

Center for Faculty Development

Exploring the Potential of AI Content Generation Tools in Teaching, Learning, and Research: Frequently Asked Questions

M'hammed Abdous, Ph.D.

Version 1.0, March 22, 2023

Table of Contents

Table of Contents.....	1
1. What is AI-Generated Content?.....	2
2. What should I know before I start using AICGTs?	2
3. How can AICGTs support faculty in their teaching and research activities?	3
4. How can AICGTs improve students' learning?	4
5. How can I use the AICGTs to enrich and diversify my course assignments?	5
6. How can I design assignments that do not discourage my students from using AICGTs?	5
7. What statement should I include in my syllabus about the use of AICGTs?	6
8. What guidelines should I give my students to properly cite AI-generated content?	7
9. What precautions should my students take before using AI-generated content?	7
10. How can I identify AI-generated content in my students' work?	7
11. Where can I learn more on AICGTs?	8
12. List of AI Content Generation Tools by Category.....	10

Artificial intelligence content generation tools (AICGTs), such as ChatGPT and DALL•E 2, have the potential to transform the teaching, learning, and research landscape in higher education. By expanding humans' ability to create various forms of content, including text, images, digital art, sound, video, and programming code, AICGTs are slowly disrupting teaching practices as well as traditional models of knowledge creation. While some educators are excited about the pedagogical potential of these tools, others worry that they could undermine students' academic integrity, creativity, and critical thinking.

To help you navigate this emerging landscape, the Center for Faculty Development has created a comprehensive FAQ document that addresses common questions about generative AI content. We hope this useful resource will help you make informed decisions about how to incorporate AI-generated content into your teaching, learning, and research activities.

We encourage you to use this resource and share it with your colleagues. The FAQ will be updated regularly to keep you informed about the latest AI tools. If you have any suggestions or feedback, please contact us at cfcd@odu.edu.

1. What is AI-Generated Content?

AI-generated content is any content created by artificial intelligence tools. Trained on massive amounts of data, these tools use complex machine learning algorithms to generate content such as articles, images, and programming code based on text prompts. For example, GPT-4 has the potential to accept text and images as input, extending the multimodal capabilities of AI content creation tools. Similarly, DALL•E 2 can generate realistic images and digital artwork from user-written descriptions.

2. What should I know before I start using AICGTs?

- 2.1. Familiarize yourself with the various AI Content Generation Tools.
See [page 11](#) for a list of some of the most popular AICGTs.
- 2.2. Clarify your course goals and reflect on how AI-generated content can help you accomplish or improve your students' learning outcomes.
- 2.3. Clarify your academic honesty expectations. Be clear about what your students are allowed or not allowed to use.
- 2.4. Update your course syllabus honor code based on your decision to use or not use AICGTs. See [examples](#) of syllabus statements below.
- 2.5. Before requiring your students to use AI tools, you need to:
 - 2.5.1. Discuss the use of AI-generated content with your students. Highlight the pros and cons of various AICGTs.
 - 2.5.2. Review the privacy and data collection practices of the AICGTs, including log-in data, tracking, analytics, etc.
 - 2.5.3. Check if the tools are free and accessible.
 - 2.5.4. Remember that AICGTs are subject to FERPA regulations: students' personal information should not be disclosed to systems that are not supported by the university.

- 2.6. Provide clear assignments instructions on how to use AICGTs: why (purpose), what (tasks) how (evaluation criteria).
- 2.7. Provide alternative assignments for students who opt out from using AI tools.
- 2.8. Design your grading rubric around your assignments' expectations.
- 2.9. Provide clear guidance on how to cite AI-generated content. See [citation example](#) below.
- 2.10. Review the ethical implications of AICGTs on academic honesty.
- 2.11. Run one of your assignments through one of the AICGTs such as ChatGPT during class and discuss the output with your students. Remember that the assignment prompt gives a different output every time it is submitted.
- 2.12. Familiarize yourself with various AI-Generated text detection tools. See list of AI [detection tools](#) below.
- 2.13. Remember that AICGTs responses are sometimes inaccurate, if not false or made up (hallucinations problem).

