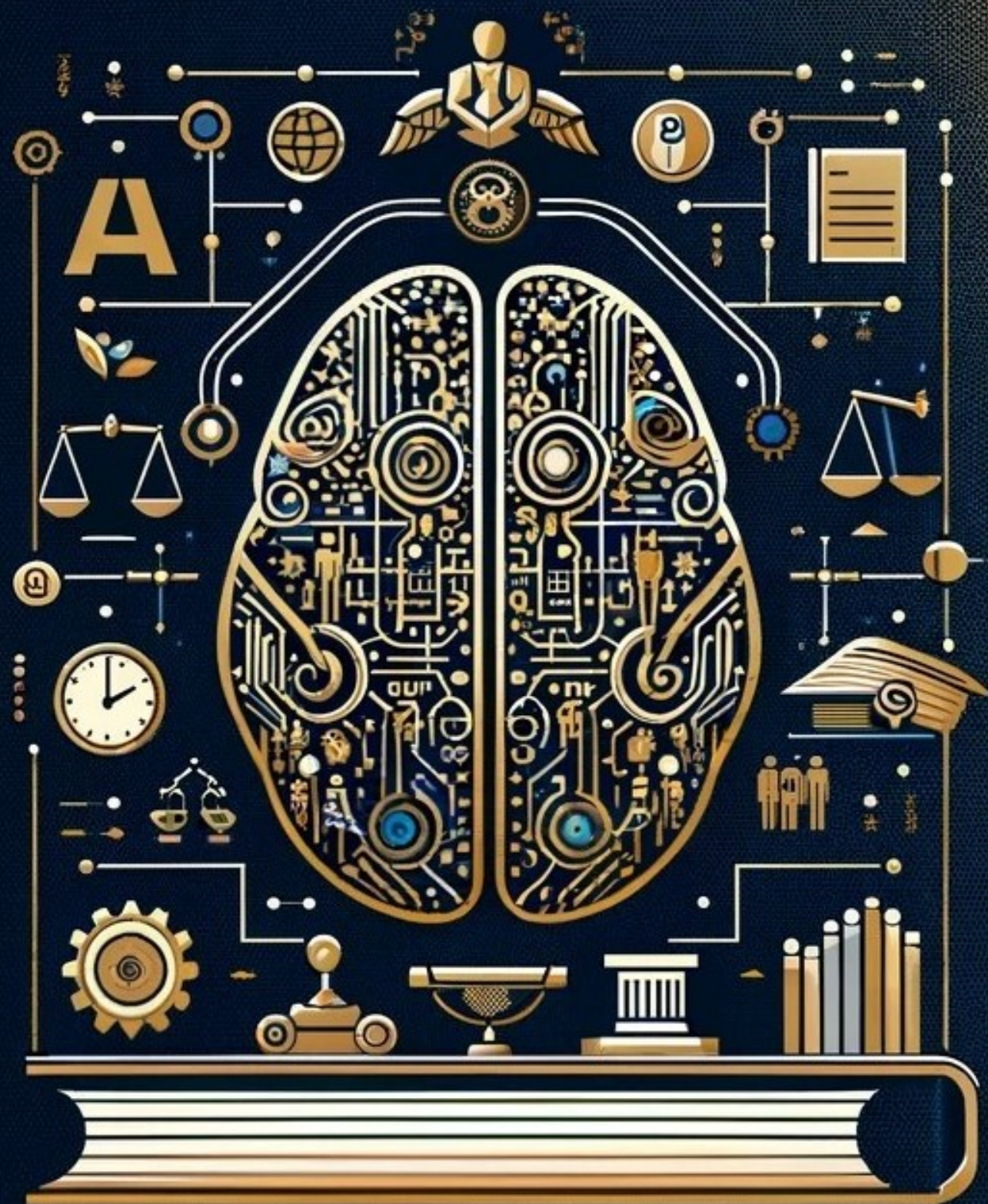


AI AND ETHICS IN HIGHER EDUCATION



Introduction to AI and Ethics in Higher Education

Hepler, R. C. , Vecchione, A. , Hensley, R. , Fensie, A. , Sinha, S. , Otero, L. , Riechers, D. , Long, L. , Liang, L. , Randall, R. , & Gladd, J.

This work examines the implications of AI on ethics, and vice versa, in higher education. It discusses these issues from the perspectives of students, educators, and administrators. Topics include types of AI deployment and integration, the impact of copyright law on AI use, issues with validity and fact-checking, and administrative and educator policies regarding AI in higher education.

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2024

English

Acknowledgments

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Reed C. Hepler

College of Southern Idaho, Idaho State University

Reed Hepler is the Digital Initiatives Librarian, Copyright Agent, and Archivist for the College of Southern Idaho. He obtained a Bachelor's Degree in History from Utah State University and a

Master's Degree in Library and Information Science from Indiana University. Currently, he is enrolled in the Master's Program in Instructional Design and Technology at Idaho State University. He has used his experiences in instructional technology, digital curation, copyright, records management, public communication, and database research to develop best practices guidelines for Generative AI use. He also applies these guidelines in his separate consulting company, heplerconsulting.com. In his corporate and educational work, Reed promotes ethical, equitable, and open technology and information access. He also advises on data privacy and confidentiality measures that should be at the forefront of generative AI interactions. His views and projects can be seen on his LinkedIn page or his blog, CollaborAltion, on Substack. Contact him at reed.hepler@gmail.com for more information.



Amy Vecchione



Ritamarie Hensley

Ritamarie (Re) Hensley is always looking for ways to leverage technology to enhance learning. As an instructional designer and adjunct instructor at Simmons University, she partners with faculty to build engaging online courses and assignments. After attaining her EdD in Leadership, she transitioned from teaching high school English to instructional designer. She understands how to translate effective in-person teaching strategies to flexible digital learning experiences. Having seen firsthand the time burdens on instructors, Re is particularly interested in using AI to improve work processes so faculty have more time to focus on students. She stays on top of the latest AI capabilities and considers how they can save effort while maintaining quality. Understanding that AI in education marks both a significant change and a disruption, Re makes it a priority to ease instructors into understanding the many applications AI offers. She consults with them to evaluate needs, demonstrate AI functionality, and slowly integrate selected uses at a comfortable pace. Re finds small wins go a long way toward gaining faculty buy-in. With AI geared to suit teaching and learning goals, professors can spend less time on administrative tasks, and more time engaging students.



