneled UK ADVANCE, a broad-based committee of experts to examine and make recommendations to help the campus and community regarding the implications of generative AI for higher education, research and beyond. UK ADVANCE is taking an evidence-based approach with experts from many disciplines and ongoing monitoring of experiences among our campus, community, and nationally. For these guidelines, initially released on August 11, 2023 and updated on December 14, 2023, UK ADVANCE has sought input from multiple stakeholders as well.

AI already is heralding tremendous changes in academia and the economy, from innovations in farming and the development of therapeutics to customer service and workplace innovations. At the same time, there are significant concerns over disruption and displacement of the workforce, embedded bias, data security and privacy and the spread of misinformation.

Within academia, there is the potential to create even greater access to personalized and customized learning, expanded student engagement, intelligent tutoring systems and innovative approaches to curriculum design. At the same time, there are concerns over academic integrity, infringements on privacy and the ability to develop data and information literacies for AI tools.

After reviewing emerging evidence and experiences related to instruction and learning, UK ADVANCE offers the following guidelines and recommendations for the use of generative AI in instructional contexts, specifically regarding (1) the development of course policies concerning generative AI, (2) the response to potential misuse of generative AI in instructional contexts, and (3) approaches to assignment and learning design that mitigate the risk of misuse and leverage the positive potential of generative AI. Guidelines for the use of generative AI in research are currently available on the UK ADVANCE website.

It’s important to note that the following guidelines and recommendations primarily focus on text-based generative AI tools. At the same time, many of the recommendations and insights are transferrable to situations involving other modalities of generative AI (e.g., image).

Generative AI is a rapidly evolving technology. These guidelines reflect our best understanding at the current time and may be updated to reflect the nature of the field as it continues to change.

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3 For example, see Topol 2023 and Yan, et al. 2023.
4 For example, studies have examined the impact on productivity and quality of work, e.g., Cambon, et al. 2023; Choi, Monahan, and Schwarcz 2023; Dell’Acqua, et al. 2023.
5 Passages adapted from UKNow, uknow.uky.edu/campus-news/advance-committee-will-explore-ai-opportunities-challenges-campus-commonwealth.
Course Policies Regarding Generative AI

**Provenance.** University Senate maintains requirements, policies, and procedures for course syllabi and policies. See [https://www.uky.edu/universitysenate/syllabi](https://www.uky.edu/universitysenate/syllabi). Instructors have authority to determine policies, within the bounds of senate rules, for the appropriate use of technologies in their courses.

**Recommendation.** We recommend clear course policies for the use of generative AI in four key areas as follows:

- **People-centered**: policies are student- and instructor-centered
- **Adaptability**: policies are adapted to the needs and circumstances of the course
- **Effectiveness**: policies demonstrate characteristics of an effective course policy
- **Awareness**: policies promote awareness and understanding of generative AI

**People-centered.** AI is a tool that instructors and students can use to enhance education, but it should be used with human oversight and an awareness of its strengths and limitations. Students and instructors should exercise judgment and control over the use of generative AI so that it is used to augment — rather than replace — instructor decision-making and student learning. The U.S. Department of Education’s Office of Educational Technology describes this as keeping “humans in the loop,” whereby “the human is fully aware and fully in control, but their burden is less, and their effort is multiplied by a complementary technological enhancement.”

**Adaptability.** Course policies regarding the use of generative AI are best adapted to the local context of the course, including the instructor’s expertise and perspectives; the course learning goals; the nature of the coursework, discipline and/or profession; and the learning needs of the students. While generative AI may not be as useful for one course, it may also present an opportunity to enhance learning in another course. Moreover, different modalities and tools for generative AI may be more or less desirable for a course. While instructors may adopt a range of course policies regarding the use of generative AI, those policies likely will fall within one of four areas on a spectrum:

- No use
- Use only when/as directed
- Use freely in certain cases
- Use freely in all cases

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7 US Department of Education Office of Educational Technology, 2023. Abdicating decision-making to AI without appropriate human oversight has also been described as “falling asleep at the wheel, e.g., Dell’Acqua 2022.”
While course policies may be more restrictive than what is found in the University Senate rules, they must reflect the approved senate syllabi template and language. For more restrictive course policies an instructor may need to consider measures to ensure that the policy is followed appropriately. This may involve adapting assignments and holding certain activities during class meetings. Additionally, for more restrictive course policies it is important to understand the limitations of AI detectors as described in the section of these guidelines on responding to possible misuse.