3. How can AICGTs support faculty in their teaching and research activities?

3.1. Teaching and Learning (this list is not exhaustive):

- 3.1.1. Generate draft/outline for course syllabus, lecture notes, etc.
- 3.1.2. Create course readings, study guides, presentations, visuals, and more.
- 3.1.3. Draft quiz questions and answers, rubrics, assignments, project-based learning scenarios, etc.
- 3.1.4. Generate weekly activities and creative writing prompts for students.
- 3.1.5. Generate practice quizzes and surface-level prompts, etc.
- 3.1.6. Generate personalized feedback on student assignments.
- 3.1.7. Edit and proofread papers.
- 3.1.8. Provide simple explanations for complex concepts.
- 3.1.9. Translate text from one language to another.
- 3.1.10. Write and debug programming code.
- 3.1.11. Author stories, book synopses, poems, jokes, emails, etc.
- 3.1.12. Improve/inspire creative writing process: tone, outlines, metaphors, follow-up sentences, different perspectives, details, etc.

3.2. Research (this list is not exhaustive):

- 3.2.1. Generate ideas, questions, references for research proposals, etc.
- 3.2.2. Conduct online research and review of the literature.
- 3.2.3. Summarize research papers and findings.
- 3.2.4. Analyze qualitative data: classify data, generate themes, and transcribe data from audio and video recordings.
- 3.2.5. Analyze quantitative data: basic statistics, predictive modeling, visualization of data, etc.

4. How can AICGTs improve students' learning?

4.1. Assist with Coursework

- 4.1.1. Answer questions on a variety of topics and disciplines.
- 4.1.2. Write abstracts for articles and book reviews.
- 4.1.3. Solve mathematical and engineering problems (high rate of inaccurate answers).
- 4.1.4. Explain complex scientific ideas.
- 4.1.5. Write full essays and papers from prompts.
- 4.1.6. Proofread written text.
- 4.1.7. Receive feedback on writing.

4.2. Create Study Materials for Courses

- 4.2.1. Create study guides and summaries.
- 4.2.2. Create exercises and quizzes for different disciplines.
- 4.2.3. Provide reference material (may contain outdated or inaccurate information).
- 4.2.4. Create flash cards on various subjects.

4.3. Improve Study Skills

- 4.3.1. Create to-do lists.
- 4.3.2. Provide schedule templates.
- 4.3.3. Offer productivity tips.
- 4.3.4. Provide resources and support.

4.4. Prepare for Tests and Exams

- 4.4.1. Provide sample questions for exams and quizzes.
- 4.4.2. Generate practice tests.
- 4.4.3. Offer study tips and strategies.

4.5. Supporting Research Activities

- 4.5.1. Provide research suggestions.
- 4.5.2. Create outlines, summaries for research papers.
- 4.5.3. Generate bibliographies (may contain outdated or inaccurate references).
- 4.5.4. Conduct literature reviews.

5. How can I use the AICGTs to enrich and diversify my course assignments?

- 5.1. Encourage students to create reusable prompts and scenarios for your course assignments and activities.
- 5.2. Provide sample prompts related to the course assignments. Here is a link on how to create effective prompts: <https://fka.gumroad.com/l/art-of-chatgpt-prompting?a=70565704>. Understanding the wording and structure of prompts is one of the most important skills for using AICGTs effectively ([prompt engineering](#)).
- 5.3. Assign students to evaluate the accuracy, ethical issues, and relevance of AI-generated content.
- 5.4. Ask students to revise/improve AICGTs's output using **Track Changes** (Microsoft Word) or **Suggesting** in Google Docs.
- 5.5. Use AI tools as thinking partners to design and complete assignments.
- 5.6. Have students flag inaccurate, biased, or misleading information generated by AIGCTs.
- 5.7. Use AI tools as a starting point to generate ideas and facilitate discussion.
- 5.8. Use AI tools to identify student misconceptions.
- 5.9. As you evaluate your students' writing, consider the following questions:
 - i. What is the role of writing in your course?
 - ii. What are you grading? What criteria are you using?
 - iii. What kind of feedback do you need to give your students?
 - iv. How can you use ChatGPT and other AICGTs to help your students become better writers (metacognitive skills)?