Anne Fensie

University of Maine at Augusta

Anne Fensie has been an educator for over 25 years, as a high school and college teacher, an adult education administrator, and a distance education instructional designer. She is a doctoral candidate at the University of Maine where her research focuses on applying the science of adult learning to instructional design in distance education, and she also teaches educational technology to nontraditional undergraduates. Anne earned a bachelor's degree in music education from Ithaca College and a master's degree in instructional technology from Bridgewater State College. She is an active member of AECT, ICICLE, IMBES, and ISLS, has presented internationally on the science of adult learning, learning

engineering, instructional design, and distance learning, and has several peer-reviewed publications on these topics. Her greatest contribution is the bridging of adult learning theories and the learning sciences. Anne has won awards for her innovative programs in adult workplace and college transitions, her mentorship to graduate students, and her podcast, Learner Engagement Activated! A neurodivergent scholar and practitioner, Anne works to ensure equity for adult learners in higher education by increasing access and improving instructional designs that suit their unique needs based on life responsibilities, social identities, and cognitive changes throughout the lifespan.



Dr. Suparna Sinha

Rutgers University

Dr. Suparna Sinha is an Instructional Designer with University Online Education Services (UOES) at Rutgers University. She has a MA in Education with a focus on Educational Technology from Michigan State University and PhD. from the Graduate School of Education, Rutgers University. She is interested in understanding how students' engagement with technologies influences their thinking and learning. Her dissertation reflected this line of research by investigating influences of technological affordances (of simulations, hypermedia and modeling tools) on collaborative engagement and subsequently how student's collaborative engagements in technology intensive learning environments influences individual transfer of learning. Her interest in blending

these two major research areas, i.e. engagement and transfer, stem from her professional focus on educational technology. Prior to working for UOES, Dr. Sinha was the Director of In District Initiatives at the Center for Math, Science and Computer Education where her focus was on K-12 teacher professional development in the areas of Mathematics, Science and Maker Education.

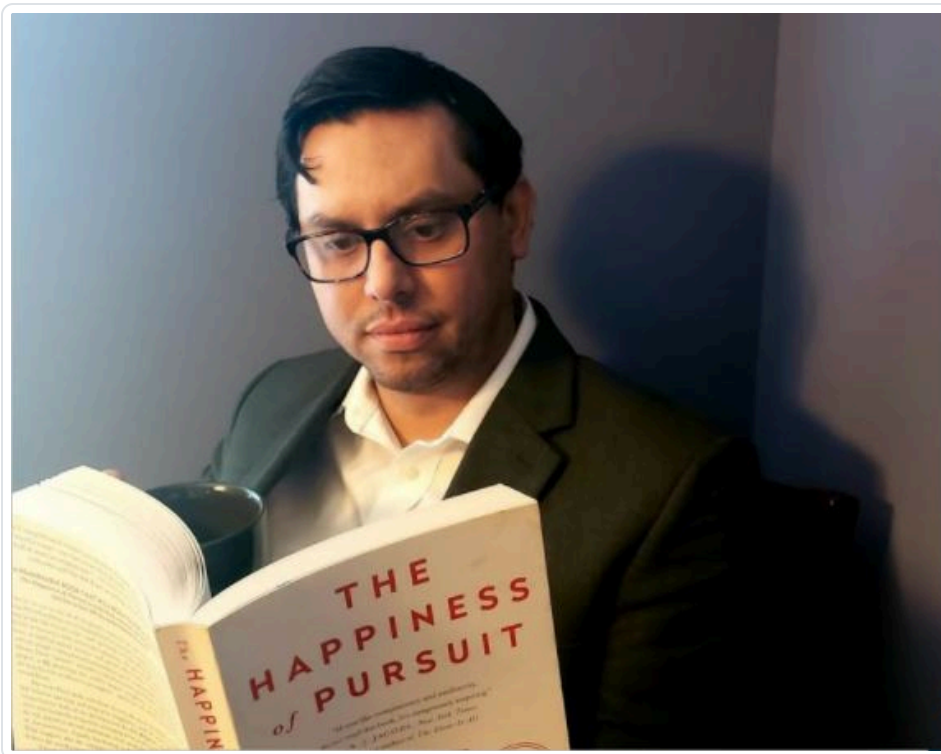


Laura Otero

California State University Monterey Bay

Laura Otero has over a decade of experience in academia specializing in online education and faculty development. She teaches for the School of Computing & Design at CSU Monterey Bay, where she is also the Online Education Coordinator in the Center for Academic Technologies. She earned her Bachelor's degree in Communication, her Master's degree in Education, and

her Ph.D. in Instructional Technology Leadership. Her hands-on experience with Artificial Intelligence began in 2022 when she first used MidJourney to illustrate a short story. Her research interests include relational leadership practices, AI impacts on higher ed, IT leadership practices, and online teaching and learning.



Derk Riechers

Northeastern Technical College

Dr. Derk Riechers has worked a myriad of years in higher education and has presented at numerous national conferences with topics ranging from academic affairs to strategic online college operations with the implementation of lean management principles. He is considered a foremost expert in distance education and is also a Board Member of the Instructional

Technology Council In addition, was is the Co-founder and COO of Virtual Education. His specialized research interests deals with the pedagogy of teaching online in terms of faculty and program development and Artificial Intelligence. He is highly skilled in data and statistical analysis and uniquely able to decipher and then successfully apply his findings to vastly improve online learning outcomes, student success rates, and retention. Derk Riechers earned a Bachelor's of Business Administration in Business Economics from Francis Marion University, Master of Business Administration from Capella University, Masters in Human Resources Development and Leaderships from Webster university, a Doctor of Education specializing in Teaching and Learning from Brenau University, Post-Master Certificate in College Teaching from Capella University, and an Instructional Leadership Certificate from Harvard Graduate School of Education.



Liza Long

Liza Long, Ed.D. is an associate professor of English and the chair of the General Studies committee at the College of Western Idaho. Liza began teaching with generative artificial intelligence tools in Spring 2023 and co-wrote an opened education critical theory textbook, "Critical Worlds: A Targeted Introduction to Literary Analysis," for her literary analysis course. She blogs about teaching, learning, and writing at her Substack, Artisanal Intelligence. Liza

earned her Ed.D. in organizational leadership and holds a B.A. and M.A. in Classics (Latin and Greek). She started an English Ph.D. program at ISU in Fall 2024, where she hopes to focus her research on teaching writing with artificial intelligence. She has taught English, ethics, humanities, and student success courses at the college level for several years and is passionate about the power of education to change lives.



