



# ChatGPT & other AI tools for Learning and Teaching

Version 1.02 of 26 August 2023

A comprehensive ‘living’ resource about generative and other ‘artificial intelligence’ that will be constantly updated with new resources. To contribute to this resource, please access the [google doc version of this resource](#).

## Contents

<b>ChatGPT &amp; other AI tools for Learning and Teaching</b> .....	<b>1</b>
Prompt .....	2
Introduction to ChatGPT .....	2
What is ChatGPT?.....	2
How ChatGPT works.....	2
Opportunities for learning & teaching offered by ChatGPT .....	4
Threats to Learning and Teaching .....	6
Ethics and morality of using ChatGPT for Learning and Teaching .....	7
How ChatGPT can be used in the classroom .....	8
Lesson Plans for Using ChatGPT in Higher Education .....	12
Assessing student learning .....	12
Misuse of ChatGPT by students / Academic Integrity and ChatGPT.....	14
Detection of misuse of ChatGPT by students .....	15
Policy and guidelines .....	16
Additional reading .....	17
<b>Annexure: AI Tools for Learning and Teaching</b> .....	<b>18</b>
Tutorials, Courses and Explanatory videos .....	22
Prompt Development/Engineering .....	22
Research Tools .....	23
References.....	23



## Prompt

The initial outline for this resource was generated by ChatGPT. The prompt used was:

*Create a comprehensive teaching resource about using ChatGPT in higher education. Include sections on what ChatGPT is, how ChatGPT works, benefits of ChatGPT for Higher Education, how ChatGPT can be used in the classroom, challenges of ChatGPT for higher Education, how students can misuse ChatGPT, and how such misuse by students can be detected. Cite some resources for further reading under every section.*

## Introduction to ChatGPT

ChatGPT, or "Chat Generative Pre-training Transformer," is a cutting-edge natural language processing (NLP) tool that can generate human-like text based on a given prompt or context. Developed by OpenAI, ChatGPT is a variant of the GPT-3 model, which has been trained on a massive amount of text data and has the ability to generate text that is often indistinguishable from text written by a human.

## What is ChatGPT?

ChatGPT is a language model that uses deep learning techniques to generate text. It is pre-trained on a massive amount of text data, including books, articles, and websites, which allows it to generate text that is similar to text written by humans. It is designed to generate text in response to a given prompt or context, and it can be fine-tuned for specific tasks such as language translation, summarization, and question answering.

## Relevant resources

- [Something wicked this way comes: ChatGPT, Artificial Intelligence's quantum leap](#) Steven Boykey Sidley, a professor of practice at JBS, University of Johannesburg provides a brief history of the development of AI and describes how CHATGPT is evolving.
- [What is ChatGPT? And questions you have been afraid to ask](#) A succinct background to the tools development
- [What is Chat GPT Explained](#) Helpful video explaining what Chat GPT is, what it can do and its history as a product of Open AI.

## How ChatGPT works

ChatGPT uses a technique called "transformer architecture" to generate text. The model is trained on a massive amount of text data (over 8 million documents and over 10 billion words) ([Inteligencia Artifical](#), 2023), which allows it to understand the relationships between words and phrases. When



given a prompt or context, the model generates text by predicting the next word or phrase based on the input it has been given. The model can also be fine-tuned for specific tasks by training it on a smaller, task-specific dataset. ChatGPT has no 'real' intelligence, instead merely predicting what the most likely response to a prompt would be. For this reason, it is sometimes referred to as a 'stochastic parrot'. Others refer to it as the 'King of Pastiche' as it is really just putting together pieces of texts

According to a recent blog post on the disadvantages of ChatGPT content, it notes that it is (*currently*) unable to use idioms - the absence of which may serve as signal to detection software (Crothers et al., 2022). It also lacks artistic expression devoid of irony, humour or metaphors as well the ability to provide unique insights. It issues verbose, often overly detailed responses and tends to steer away from proffering an opinion with a bias to adopting a neutral stance. Apart from the disclaimer which states that it can fabricate facts, its responses appear to be plausible with an overtly formal tone adopted yet evidently too literal in style. (Montii, 2023) It is however not sentient and has no temporal reasoning.

That said, its efficacy really depends on the inputted prompt (Bouchard, 2022). As such there is a need for AI literacy, in particular skills on Prompt Engineering, in order to generate content that is qualitatively superior to the superficial responses often generated by simple prompts.

Other key limitations of its operations include the inability to access the internet; its input text limit (though concise text is recommended in order to get the accurate results) and lack of common sense and up-to-date knowledge given that its training data set comprises entries only up to 2021.

### Further ChatGPT prompts used in this section

*What are your limitations?*

As a language model, I have several limitations:

1. Bias: My training data reflects the biases and stereotypes present in the text it was trained on. This can sometimes result in me generating responses that are biased or insensitive.
2. Lack of Context: I don't have access to external information or context outside of what's provided in the prompt, so my responses can sometimes be limited or incorrect.
3. Lack of Common Sense: I was trained on text, but I don't have real-life experiences or common-sense knowledge. This can result in me making mistakes or providing unrealistic answers.
4. Creative Limitations: Although I can generate text that is similar to text I was trained on, I don't have the ability to truly understand or create original ideas in the same way a human can.

It's important to remember that I'm a machine learning model and not a human, and there will always be limitations to my understanding and ability to respond.



## Relevant resources

[How does Chat GPT work](#) A useful article discussing how ChatGPT works with practical advice on how to use in projects.

[A Generative AI Primer](#) Source: JISC A work-in-progress resource serving as an introductory primer to AI in education

## Opportunities for learning & teaching offered by ChatGPT

ChatGPT offers a number of opportunities for learning and teaching, including:

- Enhanced intrinsic learner motivation, foundational knowledge building and deep understanding and expertise. (Hardman, 2023)
- The automation and rapid design of lessons
- An opportunity to redesign assessment strategies
  - Some institutions are opting for more oral exams, group work and handwritten assessments! (Huang, 2023)
  - A new focus on assessing *prompts* as opposed to outputs and the evaluation of the recombined output signifying the nature of knowledge creation as well as how creative thinking is connected to innate critical thinking. (Firth, 2023)
- Providing accessible information
- Providing innovative opportunities for students to reproduce existing knowledge in order to enact high order thinking
- An opportunity to pursue the provision of new critical information literacies such as prompt engineering skills, AI media literacy
- The repositioning of academics as co -creators of knowledge through the immersion in collaborative, knowledge- building pedagogies (Carvalho et al., 2022, )
- An opportunity to reconceive how student competencies can be measured.
- The opportunity to cultivate skills which will allow for the integration of machine learning views guided by a human perspective.