6. How can I design assignments that do not discourage my students from using AICGTs?

If you choose not to use AI-generated content, you will need to design your assignments with the following suggestions in mind:

- 6.1. Reference your class lecture notes, materials, or discussions in your assignments.
- 6.2. Include current events and news in your assignments.
- 6.3. Use a multi-step submission process that includes an outline, draft, and final version.
- 6.4. Use multimodal assignments that require non-text-based responses (infographics, interactive Google maps, timelines, etc.).
- 6.5. Encourage students to reflect on their process of completing assignments (metacognitive).
- 6.6. Design assignments that require current sources and references, making it difficult to rely on outdated or inaccurate information.
- 6.7. Replace written assignments with multimedia submissions (audio, video, etc.).
- 6.8. Incorporate in-class writing and conferences to discuss writing, among other activities.

Alternatively, you might invite your students to think about ways to incorporate AI-generated content into your course activities, while considering how it will affect their creativity and learning process.

7. What statement should I include in my syllabus about the use of AICGTs?

Depending on your course learning outcomes and expectations, consider adopting or modifying one of the following examples:

7.1. Option A - Use of AI tools to generate content is prohibited:

In this course, you may not use AI tools such as ChatGPT and DALL•E 2 to generate content, including text, images, digital art, sound, video, and programming code. You will be required to complete all course assignments on your own or with your classmates. Using AI tools to create content for your assignments is a form of academic dishonesty and a violation of the University Honor Code.

7.2. Option B – Partially allow AI-generated content with attribution:

In this course, you may use AI tools such as ChatGPT and DALL•E 2 to brainstorm ideas and create outlines. However, you may not include AI generated content in your final submission without attribution. Using AI-generated content without giving proper attribution is a form of academic dishonesty and a violation of the University Honor Code.

7.3. Option C - Allow AI-generated content with attribution:

In this course, you may use AI tools such as ChatGPT and DALL•E 2 to generate content for your assignments, provided that the content is accurate, unbiased, and appropriate for the assignment. To ensure academic integrity, you must (1) specify which AI tool you used, (2) use quotation marks or a different font color to distinguish AI-generated content, and (3) include citations to the AI tool sources in your references. Failure to properly cite AI-generated content is a form of academic dishonesty and a violation of the University Honor Code.

8. What guidelines should I give my students to properly cite AI-generated content?

Provide clear guidelines for citing AI-generated content:

- 8.1. General writing, images, artwork, programming code, etc.:
 - 8.1.1. Acknowledge the use of AIGCTs:
 - 8.1.2. What tools did you use?
 - 8.1.3. What prompt did you use to generate the content?
 - 8.1.4. What content did you use: design, outline, image, code, content used?
 - 8.1.5. Indicate the date you used the tool.

Example: (OpenAI's ChatGPT AI language model, "prompt", "draft", March 1, 2023).

9. What precautions should my students take before using AI-generated content?

- 9.1. **Accuracy and bias:** AI-generated content may not always be accurate or unbiased. Some tools, such as ChatGPT, may even create information or references that do not exist.
- 9.2. **Current knowledge:** AIGCTs have a limited understanding of world events that have occurred after 2021.
- 9.3. **Conversational responses:** ChatGPT, for example, remembers past prompts and can adapt responses. This in-context learning is often used to circumvent ChatGPT's internal safeguards.
- 9.4. **Availability:** Unless you have a paid monthly subscription, some AIGCTs like ChatGPT may not always be available.
- 9.5. **User Data:** AIGCTs collect user data, so it is important not to share any personal information.

10. How can I identify AI-generated content in my students' work?

Familiarize yourself with various AI-Generated text detection tools:

- [AI Content Detector](#)
- [AI Text Classifier](#)
- [AI Writing Check](#)
- [Content At Scale](#)
- [Copyleaks](#)
- [Giant Language Model Test Room \(GLTR\)](#)
- [GPTZero](#)
- [Originality.ai Plagiarism Checker and AI Detector](#)
- [AI Writing Check](#)

Keep in mind that these tools are not always accurate. Because some of these tools are based on outdated versions of AIGCTs, the results are inconsistent and sometimes inaccurate. Also, users can create multiple iterations of the same text using different AI technologies until it is no longer detectable.