Li Liang

With years of teaching, research and management work in market-ready AIED in assessment, Li (Lee) Liang is a tech-savvy multi-disciplinary PhD researcher on learning sciences and learning

engineering for learning and assessment with mixed methods, innovative psychometric methods in educational measurement with digital technology, HCI/UX design of market-ready AIED product and project development, educational psychology (socio-cultural psychology) for assessment and HCI/UX design of AIED product, psychometrics and validity of assessment behavior, developing higher-order thinking skills in individuals with AI, employability and workforce transformation in digital age, etc. Her research outcomes include peer-reviewed journal papers, HCI/UX design of market-ready AIED product in formative assessment for an AIED company, international conference presentations, etc.



Ryan P. Randall
Idaho State University



Joel Gladd

Joel Gladd, Ph.D., is the Department Chair of Integrated Studies at the College of Western Idaho. Joel began teaching with generative AI in early 2022, initially incorporating it into a First Year Experience course. He has since researched and implemented various AI strategies across literature, writing, and other first-year experience courses. In late 2023, Joel developed AI training for the First Year Experience course at CWI. He earned his Ph.D. in Literature Studies from the College of Western Idaho-Madison. With several years of experience teaching literature and writing courses at the college level, Joel has consistently embraced innovative pedagogy to empower students for future success.

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The authors of this book would like to thank all of the external editors who reviewed its chapters and provided feedback. Some of us (like Reed) were extremely verbose and *especially* needed to cut back on their content. Reviewers include Laura Dumin, David Wiley, and others.

In addition to the external reviewers, the authors would like each other for their reviewing and encouragement. We all reviewed two to three of each others' manuscripts and worked as a team, which was impressive considering the wide geography scope of the group.

The editor also thanks Laurie Bridges for having the idea that provided the impetus for this book. Also, he thanks John Curry and David Wiley for inspiring him and encouraging him. This was a daunting project, and it could not have been completed without their support.

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Introduction

Hepler, R. C.

Learning Objectives

1. Understand the social and educational context of the chapters of this book.
2. Explain why ethics is important when discussing GenAI Tools.
3. Explain the difference between commercial and open technologies.

Introduction (Meta-Introduction, if you will)

You walk onto campus (or log onto Canvas, if you are in an online class) on the first day of the semester. You have anxiously been awaiting the start of this course because you heard that the content was exciting and the teacher was engaging. Additionally, you are eagerly anticipating the vibrant and energetic discussion you and

your classmates have during class. You are excited to learn anything you can in this course because it is fundamental to your career path.

After you settle in (or start scrolling on the syllabus), you notice something. Your instructor has an entire section on Generative AI use. For such an important class, you are surprised and bewildered that your teacher not only supports Generative AI tools, but has guidelines on how to use them. You thought that using Generative AI tools in any way constituted cheating. After all, what about the many issues surrounding Generative AI? And other teachers in previous courses took a hard line against it! Has this teacher gone soft? How are you going to know that your classmates are using AI according to your instructor's guidelines? How are you going to know that *you* are using AI ethically?

This book is meant to answer some of these questions.

How This Book Came to Be

Laurie Bridges from Oregon initiated the creation of this textbook to address the urgent need for an accessible Open Educational Resource (OER) on AI and Ethics for undergraduate students. This project quickly attracted twelve diverse authors from around the

globe, all bringing unique perspectives on artificial intelligence and its ethical implications in education. This collaborative effort ensures a comprehensive exploration of AI's ethical dimensions, enriching the textbook with a wide array of insights.

My academic journey is deeply rooted in the principles of information literacy, where I see generative AI as both a significant asset and a substantial ethical challenge. From my perspective, generative AI offers incredible opportunities for innovation in data and information management. At the same time, the multitude of generative AI tools in the world presents complex ethical dilemmas that require careful consideration and responsible handling.

Why the Emphasis on Ethics?

Ethics can be a complicated subject. Whenever you read a novel about corporations or nation-states, ethics are seen as an idea that is shunned because it is not realistic. Every person wants to be ethical, but we all fall short. So, why bother?

In my personal life and the work that I do for other people, I try to eschew virtue-based assignments of my work and my tools. I do not want an Ethical Guide to Research. I want a Guide to Research that I can use ethically. I do not want a Best Practices-based Archival

Management presentation. If the Archival Management presentation is truly based on best practices, that should be self-evident. It should not have to be in the title.

In the same way, ethics should not be a unilateral standard, the end goal of all of our work. Instead, it should be a way of working. It should influence the *style, tone, and content* of our work. This is why I support this book on Ethics and AI in Higher Education. When you know the implications of ethics on generative AI, including some unethical aspects of generative AI use, you will be able to make informed decisions and alter your practices accordingly.

One of my foundational principles for my projects in digital initiatives in libraries and technology integration in education is that all of these should be oriented toward humans. To put it concisely, technological success is not about the technology. It is about the user. By the same token, ethical issues do not only put responsibilities on corporations or on artificial tools. The user is responsible for being informed about the ethics of certain tools. They are also expected to use ethical practices and workflows when creating projects. Ethics should not be ignored because they are lofty. Acting according to ethical principles is part of every person's responsibility to each other.

A Comprehensive Treatment of Ethical Use of AI in Higher Education

Rather than having discrete chapters with little or no relation to each other, each chapter has been designed to work with the rest. All authors wrote their chapters knowing what the other authors would be writing. In this way, they could make sure that their chapters meshed well without overlapping in their content.

Additionally, it provided a way for the chapters to be divided into several broader categories. Hopefully, the coverage of each of these categories will provide a comprehensive discussion of the importance of ethics related to AI tool use in higher education.

[I. Foundations of AI and Ethics](#)

In order to understand how ethics and AI intersect, you first must have at least a basic knowledge of *what* AI and ethics *are*. It is assumed that the reader may have a basic use history of generative AI tools, but if you do not, that is not a problem. Even if you have used generative AI tools before, you may *not* know the machinations behind its functions. Therefore, the first few chapters of this book will emphasize the nature of AI and its ethical considerations. It will discuss the basic principles of generative AI and their ethical implications. This will set us up for the next section, which will

discuss the ethical implications of the *integration* of AI into multiple settings, including education and the workforce.

[II. Ethical Considerations in AI Deployment](#)

The second section of this book addresses concepts such as confidentiality laws and best practices, privacy concerns about data and conversation content, and the necessity of data protection, both in AI systems and through proactive actions on the part of the user.