## Further ChatGPT prompts used in this section

*How does one gauge student competence in the age of artificial intelligence such as ChatGPT?*

To gauge student competence in the age of AI, it is important to assess not just their ability to recall information, but also their critical thinking, problem-solving, and creativity skills. This can be done through various assessments methods, such as:

1. Project-based assessments: Assign projects that challenge students to apply their knowledge and skills to real-world scenarios.
2. Peer evaluations: Have students assess each other's work, which helps to develop critical thinking and communication skills.
3. Self-reflection and self-assessment: Encourage students to reflect on their own learning process and evaluate their own progress.



4. Case studies and simulations: Provide students with complex, real-world scenarios and have them analyse and solve problems.

It is also important to consider the limitations of AI and not solely rely on it for assessing student competence. AI is still a developing technology and may not always accurately gauge the full range of a student's abilities and potential.

*What types of Artificial Intelligence literacies would be required by students to engage critically with ChatGPT? Please describe what Prompt Engineering is and whether this will be required by students from various disciplines, not necessarily information science or computer Science, in order to generate deep insightful information from ChatGPT.*

To engage critically with ChatGPT, students from various disciplines may benefit from having a general understanding of:

1. Natural Language Processing (NLP): The field of AI that focuses on allowing computers to understand, interpret, and generate human language.
2. Deep Learning: A subset of machine learning that uses multi-layer neural networks to model complex patterns in data.
3. Machine Learning: The field of AI that focuses on developing algorithms that allow computers to learn from data and make predictions or decisions

In addition to these, prompt engineering refers to the process of designing and crafting questions or prompts that are well-suited for a specific AI model, such as ChatGPT. This can help ensure that the model produces high-quality responses that are relevant and accurate. Whether students from various disciplines would need to learn about prompt engineering would depend on their specific goals and the types of information they are looking to generate from ChatGPT.

In general, having some understanding of prompt engineering may be beneficial for anyone who wants to use AI models, like ChatGPT, in a way that maximizes the quality of the information generated.

## Relevant resources

- [AI in Education Resource Directory](#)
- [AI and Assessment](#) Prof and Chair in Digital Education, Mairéad Pratschke from the University of Manchester shares her screencast presentation, replete with helpful resources on how to engage with AI in creating Education 4.0.
- [Designing Assessments for Responsible AI Integration](#)
- [Higher Education's Thoughtful Response to Robot Writing: A Recording of the webinar held on 7 Feb with panel discussants from NSW, Canada and Australia. Full transcript and invitation to continue the chat on ChatGPT in Education](#)
- [Learning Landscape Presentations T&L with AI](#)



## Further reading

- [A decolonial approach to AI in higher education teaching and learning: strategies for undoing the ethics of digital neocolonialism](#) *The questions driving this article are: What does a decolonial approach to AI imply for higher education teaching and learning? How can educators, researchers and students interrogate the coloniality of AI in higher education? Which strategies can be useful for undoing the ethics of digital neocolonialism in higher education?*
- [Humanities and social science educators must embrace ChatGPT \(for now\). Here's why](#) *An opinion piece by Prof Bhaso Ndzendze at the University of Johannesburg's department of politics and international relations, as well as its 4IR and Digital Policy Research Unit. His books include Artificial Intelligence and International Relations Theories (2023) and Artificial Intelligence and Emerging Technologies in International Relations (2021).*
- [ChatGPT represents progress but also problems](#) *Source: Mail & Guardian An opinion piece by CEO of WethinkCode, Nyari Samushonga, who looks at the third side of the proverbial coin that describes the pros and cons regarding artificial intelligence for educators, alerting us to issues of digital inequity that feed into the biases of the CHAT GPT tool.*
- [Generative AI is coming for the classroom, whether teachers like it or not. Here's why many in education think it should be embraced rather than shunned.](#)
- [Is AI the New Homework Machine? Understanding AI and Its Impact on Higher Education.](#) *A comprehensive introduction to artificial intelligence and its likely impact on teaching in higher education, and also on how large language models such as ChatGPT work.*
- ['This shouldn't be a surprise' The education community shares mixed reactions to ChatGPT](#) *Some institutions have banned the tool on networks whilst others are urging for educators to be trained on how to use AI tool with OpenAI currently working on tools to detect its ChatGPT use on assignments and tests*
- [Breaking What Was Already Broken: AI and Writing Assignments](#) *A very useful blog post peppered with links to articles representing key arguments- for and against AI use- that Higher education is currently wrestling with.*
- [Alarmed by A.I. Chatbots, Universities Start Revamping How They Teach](#) *With the rise of the popular new chatbot ChatGPT, colleges are restructuring some courses and taking preventive measures.*

## Threats to Learning and Teaching

While ChatGPT offers many benefits for higher education, there are also some challenges that educators may face when using it, including:

- The use of ChatGPT may discourage students from developing their own critical thinking, creativity and writing skills. Students may become too reliant on the tool and not learn how to generate their own ideas and thoughts.
- ChatGPT may not be able to fully understand and incorporate the nuances and context of a particular subject or assignment and may thus provide overly simplistic answers or incorrect answers.
- The use of ChatGPT may raise concerns about plagiarism and academic integrity.
- Students may not understand that ChatGPT is not a replacement for human intelligence



- Students may use ChatGPT as a first port of call to generate responses to assessments without attempting to *either* engage initially on their own OR engage further with the AI generated response thereby limiting the students sense of their innate potential.
- Students may not understand the limitations of ChatGPT.
- Students may not be able to discern fabricated information.
- Lack of accountability: Since the responses generated by AI models are not directly linked to a specific individual, there may be concerns about accountability for the information provided and its accuracy.
- Bias and Discrimination: AI models like CHATGPT are trained on large amounts of text data and can sometimes exhibit biases and discriminatory behaviour learned from the training data.
- The potential IP infringement issue associated with ChatGPT use

## Further reading

- [ChatGPT is a data privacy nightmare. If you've ever posted online, you ought to be concerned](#) Prof in BIS, Uri Gal opines about the privacy issues that using ChatGPT poses to users.
- [ChatGPT threatens language diversity. More needs to be done to protect our differences in the age of AI](#)
- [Chat GPT's Biggest Weakness - a Danger](#) A YouTube video by educator Michael Frank warning about relying on the tool too much given its inconsistent provision/lack of citations.
- [Sarah's Thoughts: Artificial Intelligence and Academic Integrity](#) A blog post by Dr. Sarah Elaine Eaton, a professor, ethicist, writer, and speaker who is a strong advocate for academic integrity and ethics in educational contexts.
- [Seeing Past the Dazzle of ChatGPT](#) To help put text generators in the proper perspective, we need to turn toward each other to determine guidelines for the use of such tools, Anna Mills writes.