Gewitz, D. (2023, January 13). [Can AI detectors save us from ChatGPT? I tried 3 online tools to find out.](#) ZDNET.

11. Where can I learn more on AIGCTs?

References

- [AI in Higher Education](#)
- [AI Text Generators Sources to Stimulate Discussion among Teachers](#)
- [ChatGPT and Education](#)
- [ChatGPT General FAQ](#)
- [Faculty Help: ChatGPT's Impact on Higher Education: Resources: FAQ](#)
- [GPT: The Generative AI Revolution, EDUCAUSE](#)
- [Robo-rights: As AI art takes over, who's the real artist in the machine learning age?](#)

In the media:

- [19 Ways to Use ChatGPT in Your Classroom](#)
- [43 Examples of Artificial Intelligence in Education](#)
- [AI and the Future of Undergraduate Writing](#)
- [Alarmed by AI Chatbots, Universities Start Revamping How They Teach](#)
- [ChatGPT Advice Academics Can Use Now](#)
- [Cheating with ChatGPT: Can openAI's chatbot pass AP lit?](#)
- [Noam Chomsky: The False Promise of ChatGPT](#)
- [Is AI the New Homework Machine? Understanding AI and Its Impact on Higher Education](#)
- [Teaching: Will ChatGPT Change the Way You Teach?](#)

Peer-reviewed Articles:

- Cotton, D. R., Cotton, P. A., & Shipway, J. R. (2023). Chatting and Cheating. Ensuring academic integrity in the era of ChatGPT.
https://edarxiv.org/mrz8h?trk=public_post_main-feed-card_resshare-text
- Diwan, C., Srinivasa, S., Suri, G., Agarwal, S., & Ram, P. (2023). AI-based learning content generation and learning pathway augmentation to increase learner engagement. *Computers and Education: Artificial Intelligence*, 4, 100110.
<https://www.sciencedirect.com/science/article/pii/S2666920X22000650>
- Eaton, S. E., Mindzak, M., & Morrison, R. (2021). Artificial Intelligence, Algorithmic Writing & Educational Ethics. <https://prism.ucalgary.ca/handle/1880/113569>
- Ippolito, D., Yuan, A., Coenen, A., & Burnam, S. (2022). Creative Writing with an AI-Powered Writing Assistant: Perspectives from Professional Writers. *arXiv preprint arXiv:2211.05030*. <https://arxiv.org/abs/2211.05030>
- Sharples, M. (2022). Automated essay writing: an AIED opinion. *International Journal of Artificial Intelligence in Education*, 32(4), 1119-1126.
<https://link.springer.com/article/10.1007/s40593-022-00300-7>
- Susnjak, T. (2022). ChatGPT: The End of Online Exam Integrity? *arXiv preprint arXiv:2212.09292*. <https://arxiv.org/abs/2212.09292>
- Swiecki, Z., Khosravi, H., Chen, G., Martinez-Maldonado, R., Lodge, J. M., Milligan, S., ... & Gašević, D. (2022). Assessment in the age of artificial intelligence. *Computers and Education: Artificial Intelligence*, 3, 100075.
<https://www.sciencedirect.com/science/article/pii/S2666920X22000303>
- Tate, T., Doroudi, S., Ritchie, D., & Xu, Y. (2023). Educational research and AI-generated writing: Confronting the coming tsunami.
<https://edarxiv.org/4mec3/download?format=pdf>
- Yeadon, W., Inyang, O. O., Mizouri, A., Peach, A., & Testrow, C. (2022). The Death of the Short-Form Physics Essay in the Coming AI Revolution. *arXiv preprint arXiv:2212.11661*. <https://arxiv.org/pdf/2212.11661.pdf>