While recognizing the need for generative AI innovation, this section will seek to describe a balancing act. The push for change and advancement, particularly in regards to a relatively new technology, should be met with the imperative of ethical AI use in all environments. This means that not only should the creator act ethically, but also should all of the users of AI tools. The last chapter in this section will describe the fundamentals of digital literacy and explore how they can be implemented in ethical and informed AI engagement.

[III. Perspectives on AI and Ethics](#)

The third section of this book will focus on examples and quasi-“case studies” from students and faculty. This section will demonstrate how students can collaborate with their educators so that all AI tools are used ethically and responsibly. Separate chapters will consider both of these groups’ insights on the ethical use of AI and its impact on their educational experiences. Hopefully, they will give you some

inspiration as to how you can use artificial intelligence while still upholding academic integrity.

Another chapter will discuss how administrators view and support ethical AI practices within educational institutions. It will explain how, why, and in what context academic institutions' policies regarding AI use are created.

IV. Institutional Response and Policy Development

Section four will discuss developing and scaling AI training for faculty.

This may seem to be a strange chapter in a book for students on using AI in their educational endeavors, but hopefully knowledge about how educators are trained can help you see their perspective and priorities when making decisions regarding AI use in courses.

Many policies are created with the origins and development of AI technologies in mind. For example, some institutions refuse to use a particular tool because they have serious qualms about the ethical implications of how that tool was created. This is not because they believe that those who use *tool* are unethical, but only that they believe the data recorded in the tool was gathered using unethical means. Appendices

After the chapters in this book come the appendices. The first two appendices will be simple lists of tools and workflows you can use to

guide the ethical implementation of AI in education. The tools and workflows in these appendices can all be used for free. They are either open access, open source, or have free tiers that have a wide range of capabilities for the foreseen future. Only companies that are responsible for their users in this manner have been included in these appendices.

Open AI (vs. OpenAI)

One of the most frustrating parts of this moment in educational history is the fact that it is being led by an organization whose name is misleading about its current intents, purposes, and processes. When OpenAI was founded, it was a non-profit organization that explored the implications of many types of AI tools for the public good. It collaborated with many organizations, including Microsoft, to formulate potential products for a variety of modalities and media, including music, images, and text.

However, it eventually became a for-profit company around the same time that Dall-E 1 came out. The board of the organization realized that with the amount of public interest in their product, they could easily charge for access and make a lot of money. They became further entrenched in the for-profit sector when they created a paid tier of ChatGPT.

One of my commitments to those whom I advise regarding AI tools is that the cost will be as little as possible. For some projects or uses, that means buying a \$20/month ChatGPT Pro subscription. But for many other people, the products and workflows they want to facilitate can be easily provided using free or open AI tools. My emphasis is to provide ethical, affordable, equitable, and inclusive AI products, tools, services, and consulting advice.

“Open AI” as a product or service does not have a broad or accepted definition. However, it is a concept that we should be considering. Open source AI, free AI, and commercial AI products that offer viable free tiers should be used, especially in educational contexts, before commercialized AI products that often focus on capitalizing on the hype and do not fulfill their promises. Often, a highly-skilled user can create higher-quality products than commercial “fine-tuned” AI tools by simply using best practices prompt engineering and a well-configured workflow of open and free AI tools.

Chapter Structure

Before we continue on to the actual content of the book, let us explore the structure and main themes of the book. First of all, the focus of this book is the ethics of using AI tools in education. Notice that the focus is *not* “How to convince students and teachers to use

AI in education.” Nor is it, “Why AI is unethical in education or the workplace.” **We neither want to support or speak against the use of AI in higher education. Instead, we would like to present facts for you to create your own understanding.**

Each of these chapters were created by focusing on a problem that the author could see in their line of work or their chosen perspective. The text, examples, resources, and theories proposed in each chapter were specifically selected to help the reader resolve that problem. After each chapter, a set of discussion questions selected by the author and reviewers will provide the opportunity for readers to consider the central ideas. They may also help the reader examine how to use these ideas in their work and projects.

While we would like this to be a formal-sounding textbook, we also want this book to be a useful source of information. Therefore, we will start each chapter with a scenario that will illustrate that chapter’s main issues. We will also try to use as straightforward language as possible. While technology necessarily has some complex ideas, we will take the time to explain each component of each type of tool, product, and workflow. In this way, all readers will be able to confidently follow a clear ethical process or roadmap for many scenarios and tools they will encounter in their educational and workplace careers.

To further assist in comprehension and preparedness for application of these principles, each chapter will include as many references and examples as possible. There are many examples of each principle, but we will try to provide the most explanatory and typical examples.

Finally, much of the learning that occurs when reading textbooks occurs outside of the text of the book itself. Thinking on, and applying, the content in the book requires some consideration of how you can best apply the ideal concepts described in the book to your current situation. This may necessitate some compromise or some alterations to provide the ideal qualities in your workflow. For example, if one of our suggestions does not align with an institutional policy, you may or may not have to change their actions or tools to fit that policy. With the plethora of free and open access generative artificial intelligence tools available to the public, your possible courses of action are quite varied. Always follow institutional policies, and state and federal laws, if they conflict with our suggestions.

Disclosure of Generative AI Use

With the strength of our opinions and our knowledge about the integration of generative artificial intelligence into education, the reader should not be surprised that we are all quite adept at utilizing

it ethically. Each of our institutions has its own generative AI policy. Furthermore, while there are recommendations and best practices, AI-Infused Higher Education is a relatively new phenomenon. Thus, the “best practices” recorded in this book can more appropriately be called “good faith” or “well-intentioned” practices. There are multiple philosophies and perspectives, even among proponents of AI in education, that can lead to different workflows and priorities when working with AI. Therefore, you should not judge another user’s well-intentioned and transparent use of generative AI, as long as that use is ethical.

That being said, each of the authors in this book has used generative AI in some form for the creation of their chapter. If we have not used it for the text, we certainly have used it for images, data processing, researching, experimentation, or any other type of information processing, ingesting, arranging, or presenting. As you read this book, you may see phrases highlighted in pop-up boxes with probable definitions. This is also powered by artificial intelligence. When you do write-ups or create question responses, you may have writing suggestions given to you by artificial intelligence. These are all illustrations of how even when you are trying your hardest, there is no way to completely escape the presence of generative artificial intelligence.

Each chapter will include a disclaimer of how the author(s) utilized generative AI and other tools to create their chapter's content. Here is my disclaimer: I used ChatGPT to create the outline for this chapter. However, only two of the resulting outline headers remained in the chapter. Furthermore, I added two or three headers after the tool was done. I also used generative AI to create the first drafts of the assignment prompts below.