## Ethics and morality of using ChatGPT for Learning and Teaching

- The use of ChatGPT can promote the spread of false news, misinformation especially through the veneer of plausibility of the generated text
- The use of ChatGPT raises ethical concerns about the creation and use of artificial intelligence in education.
- The use of ChatGPT may perpetuate issues of bias and discrimination if the data used to train the model is not diverse and inclusive.
- The use of ChatGPT may raise questions about the value of human input and creativity in education.
- The use of ChatGPT may raise concerns about privacy and the potential misuse of student data. i.e. fodder for machine learning?
- The use of ChatGPT should entail a critical engagement with the exploitative labour practices involved in its development. (Perrigo, 2023)
- The significant carbon footprint that the training of LLMs require
- How using these tools may signal the endorsement of surveillance capitalism, alignment problems that could cause potential damage etc.



## Relevant resources

- [Helping teachers bring AI to the classroom critically, ethically, & responsibly](#). A curated collection of assignments bringing a critical lens to Artificial Intelligence (AI), built collaboratively with educators. We give teachers the tools to examine AI's dangers, benefits, and inevitable impact in the classroom.
- [Critical lenses on 'AI'](#) A compilation of resources aimed at providing a vigilant take on AI tools and 'resisting the hype'
- [Critical AI](#) : The blog site for the Critical AI, a new interdisciplinary journal based at Rutgers University's [Centre for Cultural Analysis](#).
- [Limitations And Ethical Considerations Of Using ChatGPT](#)
- [Teaching AI Ethics](#) A resource compiled by Leon Furze, an international consultant, author, and speaker and studying his PhD in the implications of Artificial Intelligence on writing instruction and education. See also [Teaching AI Ethics: Intermediate Series](#)
- [ChatGPT and the sweatshops powering the digital age](#)
- [Transcript: Ezra Klein Interviews Gary Marcus](#). Gary Marcus is an emeritus professor of psychology and neural science at N.Y.U., and he's become a leading voice of not quite A.I. scepticism, but scepticism about the A.I. path we're on.
- [Prof. Luciano Floridi - ChatGPT, Superintelligence, Ethics, Philosophy of Information](#): A YouTube video of the interview with Prof Floridi expounding on the deontology and teleological perspectives of AI along with other philosophical aspects needed to understand the impact of these tools and underscoring these arguments with the crucial need for governance and a regulatory framework developed by all stakeholders to improve the world .

## Further reading

- [AI Act: EU Parliament's crunch time on high-risk categorisation, prohibited practices](#) The European Parliament's co-rapporteurs proposed compromise amendments to the list of high-risk AI applications, banned uses and concept definitions. EU lawmakers Brando Benifei and Dragoş Tudorache are striving to close the negotiations on the Artificial Intelligence Act in the coming days. The Act is the world's first attempt to regulate AI based on its potential to cause harm.
- [A short list of suggestions on ChatGPT and BARD from an ethicist](#)

## How ChatGPT can be used in the classroom

ChatGPT can be used in a variety of ways in the classroom, including:

- Generating lesson plans based on a particular pedagogical design
- Enhancing the learning experience by providing students with more **engaging and interactive materials**
- Creating storyboards for **interactive or gamified learning activities**
- Creating **interactive quizzes and exercises**
- Generating **test questions**
- Creating discussion prompts with rubrics to grade student contributions
- Automating time-consuming tasks such as **essay writing and language translation**





- Enabling students to practise their writing skills by using the model to generate text, which they can then revise and edit
- Generating unique text for essays, research papers, and other assignments
- An opportunity to **transform essay writing**
- Generating **unique text for essays and research papers**
- Automating **essay writing**: Students can use the model to generate text for an essay, which they can then revise and edit.
- Practicing writing skills: Students can use the model to generate text, and then revise and edit it to improve their writing skills
- Enhancing **personalization and differentiation**: Teachers can use the model to generate text at different levels of proficiency, which can help students learn at their own pace.
- Students can similarly generate text at their **own level of proficiency**
- Providing opportunities for students to explore and analyse text generated by the model, which can help them **develop critical thinking skills**
- Simulate debates to **develop critical thinking skills**
- Automating **language translation tasks**
- Providing students with personalized **language assistance**
- Provide **exemplars for assignment tasks**
- Prompting Chatbot to adopting a persona to whom questions can be asked and who can generate questions in turn for the user/student.
- Writing Assistance: Have students use ChatGPT to generate ideas and suggestions for their writing assignments. This can be used as a tool to assist with brainstorming and editing.
- Dialogue Generation: Have students use ChatGPT to generate dialogue for a fictional story or script. This can be used as a tool to assist with creative writing and scriptwriting.
- Language Learning: Have students use ChatGPT to generate sentences and phrases in a foreign language. This can be used as a tool to assist with language acquisition and practice.
- Research Assistance: Have students use ChatGPT to generate summaries and analysis of research articles. This can be used as a tool to assist with research projects and assignments.
- Tips harvested from various posts
  - Be intentional about when and how ChatGPT is introduced.
  - Create dedicated non-AI spaces.
  - ChatGPT will be indispensable for pattern recognition.
  - ChatGPT should be used to supplement other forms of writing.