For more permissive course policies an instructor may need to consider measures to ensure transparency and appropriate documentation of the use of generative AI.8

Any questions or requests from students related to the use of generative AI as learning accommodations should be referred to the UK Disability Resource Center.

**Effectiveness.** While instructors will adopt a range of policies and approaches for students’ use of generative AI in courses, they should be made clear for students both verbally and on syllabi and other locations where students regularly interact with information about the course (e.g., Canvas). This is important for several reasons, including:

- Students will likely be navigating different policies, requirements, and approaches to the appropriate use of generative AI for their coursework.9

- Students may be unsure about generative AI, especially whether it can or should be used for their coursework.10

- Students may be reluctant to ask about course expectations for the use of generative AI in the face of ambiguity or uncertainty.11

Factors to consider when developing course policies on generative AI include:12

- A definition of generative AI. For example, “Generative AI refers to a range of emerging technologies that draw from training on large datasets to generate new content in written, visual and other forms based on user instructions.” This definition may be expanded or revised to include information that is relevant to the course and discipline.

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8 Dobrin 2023.
9 McMurtrie and Supiano 2023.
11 Ryan, Gheen, and Midgley 1998; Ryan, Pintrich, and Midgley 2001; Sheu, Chong, and Dawes 2022.
12 Gannon 2023.
- A statement on whether the use of generative AI will be permitted for coursework, and if so, how and to what degree it will be permitted.

- A specific description of what constitutes inappropriate use of generative AI in the course as well as the consequences for inappropriate use.

- A process for students to document or cite the use of generative AI for assignments and other course activities (if it is permitted).

- A rationale for the policy grounded in the context of the discipline/profession, the learning goals of the course, the skills that will be assessed and/or ethics and academic integrity.

- Links to resources for understanding and using generative AI ethically and effectively. (See the short list of resources later in this document.)

- A learner-centered and student-friendly tone that builds understanding and motivation for students in the course.

- An invitation for students to discuss any questions or concerns with the instructor.

**Language.** University Senate has developed recommended syllabus language for course policies on generative AI, including options for overall course policies as well as options that provide for variance in how students use generative AI for different assignments and activities.

**Awareness.** In addition to providing clear course policies regarding generative AI, it is important for instructors and students to be aware of and discuss the larger evolving issues concerning the technology:

- While generative AI continues to become more sophisticated, it has a well-documented history of producing 'hallucinations': fabricated, incorrect, and misleading information.\(^\text{14}\) Because language-based generative AI seeks to produce the most probable strings of text based on its training, hallucinations are a type of forecasting error similar to what we see in other predictive technologies.\(^\text{15}\) Hallucinations may involve a range of

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\(^\text{13}\) Perkins 2023. What is appropriate for the documentation of generative AI use will vary by learning task, instructor, course, program, discipline, etc. In many cases, an indication of how generative AI was used is appropriate (e.g., summarizing literature), as is information about the tool/model used (e.g., Claude 2.1) and when it was used.

\(^\text{14}\) Alkaissi and McFarlane 2023; Athaluri, et al. 2023; Christian 2023; Franci 2023; Hosseini, Rasmussen, and Resnik 2023; Ji, et al. 2023; Kidd and Birhane 2023; Lee, Bubeck, and Petro 2023; Lightman, et al. 2023; Liu, Zhang, and Liang 2023; Megahed, et al. 2023; Metz 2023; Metze, Morandin-Reis, Lorand-Metze, and Florindo 2023; OpenAI 27 March 2023; Poritz 2023; Weise and Metz 2023; Weiser 2023; Zhang, et al. 2023; Zhao, et al. 2023; Zhavoronkov 2023.