Discussion Questions

1. Evaluate the impact of AI on privacy within educational environments, considering both benefits and risks.
 2. How can digital literacy among students and faculty be enhanced to promote ethical AI usage?
 3. Analyze a case study of AI-enhanced learning, focusing on the ethical considerations addressed.
 4. Design a policy proposal to ensure academic integrity in the context of AI-assisted assignments.
-



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Foundations of AI and Ethics

Section I

[AI and Digital Literacy](#)

[Ethics of Using AI in Higher Education and Its Impact on Academic Integrity](#)



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AI and Digital Literacy

Understanding the Basics

AI and Digital Literacy

Sarah, a graduating college student with a stellar academic record is excited to begin her career in the tech industry. Eager to explore job opportunities, she begins using an AI-powered job matching platform that promises to connect candidates with suitable positions based on their qualifications and interests.

As Sarah carefully fills out her profile, highlighting her skills, education, and career aspirations, she eagerly awaits job recommendations from the platform. However, to her dismay, Sarah notices that she isn't receiving as many interview offers as her peers with similar credentials.

Confused and frustrated, Sarah decides to investigate further. After a few online searches, she discovers that algorithms often include biases, which she concludes must be the case in her situation. The AI algorithm used in the job searching platform is systematically downgrading her profile and recommending fewer job opportunities compared to her male counterparts. Despite her qualifications, Sarah realizes that the algorithm is biased against female candidates, favoring male applicants for tech-related positions.

Feeling frustrated by the unfair treatment, Sarah wants to confront the platform's administrators about the biased algorithm; however, she is unable to find a way to make her concerns known. After further research,

she discovers that it is almost impossible to hold anyone accountable and that the lack of transparency is common within AI algorithms (Long & Magerko, 2020). Despite organizations' rigorous efforts to enforce transparency and accountability, these issues persist and continue to significantly undermine the hiring process.

Sarah's experience with the biased algorithm highlights the ethical implications of AI-driven systems in the job market. It prompts her to advocate for greater accountability, transparency, and diversity in AI technologies, ensuring equal opportunities for all candidates regardless of gender, race, or background.

What is Digital Literacy?

Before we begin to explore ethics surrounding AI technologies, it's crucial to grasp the concept of digital literacy and its importance in our rapidly changing world. In 2011 the American Library Association (ALA) defined digital literacy as “the ability to use information and communication technologies to find, evaluate, create, and communicate information, requiring both cognitive and technical skills.” Essentially, digital literacy, also called data literacy or computer literacy, empowers individuals to navigate, assess, comprehend, interpret, and communicate digital information effectively. It goes beyond mere proficiency in operating devices; it entails the capacity to discern, evaluate, and responsibly engage with the vast expanse of digital content available.

Digital literacy is not just a skillset reserved for college students or professionals; it is a fundamental competency that is essential for everyone in today's interconnected world. In an era where the internet serves as a primary source of information and communication, digital literacy qualifies individuals to access, evaluate, and utilize online resources with confidence. Whether seeking health information, conducting research, or engaging with news and current events, digital literacy empowers individuals to critically evaluate the reliability, relevance, and credibility of online content, enabling them to make informed decisions.

Additionally, digital literacy fosters communication and connectivity in both personal and professional contexts. Communication often takes place through digital channels such as email, social media, and video conferencing platforms. With skills in digital literacy, individuals can effectively communicate and collaborate with others. From staying in touch with family and friends to collaborating on projects with colleagues or

participating in online communities, digital literacy facilitates meaningful connections.

Along with meaningful connections, digital literacy plays a crucial role in enhancing career opportunities and professional development. In virtually every industry, digital technologies have become integral to business operations, from marketing and sales to data analysis and project management. Many people needed these skills during the pandemic when offices and schools were closed and remote work and learning became the norm. Individuals who possessed strong digital literacy skills were better equipped to adapt to these sudden changes (Mullen, 2023). Individuals with digital literacy have an easier time adapting to technological advancements, leveraging digital tools and platforms, and innovating in their respective fields. Overall, digital literacy enhances employability and opens doors to a wide range of career opportunities.

Although digital literacy and AI literacy are terms that are often used interchangeably, there is a difference between them. While digital literacy refers to the ability to effectively and critically navigate, evaluate and create information using a range of digital technologies, it encompasses a broad set of skills including basic computer skills, internet navigation, digital communication, and cybersecurity awareness. AI literacy, on the other hand, refers to a specific set of competencies related to understanding and interacting with artificial intelligence technologies. According to Long and Magerko (2020), AI literacy enables individuals to critically evaluate AI technologies, communicate and collaborate effectively with AI, and use AI as a tool in various contexts.

AI Literacy

As AI continues to permeate various aspects of society, understanding its principles, capabilities, and implications is becoming increasingly important for individuals of all backgrounds. AI literacy encompasses the ability to comprehend the fundamentals, including machine learning algorithms, neural networks, and deep learning techniques. It also involves a basic understanding of how AI systems are developed, trained, and deployed to perform tasks such as image recognition, natural language processing (NLP) and predictive analytics. Long and Magerko (2020) define AI literacy as “a set of competencies that enables individuals to critically evaluate AI technologies; communicate and collaborate effectively with AI; and use AI as a tool online, at home, and in the workplace” (p. 2). Understanding how to use AI tools and applications in daily life, work, and learning

environments is another aspect of AI literacy. With just a basic understanding of AI, individuals can critically evaluate the ethical implications and societal impacts, including bias, fairness, transparency, and accountability of these evolving technologies (Long & Magerko, 2020).

Some basics of AI literacy include a rudimentary understanding of machine learning, neural networks, and Natural Language Processing (NLP). ChatGPT 3.5 composed the following three definitions:

Machine Learning: Machine learning is a subset of artificial intelligence that focuses on the development of algorithms that enable computers to learn and make predictions or decisions based on data. Instead of being explicitly programmed to perform a task, machine learning algorithms use patterns and inference to learn from data and improve over time (ChatGPT 3.5).

Neural Networks: Neural networks are a fundamental component of deep learning, a subset of machine learning. Inspired by the structure of the human brain, neural networks consist of interconnected nodes organized in layers. Each node, or neuron, in a neural network receives input, processes it through an activation function, and passes it on to the next layer of neurons. By adjusting the weights of connections between neurons during a process called training, neural networks can learn to recognize patterns, classify data, and make predictions (ChatGPT 3.5).