## Relevant resources

- [Link to internal doc of AI tools](#)
- [Resources on Generative AI in Education](#) *Sponsored by the University of California, Irvine, and the Spencer Foundation, this curation of resources includes an overview of generative AI and its integration in education, and the application of generative AI in specific topic areas in education- Link to Discord Channel <https://discord.gg/YpXHRWED>*
- [Learn Prompting](#) *An open -source work in progress course on how to craft good prompts*
- [Resources on Generative AI in Education: Writing](#) *Sponsored by the University of California, Irvine, and the Spencer Foundation, this curated set of resources serves as precursor materials for the Pens & Pixels: Generative AI in Education Conference scheduled for July 2023*
- [Using AI to make teaching easier & more impactful](#) *Here are five strategies and prompts that work for GPT-3.5 & GPT-4 2023/03/18*
- [PedAlgoogy – new era of knowledge and learning where AI changes everything](#) *A blog post by Donald Clarke. He writes” This is another big bang, the difference being the dynamic creation*



of knowledge, in real time, in co-created dialogue. We are no longer using technology to simply find knowledge and learn. We have moved forward to find, create, change, organize, synthesize, even evaluate knowledge and learning with technology. This is a new form of pedagogy, I call 'pedAlgogy'. We are co-creators, not just of text but in all media, multimedia creators, as well as learning and teaching in a far more complex relationship with technology. Also see [8 Learning Trends Now Shaping L&D Webinar Recording](#)

- [A practical guide to ethical use of ChatGPT in essay writing](#) A resource compiled by UJ's Benjamin Smart, Director of The Centre for Philosophy of Epidemiology, Medicine, and Public Health, and Associate Professor of Philosophy & Catherine Botha, full professor in Philosophy
- [Presentations of the Teaching and Learning with Artificial Intelligence Symposium: 8-9 February 2023](#) : [Presentations T&L with AI resources](#) compiled by Prof Johannes Cronje (CPUT: Learning Landscapes)
- [Ideas for Using AI Tools in Teaching & Learning-](#) Western Academy of Beijing LIB on resources for T&LWAB
- [How Well Can AI Respond to My Assignment prompts](#) A resource compiled by various educators on:
  - *Alternative Tools*
  - *Assignment Prompts*
  - *Teaching Writing using AI*
- [ChatGPT in Education](#) A collection of Resources by Phil Anthony gathered from colleagues across the sector during the Digitally Enhanced Education Webinars.
- [How to... use ChatGPT to boost your writing](#)
- [What lessons can we learn from ChatGPT about AI and education?](#) Key Points include
  - *focussing students on exploring and explaining the "hows" and the "whys" vs. the "whos," "whats," and "whens."*
  - *Getting students to form opinions*
  - *Being mindful of the inaccuracies of ChatGPT*
  - *Fundamentally rethinking exam approach*
- [ChatGPT for Educators](#) A comprehensive list of resources by collaborators on various hubs such as
  - Curriculum impact
  - Educator Uses
  - ChatGPT challenges
  - Podcasts, Videos and Articles
- [Creative Learning Solutions in a ChatGPT World](#) A blog describing an educator's experience of AI use by students and his musings on how chatbots could impact teaching and learning.
- [Chatting and Cheating. Ensuring academic integrity in the era of ChatGPT](#) The paper discusses the main features and capabilities of chatAPIs and GPT-3 and provides examples of their use in higher education. It also considers the potential for these tools to be used for academic dishonesty and the difficulties of detecting and preventing such abuses. Finally, the paper suggests a range of strategies that universities can adopt to ensure that chatAPIs and GPT-3 are used ethically and responsibly, including developing policies and procedures, providing training and support, and using a variety of methods to detect and prevent cheating.
- [ChatGPT for Educators: Free Guide](#) A short guide developed by learning scientist Dr. Phillipa Hardman, creator of DOMS™ Learning Design Engine which aims to empower learning designers to create engaging learning experiences. See also her guide for [learning designers on using AI](#).
- [How to use ChatGPT to boost your writing](#) A blog providing some useful tips on prompt crafting



- [AI Text Generators: What Questions Should Writing Teachers Ask?](#) Useful set of question for academics to consider regarding AI text generators and policy issues by critical AI literacy advocate, Anna Mills.
- [Leveraging ChatGPT: Practical Ideas for Educators](#) The author proposes four ways to use ChatGPT in the Classroom:
  - Help students with grammar
  - Create Study Guides
  - Flip the Classroom
  - Build Information-Literacy Skills
- [ChatGPT: create a game activity storyboard](#) Presentation/resource on how to go about creating/generating a storyboard for a game activity using ChatGPT
- [AI, Chatbots & ChatGPT for Teachers](#) A free course intended for teachers who want to know more about ChatGPT, use it in their practice, looking for inspiration/examples of its power or those trying to improve their use of this AI chatbot.
- [ChatGPT: five priorities for research](#) The authors hold that banning AI tools will not work and outline 5 key issues on which to focus research viz. The retention of human verification processes; development of rules of accountability; invest in open LLMs, embrace AI technology and robust debate engagement.
- [So, you want to use ChatGPT in the classroom this semester?](#) Ben Swift outlines some methods and things to think about if you're unsure about ChatGPT but would like to start incorporating it in your classes right away.

## Further reading

- ["Designing Assignments in the ChatGPT Era"](#) Some instructors seek to craft assignments that guide students in surpassing what AI can do. Others see that as a fool's errand—one that lends too much agency to the software. The article describes the academes wrestle with how best to exploit the tool or resist its use.
- [The Biggest Risk of AI in Education? It makes us more efficient at creating ineffective learning experiences](#) The author opines that online education has failed to deliver on its promise to transform education because the technology that we have built to deliver it reproduces broken systems of teaching and learning." Describes then how AI can be used for
  - Intrinsic Learner Motivation
  - Foundational Knowledge building
  - Deep understanding and Expertise
- [ChatGPT Is Coming for Classrooms. Don't Panic](#) From the article: "The AI chatbot has stoked fears of an educational apocalypse. Some teachers see it as the reboot education sorely needs."
- [Can We use ChatGPT to Render Diagrams From Accessible Diagram Descriptions](#)
- [Flowcharts](#)
- [How can we design for learning in an AI world?](#) This article argues that both educators and learners should be involved not only in learning but also in co-designing for learning in an AI world. The paper discusses underpinning philosophies (the capability approach and value creation), a high-level pedagogy (with an emphasis on co-creation), pedagogical strategies (speculative pedagogies), and pedagogical tactics (AI scenarios). It then proposes a participatory design approach (ACAD) to support educators and learners' discussions about design for learning in an AI world.