12. List of AI Content Generation Tools by Category.

Content Type	AI Tools	Website	Potential Use
Text	GPT-3 GTP-4	https://openai.com/gpt-3/	Revise content on a variety of topics, including drafting course syllabi, lectures, assignments, rubrics, quizzes, etc.
	ChatGPTwriter	https://chatgptwriter.ai/	Compose and respond to email using simple prompts.
	GPT For Work	https://gptforwork.com/	Create, edit, summarize, translate, and classify content in Google Sheets and Google Docs.
	Rephrase	https://www.rephrasee.com/	Paraphrase sentences and paragraphs.
	DeepL Write	https://www.deepl.com/write	Fix mistakes and rephrase your sentences.
	Hemingway Editor	https://hemingwayapp.com/	Analyze and improve your sentences and paragraphs.
	QuilBot	https://quillbot.com/	Paraphrase sentences, check grammar, summarize and generate quotations.
	Speedwrite	https://speedwrite.com/	Write, rewrite, and generate text.
	Slide Creation	https://tome.app/ https://www.chatba.com/	Design slides and stories that combine multiple types of content.
	DALL●E 2	https://openai.com/dall-e-2/	Create images and digital artwork based on text descriptions.
Images and Visuals	PaintsChainer	http://paintschainer.preferred.tech/	Color and paint images using different colors.
	Prompthunt	https://www.prompthunt.com/	Create, edit, and share themes, including vector illustrations and soft color palettes.
	Lexica	https://lexica.art/	Search for images and artwork created with Stable Diffusion.
	Image Cleaner	https://imgcleaner.com/	Clean up your images and pictures by instantly removing unwanted objects.
	Canva Image Generator	https://www.canva.com/features/ai-image-generator/	Create different images and artwork based on text prompts and descriptions.
	WaveNet	https://deepmind.com/research/	Create transcripts and raw audio.
Audio	Lyrebird	https://lyrebird.ai/	Create synthetic voices and audio.
	Adobe Speech Enhancer	https://podcast.adobe.com/enhance	Improve audio clarity by removing background noise.

Video	Designs.ai	https://designs.ai/	Create, edit, and scale content such as logos, videos, banners, flyers, and mockups.
	Make-A-Video	https://makeavideo.studio/	Create short video clips from text prompts.
	FlexClip	https://www.flexclip.com/	Edit and create videos that include text, images, audio, and animation.
	Various tools	InVideo.io, Synthesia.io, VEED.io, Lumen5, Designs.AI	Edit and create videos that include text, images, audio, and animation.
	Unscreen	https://www.unscreen.com/	Remove background from videos.
Coding	DeepCode	https://deepcode.ai/	Write programming code and troubleshoot coding errors.
	Codex	https://openai.com/codex/	Generate code in multiple languages, debug and fix errors. Create programming assignments and coding tutorials.
	Polycoder	https://github.com/VHellendorn/Code-LMs	Generate, debug, and fix code in multiple languages.
	Tabnine	https://www.tabnine.com/	Auto-complete lines of code.
3D	LeiaPix	https://convert.leiapix.com/	Convert images to 2D and 3D formats.
AI Detection	AI Text Classifier	https://platform.openai.com/ai-text-classifier	Detect AI-generated text.
	GPTZero	https://gptzero.me/	Detect AI-generated text.
	AI Content Detector	https://writer.com/ai-content-detector/	Detect AI-generated text.
Translation	DeepL	https://www.deepl.com/translator	Translate any text into 29 languages.
Academic Research	Elicit	https://elicit.org/	Automate research workflows, such as parts of literature reviews.
	Trinka	https://cloud.trinka.ai	Check grammar and improve academic and technical writing.
	Galactica	https://galactica.org/explore/	Search and summarize academic literature, solve math problems, and write scientific code.
	Papers with Code	https://paperswithcode.com/	Access free and open resources with machine learning papers, code, datasets, methods, and evaluation tables.

Repositories for AI tools:

1. <https://allthingsai.com/>
2. <https://aidepot.co/>
3. <https://www.futuretools.io/>
4. <https://www.generatecontent.ai/>