Natural Language Processing (NLP): Natural language processing is a branch of artificial intelligence that focuses on the interaction between computers and human language. NLP algorithms enable computers to understand, interpret, and generate human language in a way that is both meaningful and useful. NLP tasks include text classification, sentiment analysis, language translation, named entity recognition, and speech recognition (ChatGPT 3.5).

A basic understanding of generative artificial intelligence (GenAI) and large language models (LLMs) helps to improve overall digital literacy (Long and Magerko, 2020). GenAI is a type of artificial intelligence technology that can produce various types of content including text, imagery, audio and synthetic data. It is trained on vast amounts of data and can employ machine-learning algorithms in order to understand patterns and produce output. The output it produces is new; however, it is based on recognizing patterns. LLMs are a type of AI model that is also trained on vast amounts of data to produce human-like text based responses. The LLM tries to find

patterns within its training sets. By processing and analyzing this data, LLMs can perform tasks such as translation, summarization, and conversation. The benefits of using artificial intelligence, especially LLMs, extend beyond language tasks to include enhancing productivity, providing personalized learning experiences, and supporting decision-making processes across various industries. They use natural language processing (NLP) to handle language related tasks and will store relevant information, which allows them to respond in a conversational manner.

Though LLM technologies like ChatGPT (developed by Open AI) or Bard (developed by Google) may sound conversational in their responses, it is important to note they are not sentient; they cannot reason or critically think (yet). They merely predict what the next word might be after searching the data from which it has been trained. The OpenAI [website](#) states, “OpenAI's large language models (sometimes referred to as GPT's - generative pre-trained transformer) process text using **tokens**, which are common sequences of characters found in a set of text. The models learn to understand the statistical relationships between these tokens, and excel at producing the next token in a sequence of tokens.” Think of it in terms of auto-complete, when creating an email or text message and the device attempts to fill-in the next few words by analyzing the last word typed and finding the most likely next word to follow. LLMs follow a similar idea but with much more data from which to generate a response, since they have been trained on billions of words. This explanation is very basic since researchers are still trying to gain a better understanding of how LLMs operate (Lee and Trott, 2023).

The Benefits and Drawbacks of AI

GenAI technologies are quickly advancing and becoming a part of everyday life, so it is important to note the considerable benefits of using these systems. These benefits can significantly enhance various aspects of society, including education, healthcare, business, and everyday life. In education, LLMs can provide personalized tutoring and support, adapting to individual learning styles. In healthcare, they assist in diagnosing diseases and offering treatment suggestions, improving patient outcomes. In business, LLMs streamline operations, enhance customer service, and drive innovation, making them indispensable tools in the modern world. The paragraphs below are just a few examples of the benefits of using AI systems.

Despite the numerous benefits artificial intelligence offers, it is essential to recognize and understand its significant drawbacks. Bias in AI systems can perpetuate and amplify existing prejudices, particularly affecting marginalized communities and raising equity concerns. Privacy is at risk as AI systems often require vast amounts of personal data, increasing the potential for misuse and unauthorized access. Also, the high cost of developing and maintaining AI systems can allow access to advanced technologies to only those individuals and organizations with the means, which only widens the digital divide (McClellan & Surani, 2023). Environmental concerns are also significant, as the energy consumption for training large AI models contributes to substantial carbon emissions. Furthermore, AI systems are prone to generating hallucinations, where the AI produces incorrect or nonsensical information, undermining trust and reliability. Understanding these drawbacks is crucial for the responsible development and deployment of AI (Kerry, 2020).

Equity and Algorithmic Bias

Since AI is becoming a part of our everyday lives, equity issues are a focal point to consider with these technologies. A significant issue is the digital divide, which refers to the unequal access to technology and digital literacy across different populations. As AI is used more, those without adequate access to digital tools and the internet are at risk of being left behind. This divide only deepens existing disparities in education, employment, and economic opportunities.

Affordability also poses a significant challenge in the equitable use of AI. Advanced AI technologies, including sophisticated software and hardware are expensive, limiting access primarily to well-funded organizations, corporations, and affluent individuals. This inequity includes the inability to afford the paid version of AI technologies giving an advantage to those who can afford paid subscriptions. AI benefits among wealthier individuals and corporations only widens the economic divide and leaves behind those who could potentially benefit the most from AI-driven solutions. Ensuring more affordable and accessible AI subscriptions and fostering initiatives that support under-resourced groups can help to bridge this gap and promote equitable distribution of AI's advantages.

Another equity issue within AI technologies is the biases entrenched in their training sets. Since AI models are trained in vast datasets that often reflect historical and societal biases and inequalities, AI systems can perpetuate these biases. Due to this training, algorithms used in areas like hiring, law

enforcement, and lending can produce discriminatory outcomes that disadvantage certain demographic groups based on race, gender, or socioeconomic status.

Algorithmic bias denotes the systemic and persistent inaccuracies within a computer system that lead to unfair or discriminatory outcomes, favoring certain groups of users while disadvantaging others. With the widespread adoption of AI and machine learning (ML), algorithmic bias has become increasingly pervasive. It poses significant ethical and social challenges, as biased algorithms can perpetuate and exacerbate existing inequalities, reinforce stereotypes, and undermine trust in automated decision-making systems (Kruspe, 2024). Recognizing and addressing algorithmic bias is essential for promoting fairness, transparency, and accountability in AI-driven applications across diverse domains.

Sources of Bias

1. **Training Data Bias:** Imagine training a facial recognition system using a dataset primarily composed of images of white individuals. When deployed, this system may struggle to recognize people with darker skin tones. The bias originates from the skewed representation in the training data.
2. **Algorithmic Design Bias:** Developers, consciously or unconsciously, embed their biases into algorithms. For instance, an AI model for hiring might unfairly favor certain qualifications, leading to gender or racial bias.
3. **Prediction Bias:** Even after training, AI models can exhibit bias in their predictions. This can disproportionately affect marginalized groups, perpetuating existing inequalities.

Algorithmic bias can be problematic when it is used in decision making. In hiring decisions, for example, algorithms may be set to arbitrary criteria such as wearing glasses or attending a women's college. Even facial recognition systems such as smartphone unlocking and surveillance contain bias. They perform poorly with darker-skinned individuals and female faces because of the lack of diversity within the training. Tools used to personalize education may disadvantage some students and limit their learning opportunities.