# Lesson Plans for Using ChatGPT in Higher Education

## Relevant resources

- [Using ChatGPT to Create a Lesson Plan: A YouTube video demonstrating the use of ChatGPT using the BOPPPs model to generate a lesson plan](#)
- [Lesson Plan: Teaching and Learning in the Era of ChatGPT](#)
- Educators and experts on all sides of the broader debates about ChatGPT give some strategies for AI-proofing assignments: <https://www.edweek.org/technology/outsmart-chatgpt-8-tips-for-creating-assignments-it-cant-do/2023/02>

## Assessing student learning

- Use open-ended questions: Open-ended questions that require a written response cannot be easily answered by ChatGPT. These types of questions can also encourage critical thinking and analysis.
- Use multiple-choice questions with a twist: Instead of traditional multiple-choice questions, use questions that require students to analyse and interpret information. For example, instead of asking "What is the main theme of the story?", ask "How does the author use symbolism to convey the main theme of the story?"
- Use peer review: Have students review and evaluate each other's work. This not only assesses their understanding of the material, but also promotes collaboration and critical thinking.
- Use real-world applications: Ask students to apply their knowledge in a real-world scenario. For example, ask them to write a proposal for a research project or to create a marketing plan for a new product.
- Nowadays, scientific endeavours are increasingly relying on AI. Scientists and engineers utilise supercomputers to predict, classify and infer to solve complex problems. These scenarios could be roleplayed in the classroom

## Further ChatGPT prompts used in this section

*Give me examples of work using ChatGPT (this was a follow up question to "How can I use ChatGPT in my learning and teaching activities in higher education whilst still ensuring academic integrity?" and is included here to follow the structure of the document)*

Here are a few examples of original work that students can create using ChatGPT:

1. Creative writing: Have students use ChatGPT as a writing prompt and generate a short story, poem, or personal essay based on the information and ideas generated by the model.
2. Problem-solving: Have students use ChatGPT to research a complex problem and then use their own critical thinking skills to develop a solution.
3. Research projects: Have students use ChatGPT to gather information on a particular topic and then use that information to write a research paper or create a presentation that presents their own original insights and ideas.



4. Group projects: Have students work in teams and use ChatGPT to research and brainstorm solutions to a common problem. The teams can then present their own original solutions to the problem.
5. Debates: Have students use ChatGPT to research both sides of a contentious issue and then use that information to participate in a class debate, presenting their own original arguments and ideas.

These are just a few examples of original work that students can create using ChatGPT. The key is to assign tasks that require students to use their own critical thinking and creativity, rather than simply repeating information from the model.

## Relevant resources

- [AI Augmented Outlining](#) An example of an assessment strategy shared from [Codaptivelabs.com](#). See their other [strategies](#).
- [AI and Assessment](#) Prof and Chair in Digital Education, Mairéad Pratschke from the University of Manchester shares her screencast presentation, replete with helpful resources on how to engage with AI in creating Education 4.0.
- [Video - AI and Assessment: ChatGPT and the Future of Education](#) A follow up presentation by Prof and Chair in Digital Education, Mairéad Pratschke.
- [ChatGPT User Experience: Implications for Education](#) The paper concludes by suggesting adjusting learning goals—students should be able to *use AI tools to conduct subject-domain tasks* and *education should focus on improving students' creativity and critical thinking rather than general skills*. To accomplish the learning goals, researchers should *design AI-involved learning tasks to engage students in solving real-world problems*. ChatGPT also raises concerns that students may outsource assessment tasks. This paper concludes that *new formats of assessments are needed to focus on creativity and critical thinking that AI cannot substitute*.
- [Designing Assignments in the ChatGPT Era](#) Some instructors seek to craft assignments that guide students in surpassing what AI can do. Others see that as a fool's errand—one that lends too much agency to the software.
- [Introducing: ChatGPT Edu-Mega-Prompts](#) A blog post by the learning scientist Dr Hardman which underscores the importance of the 'Prompt' used in requests. Describes the anatomy of the prompt, showing its *key 7 characteristics* and how to create 'undoing activities'—an instructional strategy used in the creation of quizzes which “surfaces, challenges and reframes commonly mistaken foundational ideas and assumptions”
- [25 Ideas for alternative assessment in the AI area](#) Examples of using assessment strategies for alternative assessments with AI.

## Assessment creation tools

- Yippity: <https://yippity.io/?ref=futurepedia>
- Quiz Gecko: <https://quizgecko.com/>
- Questgen: <https://www.questgen.ai/>
- Kwizie: <https://www.kwizie.ai/>



## Further reading

- [PebblePad solutions to ChatGPT challenges: Ideas to combat academic integrity issues](#)  
*Though the article promotes the use of the licenced software i.e., the personal learning platform, PebblePad, used by a number of universities in the UK, it does provide some helpful ideas.*

## Misuse of ChatGPT by students / Academic Integrity and ChatGPT

- Students may use ChatGPT to generate entire assignments without putting in their own effort or understanding the material.
- Students may use ChatGPT to plagiarize or pass off someone else's work as their own.
- Students may use ChatGPT to create fake or misleading information for assignments or research projects.

## Further ChatGPT prompts used in this section

*How can I use ChatGPT in my learning and teaching activities in higher education whilst still ensuring academic integrity?*

ChatGPT can be a valuable tool for learning and teaching in higher education when used appropriately and with consideration for academic integrity. Here are some suggestions for using ChatGPT in an academically responsible manner:

1. Use ChatGPT as a supplement to, not a substitute for, traditional teaching methods. ChatGPT can provide additional information, resources, and practice opportunities, but it is important to rely on human-led instruction and assessment as well.
2. Cite ChatGPT as a source of information. If you use information from ChatGPT in your work, it is important to properly cite the source. This helps to maintain academic integrity and to give credit where credit is due.
3. Assign original work. Assign tasks that require students to generate original ideas, rather than simply repeating information from ChatGPT. This helps to foster critical thinking and creativity, while also promoting academic integrity.
4. Encourage students to use ChatGPT as a tool for learning, not a way to cheat. Make it clear that using ChatGPT in an academically dishonest manner (such as copying answers without proper citation) is not acceptable and will have consequences.

By using ChatGPT in a responsible and thoughtful manner, it can be a valuable addition to your teaching and learning activities in higher education.