\(^\text{15}\) Stening 2023.
information such as facts, data, evidence, claims, summaries, reviews, assessments, and citations/publications/sources. If instructors or students use generative AI tools, verification and evaluation of the output will be a critical component of informed use.

- Privacy is a major concern and caution. Many generative AI tools do not guarantee the protections for private, confidential or sensitive data that may be required (or desired) for certain information.\(^\text{16}\) For example, student education records (as defined by FERPA)\(^\text{17}\) and protected research data\(^\text{18}\) should not be provided to generative AI tools unless/until they have been vetted for data privacy and other governance issues and approved by the University for the proposed use.

- There is an ongoing conversation about the ethics of how generative AI models have been trained on openly available data, both in terms of any biases that the models might inherit and propagate from the datasets or underlying protocols\(^\text{19}\) as well as issues of intellectual property in both the training data and output.\(^\text{20}\)

- Generative AI technologies continue to evolve at a rapid pace, as do the ways in which we can (and can’t) access and use them. We cannot assume that the performance nor the use-conditions of generative AI at a particular moment will remain the same or stable in the long term.\(^\text{21}\)

For assistance in talking with students about generative AI as it relates to teaching and learning, instructors can work with UK’s Center for the Enhancement of Learning and Teaching (CELT) at celt.uky.edu.

### Responding to Possible Misuse of Generative AI

**Provenance.** University Senate maintains requirements, policies and procedures for academic offenses. See Senate Rules 6.3 and 6.4 at [www.uky.edu/universitysenate/rules-regulations](http://www.uky.edu/universitysenate/rules-regulations). The

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\(^{16}\) Busch 2023; Electronic Privacy Information Center 2023; Huang 2023; Hosseini and Horbach 2023; Lauer, Constant, and Wernimont 2023; Meskó and Topol 2023; National Institutes of Health 2023; Schwartz and Rogers 2022.

\(^{17}\) See registrar.uky.edu/ferpa and registrar.uky.edu/ferpa/ferpa-faculty-and-staff-faq.

\(^{18}\) See [www.research.uky.edu/office-research-integrity](http://www.research.uky.edu/office-research-integrity).


\(^{20}\) Appel, Neelbauer, and Schweidel 2023; Lucchi 2023; Saveri and Butterick 2023; Sobel 2018; Strowel 2023; Thorbecke 2023; Zirpoli 2023.

\(^{21}\) Bohacek and Farid 2023; Chen, Zaharia, and Zou 2023.
Academic Ombud lists the procedure for processing academic offenses at [ombud.uky.edu/faculty/academic-offense-procedures](ombud.uky.edu/faculty/academic-offense-procedures).

**Detectors.** Several detectors for text-based generative AI output have been developed over the past year. For example, TurnitIn (to which all UK instructors have access through the assignments feature in Canvas) includes its own proprietary AI detector. Prior to the fall 2023 semester, OpenAI closed off access to its AI classifier, citing a “low rate of accuracy.”

Evidence has found general purpose AI detectors to be ineffective because:

- They can be prone to false positives, i.e., indicating that all or part of a student’s work is likely AI-generated when it is, in fact, not. Relying on these percentages can introduce bias in the assessment process and demoralize students if further action is taken.

- They can be evaded with a combination of prompt manipulation (e.g., iterating a prompt to receive ideal output) and hand-editing the output.

- They cannot be verified with other evidence (e.g., as opposed to similarity detectors that link to matching sources).

- They do not guarantee the protection, privacy and confidentiality of any information, data or intellectual property that a student or instructor inputs.

- They risk creating a surveillance-based or adversarial learning environment that can negatively affect student motivation, learning and belonging.

Data on detectors will continue to emerge and require ongoing reassessment, which may result in updated guidelines.

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22 OpenAI 31 Jan 2023. In addition, the efficacy of TurnitIn’s detector has been contested since its launch, particularly in relation to claims concerning accuracy and rate of false positives, cf. D’Agostino 2023 and Salem, et al. It is also possible that writing assistant software (e.g., Grammarly) and translation programs may increase the AI detection score for a document.