Challenges in Addressing Bias

Eliminating bias from AI systems is like untangling a web of interconnected threads. Here are some challenges:

1. **Complexity:** Bias detection and mitigation require deep data science expertise. It involves analyzing datasets, model architectures, and predictions to identify sources of bias.
2. **Social Context:** Bias doesn't exist in isolation; it reflects societal norms and historical inequities. Understanding this context is essential for effective solutions.
3. **The "Black Box" Issue:** Some AI models operate as black boxes. Even their creators may struggle to explain how they arrive at specific answers.

Although Sarah in our case study recognized algorithmic bias, it is often difficult to pinpoint. When possible, examine the training data that is used to develop the algorithm. You may see biases, inaccuracies, or underrepresentation of certain groups. When data is inaccurate or incomplete, it will only skew the outcomes and perpetuate unfairness. So it's important to also diversify the data by understanding where the problems are and how the system is being trained and what data is being used. To assist with understanding, solicit feedback from affected individuals to validate the algorithm's outputs and identify bias (Kruspe, 2024). Hearing diverse opinions will create a better understanding of potential biases and their impacts. Overall, critically examining the output for bias will help improve the system and therefore help solve the problem.

Although challenging for one individual to identify and correct algorithmic biases, it is an important step to addressing the unfairness. Collaboratively, we can promote fairness, transparency, and accountability. Through rigorous evaluations and a commitment to upholding ethical principles and human rights, we ensure the responsible design and deployment of algorithms.

Deep Fakes

Deep fakes are hyper-realistic videos, audio recordings, or images generated by AI algorithms that can make it appear as though someone is doing or saying something they never did. If you spend any time on social media or news channels, you have come across examples of deep fakes. It seems that almost every other day a celebrity becomes the victim of a deep fake. Despite the advancements of AI, the creation of deep fakes has become another instance where we must be cautious of what we are

reading, seeing, or listening to. These deep fakes can be extremely convincing, making it difficult for even trained eyes to distinguish between what is real and what is fabricated. This technology leverages deep learning, a subset of machine learning, to analyze and mimic the nuances of human expressions, voice patterns, and movements.

The implications of deep fakes are far-reaching and troubling. They can be used to spread misinformation, create fake news, and damage reputations. As we've seen in the past, a deep fake video of a public figure making inflammatory statements can go viral, leading to public outrage and potentially severe consequences before the truth is uncovered. The rise of deep fakes presents significant ethical challenges that need to be addressed. At the core of these challenges is the potential for deep fakes to undermine trust in media and communication. Since they can be used to spread false information, manipulate public opinion, and create fake news, legitimate news sources and institutions are not as trusted as they once were. The ability to convincingly alter reality raises ethical questions about the responsibility of individuals and organizations in disseminating information. It also highlights the need for frameworks to ensure that content is verified and that the public is protected from misleading and harmful media.

Another major ethical concern is the impact of deep fakes on individual privacy and consent. Deep fakes can be used to create non-consensual explicit content, often targeting individuals without their knowledge. This invasion of privacy can lead to severe emotional and psychological harm, as well as reputational damage. Not only does this misuse of someone's image violate privacy, but it also raises questions about the ownership of one's digital identity.

Discerning deep fakes in our digital age has become an essential skill in AI literacy. However, identifying deepfakes can be challenging due to their increasing sophistication. Despite this, there are several techniques and tools that individuals can use to protect themselves from being deceived by deep fakes. One effective way to discern deep fakes is by paying close attention to the details that AI might not perfectly replicate. Look for inconsistencies in lighting and shadows, unnatural facial movements, and mismatched lip-syncing. Deep fakes often struggle with blinking, and the area around the eyes can appear unnatural. Additionally, deep fakes can have audio inconsistencies where the speech does not align perfectly with lip movements. Another helpful tip is to use reverse image search tools to

verify the source of an image or video. If the content appears in unrelated contexts or is absent from credible sources, [it might be a deep fake.](#)

To further safeguard yourself from deep fakes, leverage technology designed to detect them. There are various AI-powered tools and browser extensions available that can analyze media for signs of manipulation. It's also important to use your own judgment when approaching sensational content. Use skepticism first and cross-reference information from multiple trusted sources before believing or sharing it. By staying informed about the capabilities and limitations of AI and exercising critical thinking, you can better navigate the digital landscape and avoid falling prey to the deceptive power of deep fakes.

Furthermore, developers of AI and deep learning technologies have a responsibility to consider the potential misuse of their innovations. They should be involved in implementing safeguards, promoting ethical guidelines, and collaborating with policymakers to prevent harmful applications of deep fakes. Fostering an environment of ethical responsibility in the development of AI applications is crucial to mitigating the negative impacts of deep fakes and ensuring that technological advancements serve the greater good.

Environment and Expenses

LLMs have a negative impact on the environment and climate; they are especially computationally expensive to train. The extensive resources required for training LLMs such as ChatGPT-4 or Google's BERT, necessitate vast amounts of computational power, which in turn demands significant energy consumption. This energy is primarily derived from non-renewable sources, which leads to a substantial carbon footprint. To understand this impact, it's essential to consider the complexity and scale of these models.

Training LLMs involves processing and analyzing enormous datasets, often comprising hundreds of billions of parameters. This process can take weeks or even months of continuous operation on highly specialized hardware like GPUs (Graphics Processing Units) or TPUs (Tensor Processing Units). These devices consume a considerable amount of electricity. For instance, a study by the University of Massachusetts, Amherst, estimated that training a single AI model can emit as much carbon as five cars over their entire lifetimes. The sheer scale of these operations means that the energy consumption and resultant carbon emissions are significantly higher than

those of traditional software systems (Strubell, Ganesh, and McCallum, 2019).

Additionally, the environmental impact extends beyond the training phase. Once deployed, LLMs are used in various applications, requiring ongoing energy for inference operations. In other words, every time an LLM is utilized, additional computational resources are consumed. Given the popularity and widespread use of these models in various domains like customer service, content generation, and research, the cumulative energy usage remains high. This continuous demand further exacerbates the environmental footprint (Strubell et al., 2019).

While LLMs provide substantial benefits and advancements, their environmental impact cannot be overlooked. The training of these models demands immense computational resources, leading to significant energy consumption and carbon emissions. As the adoption of LLMs grows, it becomes crucial to address these environmental concerns, potentially through the development of more energy-efficient algorithms, the use of renewable energy sources, and better optimization techniques. By understanding and mitigating these impacts, we can balance technological progress with environmental sustainability.

Privacy

Another critical issue to consider when using AI technologies such as ChatGPT and other LLMs is how they process and store user data to function effectively. In educational settings, where students may discuss personal, sensitive, or confidential information, the risk of privacy breaches is a concern. AI systems that collect and analyze user data can inadvertently expose this information to unauthorized parties or use it in ways that were not intended by the users.