## Relevant resources

- [How ChatGPT Can Help Prevent Violations of Academic Integrity](#) *In this YouTube video educator Dr. Brent A. Anders provides reasons behind students cheating and violations of academic integrity and suggests ways on how CHATGPT can help prevent these violations*



- [How to Avoid Plagiarism with AI \(ChatGPT\) - The Final Solution to Create Original Content](#) *The video shows how students can **avoid plagiarism** and detection by **AI detector tools** such as [Content at Scale](#) by using **ChatGPT**, and **article rewriting** and **paraphrasing tools** such as [Free Article Spinner](#) and [Word Tune](#).*

## Further reading

- [ChatGPT could help students cheat but it could also revolutionise education](#) *This controversial new form of AI comes with a silver lining writes Sam Illingworth at Edinburgh Napier University, opining that teachers could use the AI tool to develop authentic assessments and provides examples of these assessments*

## Detection of misuse of ChatGPT by students

- Teachers can use plagiarism detection software to check for similarities between student work and text generated by ChatGPT.
- Teachers can also use their own knowledge and expertise to identify patterns or inconsistencies in student work that may indicate the use of ChatGPT.
- Teachers can also encourage students to cite and reference any text generated by ChatGPT in their work.
- There is concern though but the accuracies of the detectors which sometime flag the user's original work as being fake.

## Relevant resources

### Tools for Detecting Text Generated by ChatGPT

Text generated by ChatGPT can be detected by analysing patterns and language use. Tools which can be used to detect text generated by ChatGPT includes:

- GPT-2 detector: A tool that uses machine learning to identify text generated by GPT-2 models such as ChatGPT.
- [GPTZero](#): is an app that detects essays written by the impressive AI-powered language model known as ChatGPT.
  - <https://www.insidehighered.com/news/2023/01/20/academics-work-detect-chatgpt-and-other-ai-writing>
  - <https://www.euronews.com/next/2023/01/19/chatgpt-is-it-possible-to-detect-ai-generated-text>
- Plagiarism detection software: These tools can be used to identify similarities between student work and text generated by ChatGPT.
  - Turnitin is currently working on a feature that will detect AI text
  - OpenAI is working on a feature that will watermark text from ChatGPT
- Language analysis tools: These tools can be used to identify patterns and language use that may indicate text generated by ChatGPT.





- [Writer AI Content Detector](#): A free tool developed by Writer.com. The tool is designed to help users detect AI written content generated by an AI writing tool, such as GPT-3 or GPT-2. The web-based tool provides a detection score, indicating the likelihood that the content was created by an AI.
- [Copyleaks](#): An AI detector app that can detect content generated by some AI text bot, including ChatGPT.
- Content at Scale: A tool that allows users to check the authenticity of their written content. It provides a score out of 100 to indicate the human-like quality of the content and the likelihood that it will be detected as artificial by Google.
- Corrector: A free online tool with a maximum of 300 words per run.
  - Turnitin AI Detection feature <https://www.turnitin.com/blog/sneak-preview-of-turnitins-ai-writing-and-chatgpt-detection-capability>
  - [Corrector](#)
  - [GPT-2 Output Detector](#)
  - [Content at Scale](#)
- Yippity: <https://yippity.io/>
- Quiz Gecko: <https://quizgecko.com/>
- Questgen: <https://www.questgen.ai/>
- [AI Tools for detecting generated text](#)
- [Futurepedia](#) *The Largest AI Tools Directory, updated daily with currently 2547 tools and 54 categories*

## Further reading

- [Inside the post-ChatGPT scramble to create AI essay detectors](#) *Edtech giants and plucky start-ups are vying to create potentially lucrative tools to combat the use of AI in assessments, but will they cause more problems than they solve?*
- [Can Digital Tools Detect ChatGPT-Inspired Cheating?](#) *Citing examples and providing descriptions of various AI detectors, Alyson Klein, assistant editor of Education week, reports on the potential 'AI Arms Race' with its rapid evolution and warns teachers about the limitations of such detectors.*
- [A college student created an app that can tell whether AI wrote an essay](#) *An article about the development of the GTPZero, a ChatGPT text detector app.*

## Policy and guidelines

Below are examples shared from various institutes.

## Relevant resources

- [AI Use Guidelines \(Summer 23\) - Wakefield](#) A lecturer from Keene Academic college shares his guidelines on Tool Use.





## Additional reading

- OpenAI - ChatGPT: <https://openai.com/blog/better-language-models/>
- How to Use ChatGPT for Text Generation: <https://towardsdatascience.com/how-to-use-chatgpt-for-text-generation-8d7a2f9b4eb7>
- ChatGPT-2 for Text Generation: <https://towardsdatascience.com/chatgpt-2-for-text-generation-5a5a8c5efb4e>
- OpenAI's GPT-3 paper: [https://cdn.openai.com/better-language-models/language\\_models\\_are\\_unsupervised\\_multitask\\_learners.pdf](https://cdn.openai.com/better-language-models/language_models_are_unsupervised_multitask_learners.pdf)
- "ChatGPT: A Pre-Trained Model for Conversational AI" by OpenAI: <https://openai.com/blog/chatgpt/>
- "How to use ChatGPT for text generation" by Medium: <https://towardsdatascience.com/how-to-use-chatgpt-for-text-generation>
- <https://www.theverge.com/2023/1/31/23579942/chatgpt-ai-text-detection-openai-classifier>
- [Wolfram|Alpha as the Way to Bring Computational Knowledge Superpowers to ChatGPT](#) *Blog post written by Stephen Wolfram - creator of Wolfram Alpha - asking the question, what would it look like if we combined Wolfram Alpha with Chat GPT. Also compares how Wolfram Alpha and ChatGPT differ in their responses to the same question.*
- [ChatGPT maker OpenAI releases 'not fully reliable' tool to detect AI generated content](#) *OpenAI is calling on educators to give their feedback on how the tool is used, amid rising concerns around AI-assisted cheating at universities*



# Annexure: AI Tools for Learning and Teaching

The following list of AI tools are derived largely from a compilation by [Dr Phillipa Hardman](#) as well as other sources and will be continuously updated.