23 Chechitelli 2023; Cingillioglu 2023; D’Agostino 2023; Dalalah and Dalalah 2023; Edwards 2023; Elkhatat, Elsaid, and Almeer 2023; Fowler 2023; Liang, et al. 2023; Weber-Wulff, et al. 2023.

24 Anderson, et al. 2023; Cingillioglu 2023; Henrique, Kucharavy, and Guerraoui 2023; Krishna, et al. 2023; Liang, et al. 2023; Sadasivian, et al. 2023; Weber-Wulff, et al. 2023. Additionally, Thompson and Hsu 2023 and Jiang, Zhang, and Gong 2023 found that detection methods for image-based generative AI output (e.g., via DALL-E, Stable Diffusion, Midjourney) can be evaded and/or lead to false positives.

25 See, for example, GPTZero’s privacy policy at [https://gptzero.me/privacy-policy.html](https://gptzero.me/privacy-policy.html).

26 Acevedo 2023; CCCC-IP Caucus; Cullen 2022; Lang 2013.

27 Recent developments in custom AI detectors have shown greater accuracy than general purpose AI detectors, e.g., Desaire, et al. 2023, but it is important to note that these detectors are not yet publicly available and are effective only in a specific context of professional writing in a particular academic publishing venue as opposed to novice learners in an educational context.
Data Privacy. Student education records should not be input into third-party generative AI detection tools or systems unless and until the tools/systems have been vetted for data privacy and other AI governance issues and approved by the university for use. This includes generative AI systems that include detection tools. The Family Education Rights and Privacy Act (FERPA) applies to all student education records, which are “records that are directly related to a student and that are maintained by an educational agency or institution or a party acting for or on behalf of the agency or institution.”

Range of Misuse. Misuse of generative AI can include “copy/paste” plagiarism scenarios — i.e., submitting text generated by an AI program without attribution, as if it were one’s own writing — but it also can include more ambiguous scenarios such as:

- Using ideas or approaches that generative AI programs have suggested
- Engaging generative AI tools in dialogue about assignments and course content
- Reusing information, calculations, analyses or solutions provided by generative AI
- Revising or integrating small portions of text generated by an AI program without indicating the initial source

Additionally, even if a student attributes their use of generative AI, it may still be “misuse” if course policy prohibits it in that scenario. Clear course policies will help students — and instructors — navigate the range of possible misuse cases and understand what to expect if an instructor determines that misuse has occurred.

It’s important to note that because generative AI’s language models draw from a variety of textual sources (including openly available text on the world wide web), it is possible that writing, ideas and other output produced by generative AI may themselves lack proper attribution of source material and may imitate or reproduce copyrighted material on which they were trained.

Responding. Should an instructor suspect that a student has used generative AI inappropriately in the completion or all or part of an activity or assignment, we would suggest consultation with the department chair or school director and the Academic Ombud.

Recommendation. Because of these concerns, we recommend against the use of generative AI detectors for determining academic offenses. UK ADVANCE will, however, continue to monitor the landscape and update the guidelines as appropriate.

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28 US Department of Education Student Privacy Policy Office.
29 Appel, Neelbauer, and Schweidel 2023; Dobrin 2023; Small 10 July 2023; Smits and Borhuis 2022; Thorpe 2023.
Assessing Learning with Generative AI in Mind

While generative AI can feel like a disruption of instructors’ ability to teach and assess student learning, it is also an invitation to refine pedagogy and assessment.\(^{30}\)

**Principles of Assessment Design.** The design of assessments is driven by many context-specific considerations, most importantly:

- Course and program learning outcomes
- Competencies and skills in the discipline or profession
- Scaffolding along the course curriculum
- Authentic and engaging learning experiences
- Equity, clarity and structure
- Opportunities to practice and improve
- Iterative feedback on performance
- Reflection on progress and learning

Effective, learning-centered assessments follow from these principles whether they seek to avoid the use of generative AI or engage students in it.

**Design Strategies to Enhance Learning and Mitigate Misuse of Generative AI.**

Strategies that mitigate the conditions that may lead to misuse of generative AI also draw from principles of strong learning design. Instructors may consider how their assessments may draw from any of the following strategies, as is appropriate for the course, students and other factors.