## Tools similar to ChatGPT

- BERT (Bidirectional Encoder Representations): A pre-trained model developed by Google that can be fine-tuned for a variety of NLP tasks
- XLNet: A pre-trained model developed by Google that is similar to BERT but uses a different architecture
- [ChatSonic](#)
- [Chinchilla](#)
- [Bloom](#)
- [Replika](#)
- [Jasper Chat by Jasper](#)
- [LaMDA \(Language Model for Dialog Applications\)](#)
- [Elsa Speak](#)
- [DialoGPT](#)
- [YouChat](#)
- [Perplexity](#)
- [Character AI](#)
- [OpenAI playground](#)
- [Megatron-Turing Natural Language Generation](#)
- [Socratic by Google](#)

## Research Tools - Get to Know Your Subject & Learners

### Get to Know Your Subject

- TutorAI: <https://www.tutorai.me/>
- Perplexity: <https://www.perplexity.ai/>
- Consensus: <https://consensus.app/>
- Elicit: <https://elicit.org/>
- Scholarcy: <https://www.scholarcy.com/>
- Typeset: <https://typeset.io/>
- ELIF: <https://explainlikeimfive.io/>
- Article.Audio: <https://article.audio/>
- Summari: <https://www.summari.com/products/chrome>



## Get to Know Your Learners (Deep Dive Your Data)

- Polymer: <https://www.polymersearch.com/>
- MonkeyLearn: <https://monkeylearn.com/>

## Storyboarding & Prototyping Tools - Create Visual Blueprints & Lesson Plans

- Visual Sitemaps: <https://visualseitemaps.com/>
- Uizard: <https://uizard.io/>
- ArtBoard: <https://artboard.studio/>
- Prototyper: <https://prototyper.design/>

## Authoring Tools - Turn Existing Content into New Content

- Narakeet: <https://www.narakeet.com/>
- Munch: [Munch](https://munch.com/)
- MindSmith: <https://www.mindsmith.ai>
- Nolej: <https://nolej.io/nolej-ai>
- PaperCup: <https://www.papercup.com/industries/for-elearning>
- Vidyo: <https://vidyo.ai/>
- Pictory: <https://pictory.ai/>
- Content Fries: <https://www.contentfries.com/>

## Video & Audio Editing incl. dubbing

- Invideo: <https://invideo.io/>
- Runway: <https://runwayml.com/?ref=futurepedia>
- Gling: <https://www.gling.ai/?ref=futurepedia>
- Dubverse: <https://dubverse.ai/>
- Unscreen: <https://www.unscreen.com/>

## Content Writing Tools - Generate Compelling Copy

### Write Better Copy, Faster

- Copy AI: <https://www.copy.ai/>
- Co-Writer: <https://cowriter.org/>
- Hemingwayapp: <https://hemingwayapp.com/>
- Jasper: <https://www.jasper.ai/>
- WriteSonic: <https://writesonic.com/>
- OpenAI Playground: <https://beta.openai.com/playground/p/default-summarize>
- Quillbot: <https://quillbot.com/>
- Wordtune: <https://www.wordtune.com/>
- Rytr: <https://rytr.me>
- Write essays: <http://jenni.ai>
- Note taking: <http://fireflies.ai>
- Your text to speech: <http://murf.ai>
- Writeful: <https://www.writefull.com/>
- AJE Digital research editing: <https://www.aje.com/services/digital/>



## Write Compelling Stories to Engage Learners

- Bedtime Story: <https://www.bedtimestory.ai/>
- Novel: <https://novelai.net/>
- Subtext: <https://subtxt.app/>
- MarkCopy: <https://www.markcopy.ai/>
- Compose: <https://www.compose.ai/>

## Presentation Tools - Generate Slide Decks

- Tome: <https://beta.tome.app/>
- Slides: <https://www.slidesai.io/>
- Designs: <https://designs.ai/>
- Beautiful: <https://www.beautiful.ai/>
- Pitch: <https://pitch.com/>
- Poised: <https://www.poised.com/>
- Presentation: <https://presentations.ai/>

## Image Tools - Generate Images & Animations

- Aragon: <https://www.aragon.ai/>
- Craiyon: <https://www.craiyon.com/>
- DALL-E-2: <https://openai.com/dall-e-2/?ref=futurepedia>
- Visualize: <https://visualise.ai/>
- Lexica: <https://lexica.art/>
- Stock AI: <https://stockimg.ai/>
- Illustroke: <https://illustroke.com/>
- Humaaans: <https://www.humaaans.com/>
- OpenPeeps: <https://openpeeps.com/>
- Create Art From Text: [Midjourney.com](https://www.midjourney.com/)
- 3D modeling: <http://tome.app>

## Audio Generation - Generate Voiceovers, Podcasts & Music

### Create Voiceovers & Podcast Content

- Wellsaidlabs: <https://wellsaidlabs.com/>
- Voicemod: <https://www.voicemod.net/ai-voices/>
- Descript: <https://www.descript.com/>
- Big Speak AI: <https://bigsspeak.ai/>
- Resemble: <https://www.resemble.ai/>
- Fliki: <https://fliki.ai/>
- Murf: <https://murf.ai/>
- Coqui: <https://coqui.ai/>
- Beyond Words: <https://beyondwords.io/>

### Generate Music

- MusicLM: <https://googlemusiclm.com/>



## Video Generation Tools - Turn Text into Video

- Synthesia: <https://www.synthesia.io/>
- Colossyan: <https://www.colossyan.com/>
- Descript: <https://www.descript.com/>
- Movio: <https://www.movio.la/>
- Invideo: <https://invideo.io/>
- Shuffll: <https://shuffll.com/>

## Video editing

- Runway: [runwayml.com](https://runwayml.com)

## Evaluation & Impact Tools - Gather & Analyse Data

- Genius Review: <https://geniusreview.xyz/>
- Effy: <https://www.effy.ai/>
- Monkey Learn: <https://monkeylearn.com/>
- Polymer: <https://www.polymersearch.com/>

## Access & Inclusion Tools - Optimise for Inclusion

- Diversio: <https://diversio.com/>
- Get Dost: <https://getdost.com/>
- Accessibe: <https://accessibe.com/>
- Equally: <https://equally.ai/>
- Type Studio: <https://www.typestudio.co/>

## Productivity Tools - Streamline Your Workflow

### CVs, Contracts & Proposals

- Resume Worded: <https://resumeworded.com/>
- Proposal Genie: <https://www.proposalgenie.ai/>
- Legal Robot: <https://legalrobot.com/>
- Spellbook: <https://www.spellbook.legal/>

### E-mail

- Ellie: <https://tryellie.com/>
- Twain: <https://www.usetwain.com/>
- Smartwriter: <https://www.smartwriter.ai/>
- Phrasee: <https://phrasee.co/>
- Warmer: <http://warmer.ai/>

### Day To Day Effectiveness

- Noat: <https://www.noat.ai/>
- Notion AI: <https://www.notion.so/product/ai>
- Summari: <https://www.summari.com/products/chrome>
- Summate: <https://summate.it/>



- Otter: <https://otter.ai/>
- Sembly: <https://www.sembly.ai/>
- Craft: <https://www.craft.do/>
- Mem: <https://mem.ai/>
- Taskade: <https://www.taskade.com/>
- You: <https://you.com/>
- Todoist: <https://todoist.com/integrations/apps/ai-assistant>
- Time tracking: <http://timelyapp.com>

## Course Comms & Marketing Tools - Generate Marketing Comms

### Course Marketing Comms & Strategy

- Simplified: <https://simplified.com/ai-writer/>
- Copy Smith: <https://copysmith.ai/>
- MarketMuse: <https://www.marketmuse.com/>
- Creator: <https://www.creator.ai/>
- Autopost Social Media: [repurpose.io](https://repurpose.io)

### SEO & Ads

- Frase: <https://www.frase.io/>
- ContentEdge: <https://www.contentedge.com/>
- Surfer SEO: <https://surferseo.com/>
- Smartly: <https://www.smartly.io/>
- Phrasee: <https://phrasee.co/>

## Tutorials, Courses and Explanatory videos

- [Elements of AI](#) Comprises 2 parts with Part 1: An Introduction to AI is a free online course for everyone interested in learning what AI is, what is possible (and not possible) with AI, and how it affects our lives – with no complicated math or programming required.
- [Empower educators to explore the potential of artificial intelligence](#) *A 53 min Microsoft Learn Course*
- [Destination AI: Introduction to Artificial Intelligence](#) *An OpenClassroom course Last updated on the 1/23/23 Duration 6 hrs*
- [ChatGPT vs Sparrow - Battle of Chatbots](#) *The video compares Sparrow and CHatGPT with a focus on the research. ChatGPT did not come with an extra paper release while DeepMind, although they did present a paper proposing new chatbot Sparrow, they have not made the model publicly available.*
- [First look - ChatGPT + Wolfram Alpha](#) *The video compares Deepmind's Sparrow with Open AI's ChatGPT - both conversational dialogue models, explains how ChatGPT (and other chatbots) works in comparison to how Wolfram Alpha works and includes conversations around benefits of combining the two types into one centralised platform.*

## Prompt Development/Engineering

- [The Art of ChatGPT Prompting: A Guide to Crafting Clear and Effective Prompts](#)



- [Awesome ChatGPT Prompts](#)

## Research Tools

- <https://typeset.io/> Your AI Co-pilot to decode any research paper
- <https://www.semanticscholar.org/> A free, AI-powered research tool for scientific literature
- <https://www.researchrabbit.ai/> A platform that empowers every step of your research.

## References

Bouchard, L. (2022, December 12). *Prompting Explained: How to talk to ChatGPT*. Louis Bouchard. Retrieved February 2, 2023, from <https://www.louisbouchard.ai/prompting-explained/>

Carvalho, L., Martinez-Maldonado, R., Tsai, Y.-S., Markauskaite, L., & De Laat, M. (2022). How can we design for learning in an AI world? *Computers and Education: Artificial Intelligence*, 3. <https://doi.org/10.1016/j.caeai.2022.100053>.

Chou, L. (2023, January 10). *What lessons can we learn from ChatGPT about AI and education?* Pulse. <https://www.linkedin.com/pulse/what-lessons-can-we-learn-from-chatgpt-ai-education-luyen-chou/>

Crothers, E., Japkowicz, N., Viktor, H., & Branco, P. (2022, March 2). Adversarial Robustness of Neural-Statistical Features in Detection of Generative Transformers. <https://arxiv.org/pdf/2203.07983.pdf>

Downs, L., & Altmann, G. (2023, January 5). Is AI the New Homework Machine? Understanding AI and Its Impact on Higher Education. *WICHE Cooperative for Educational Technologies*. <https://wcet.wiche.edu/frontiers/2023/01/05/is-ai-the-new-homework-machine/>

Firth, J. (2023, January 23). *Creativity – What's the Role of Memory?* Memory and Metacognition Updates. <https://firth.substack.com/p/creativity-whats-the-role-of-memory?>

Gaebel, M. (2023, January 23). *Setting the stage for digitally enhanced higher education*. University World News. Retrieved February 2, 2023, from <https://www.universityworldnews.com/post.php?story=20230123125422596>

Hardman, P. (2023, January 5). The Biggest Risk of AI in Education? It makes us more efficient at creating ineffective learning experiences. *The Learning Science Newsletter, Powered by DOMS™*. <https://drphilippahardman.substack.com/p/the-biggest-risk-of-ai-in-education>

Huang, K. (2023, January 16). Alarmed by A.I. Chatbots, Universities Start Revamping How They Teach. *The New York Times*. <https://www.nytimes.com/2023/01/16/technology/chatgpt-artificial-intelligence-universities.html>

Montii, R. (2023, January 31). *11 Disadvantages Of ChatGPT Content*. Search Engine Journal. Retrieved February 1, 2023, from <https://www.searchenginejournal.com/disadvantages-chatgpt-content/477416/#topmenubutton>



Perrigo, B. (2023, January 18). OpenAI Used Kenyan Workers on Less Than \$2 Per Hour: Exclusive. *TIME*. <https://time.com/6247678/openai-chatgpt-kenya-workers/>

Shipper, D., & Morris, R. (2023, January 13). *GPT-3 Is the Best Journal I've Ever Used*. Every. Retrieved February 2, 2023, from <https://every.to/chain-of-thought/gpt-3-is-the-best-journal-you-ve-ever-used?>

Swiecki, Z., Khosravi, H., & Chen, G. (2022). Assessment in the age of artificial intelligence. *Computers and Education: Artificial Intelligence*, 3(2002). <https://doi.org/10.1016/j.caeai.2022.100075>

Willingham, D. T. (2006, Spring). How Knowledge Helps. It Speeds and Strengthens Reading Comprehension, Learning—and Thinking. *American educator*, 30(1). <https://www.aft.org/periodical/american-educator/spring-2006/how-knowledge-helps>

Zhai, X. (2022, December 27). ChatGPT User Experience: Implications for Education. <http://dx.doi.org/10.2139/ssrn.4312418>

Writesonic (2023, August 20). Top 30 ChatGPT alternatives that will blow your mind in 2023 (Free & Paid). <https://writesonic.com/blog/chatgpt-alternatives/>

Hardman (2023). 120+ AI Tools for Educators, Powered by DOMS™ <https://philippa-hardman.notion.site/philippa-hardman/120-AI-Tools-for-Educators-Powered-by-DOMS-f0b16f09f7744279921dbded18d86329>