- **Segment larger assessments with checkpoints and/or multiple deliverables that value process along with content.**
  - This strategy helps students to organize and plan their efforts, make steady progress towards a larger goal, increase their self-efficacy and reflect on their decision-making by documenting their process.

- **Integrate work towards assessments into class meetings and other planned interactions.**
  - This strategy ensures that opportunities to study, practice, plan, research, draft, revise, etc., are embedded in the culture of the course, and students are held accountable for doing the work in ways that are constructive for learning.

- **Ground assessments in the specific context of the course.**

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○ This strategy asks instructors to integrate unique aspects of the course, whether particular readings, concepts, methods, discussions, cases, etc. (or a combination thereof) rather than assigning generic tasks that are easily replicated elsewhere.

- Incorporate opportunities to receive iterative feedback on learning and performance via drafts and revisions, development phases, interactive practice, observations, etc.
  ○ This strategy leverages frequent, formative assessment as a way to lower the stakes, engage and motivate students, and focus on opportunities for growth.

- Ask students to contribute their own insights, original analyses and other perspectives.
  ○ This strategy ensures that students are incentivized to add their own informed contributions to the issues at hand, which frames learning as reckoning with rather than merely reproducing extant knowledge.

- Include moments when students need to be conversant about the nature and progress of their own work.
  ○ This strategy engages students in multiple modes and contexts for communicating about their learning and emphasizes the importance of reflecting on their efforts in addition to proving that they have learned something.

- Ask students to express their learning in different genres, formats and modalities.
  ○ This strategy engages students in multimodal and multigenre communication in preparation for careers that will engage them with different stakeholders.

**Uses of Generative AI in Assessments and Other Learning Activities.** While some situations may not call for the use of generative AI, others may be enhanced when it is used strategically. Importantly, if an instructor integrates generative AI into an assignment, it is a consideration of equity to ensure that all students are supported in the use of digital technologies rather than relying on extant — and uneven — literacies and comfort levels with generative AI tools. 31 This might mean walking students through the process of using generative AI for a particular task, providing tips for effective use of generative AI for that task, addressing the tool during office hours, etc. Generative AI has shown potential to be effective for learning when used to: 32

- Brainstorm or discover ideas
- Organize projects or plan efforts
- Summarize or synthesize information

31 Zamfirescu-Pereira, Wong, Hartmann, and Yang 2023.
32 Ellis and Slade 2023; Hicks 2023; Mollick and Mollick 2023; Trust 2023.
- Analyze and visualize data
- Provide output that students critique or verify
- Offer different possibilities for approaches to a task
- Give feedback on ideas or drafts
- Engage students in retrieval practice, concept review, or other studying
- Generate materials for demonstrations, case studies, or simulations
- Enable innovative research methods for student projects

As part of ensuring that students learn to become strategic and ethical users of generative AI, it will be important to emphasize that students should verify the claims and information in the output, and to understand the framing of that output as only one possibility among many others. It will also be important for students to document their use of generative AI in a consistent way.

**Resources for Instructors and Students.** Resources and examples have proliferated since the introduction of ChatGPT in late 2022. UK ADVANCE offers the following short list of curated resources as a starting place for instructors and students who are eager to learn more about how generative AI works as well as how generative AI can support teaching and learning with practical examples of application in learning environments.


**Support for Instructors.** For support in any way related to designing activities and assessments in relation to generative AI, instructors can work with CELT at [celt.uky.edu](http://celt.uky.edu).

**Support for the UK Community.** Contact [UKADVANCE@uky.edu](mailto:UKADVANCE@uky.edu) with questions, ideas, and recommendations as well as feedback regarding AI-related efforts underway on campus. The UK ADVANCE webpage can be viewed at [advance.uky.edu](http://advance.uky.edu).

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35 Breen 2023.
37 For best practices in citing or documenting the use of generative AI, disciplinary or professional style guides may be a useful place to start, e.g., McAdoo 2023. Other approaches to generative AI documentation may resemble a brief description or summary of research methods.
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