Students and educators need to be informed about how their data is collected, processed, and stored by AI systems. Without this transparency, users cannot make informed decisions about their privacy or consent to its use. The data could be used for profiling or targeted advertising, which only leads to further privacy violations. Being educated about these risks and working to ensure AI providers adhere to strict privacy standards is an initial step to maintaining trust and security when using AI technologies.

Additionally, the potential for data breaches and cyber attacks poses another threat to privacy when using these technologies. Personal data stored by these systems can be targeted by malicious actors leading to identity theft, financial loss, or other forms of exploitation. Implementing robust cybersecurity measures, such as encryption and secure authentication protocols, is crucial to protect yourself against these threats (Kaspersky, n.d.). Doing regular audits and updates to security practices can help mitigate the risk of data breaches and ensure that your privacy is protected.

Hallucinations

Despite all of the training, users of these technologies must use their own critical thinking skills to determine if the response is accurate. Responses to queries often appear legitimate, but in fact, can be made up. These made up facts are called hallucinations. For example, when researching for this chapter, ChatGPT was prompted to find relevant articles on digital literacy. Its response included the titles and authors for three articles, none of which were real. Therefore, it is important to either possess some expertise in the area related to your query or understand how to check for credibility and relevance.

Hallucinations can occur because LLMs are language generators that recognize patterns in text; they are not sentient. They cannot understand or critically think since they rely on the data they have been trained on. When faced with gaps in knowledge or ambiguous prompts, the LLM may produce plausible sounding but factually incorrect responses.

Spotting hallucinations requires vigilance and critical thinking on your part. Users should verify the information provided by the AI against credible sources, especially when the content involves factual data, historical events, or scientific information. Cross-referencing with trusted references or conducting independent research can help identify inaccuracies. Additionally, AI-generated content that appears overly specific or detailed without proper citations should be approached with skepticism because it could be a sign of hallucination.

To prevent hallucinations, developers can employ several strategies. Firstly, improving the quality of the training data can help reduce the likelihood of hallucinations. The AI should be trained on accurate, diverse, and up-to-

date information. Paid subscription models tend to have better training data; however, they can still hallucinate. Secondly, incorporating robust verification mechanisms within the system can help. For example, integrating fact-checking algorithms or cross-referencing outputs with established databases can flag potential inaccuracies. Through monitoring and iterative improvements to the AI system will help contribute to reducing the incidence of hallucinations. Yet, these strategies are meant for developers and not users.

As a user you can set clear boundaries and transparency in AI responses. Encouraging the AI to acknowledge uncertainty or lack of knowledge when appropriate can mitigate the spread of false information. Users should be informed about the limitations of AI and advised to treat the content as a supplement to, rather than a replacement for, human judgment and verified information.

Misinformation and Disinformation

We hear quite a bit about fake news. Fake news is based on misinformation and disinformation. These terms are often mistakenly used interchangeably. Misinformation is false or inaccurate information that is believed to be true but is not supported by facts; it is often a mistake. People who share misinformation typically believe in the accuracy of what they are sharing, without any intent to deceive. Despite its unintentional nature, misinformation can still have severe consequences, such as misleading the public, fostering misconceptions, and disrupting decision-making processes.

Disinformation is also information that is false or inaccurate but is spread intentionally to mislead others. This can be driven by various motives, including political gain, financial profit, or social influence. The deliberate nature of disinformation makes it particularly insidious, as it can be crafted to exploit biases and fears. Both misinformation and disinformation undermine the credibility of legitimate information sources and pose significant threats to democratic processes, public health, and social cohesion. With the advancement of AI, it is much easier to create information that appears plausible. This AI generated information can be well-written and include audio as well as video, so it is very difficult to detect.

Although the campaigns of disinformation are often sophisticated, there are ways to spot misinformation and disinformation by carefully checking the source using the SIFT Method.

The SIFT Method

Mike Caulfield's SIFT method is designed to help you assess the accuracy and reliability of information found on the internet. While this framework primarily focuses on web-based information, it is also applicable to AI-generated content and is a crucial component of digital literacy.

S - Stop

I - Investigate the source

F - Find other sources

T - Trace claims, quotes, and media to the original source

Stop: The first step when you come across a website is to STOP before you decide to believe it or share it with others. You might have an emotional response to the information you are reading; however, before spreading false information or wasting more time on false claims, find the facts. Ask yourself a few questions. Do you know the website and its reputation? What do you know about this website and the information it contains? Determine what you already know about the topic you are researching. Does the information you receive ring true with your own prior knowledge? (Caulfield & Wineburg, 2023).

Investigate the source: If you are not sure what you're looking at and you don't know much about the reputation of this website, take the time to perform step two of the SIFT method by INVESTIGATING the source. You can peruse the website; however, many website creators have gotten more sophisticated and can fool most people. Rather than remaining on this website, open a new tab and research the sponsors of the website. You can begin with Wikipedia or a simple Google search to see what you might find. Wikipedia has become a great place to start when investigating other websites and their sponsors. Simply type the domain of the organization (the website you are on) followed by Wikipedia. What did you find? Is the organization legitimate? What is its reputation? (Caulfield & Wineburg, 2023)

When using generative AI, are you given sources from where the information was found? If so, use the above step to peruse the website(s) and its creators. If no sources are given, try other ways to determine if the information is accurate. You can try using other tools to investigate your query. Perhaps ChatGPT supplied the first answer to your prompt, but you're not sure if it is accurate, then try another GenAI such as Claude or Copilot.

Find other sources: Once some of the questions are answered, don't stop there. Continue your investigation by finding other sources that confirm or deny the claims. Even when the claims seem plausible, take the time to search for other sources. You don't want to share the information you find if it's inaccurate, so take a few minutes to continue your search. With easy access to LLMs, anyone can create a story that seems factual, even sophisticated. Finding other sources of information rather than relying solely on one LLM will ensure the information is accurate.

Trace Claims to the Original Sources: If you are still unsure about the claims stated in the source you are reading, try to find the original source. Many claims, quotes and media are remade into editorials, blog posts, and news articles that are passed to others over and over. If you can find the original source, you will be able to judge its credibility before sharing the news with others (Caulfield & Wineburg, 2023).

Using the SIFT method along with critical thinking and skepticism will help you navigate the complex information landscape and protect yourself from the harmful effects of misinformation and disinformation.

Creating a More Responsible and Equitable Digital Society

A multifaceted approach that includes policy, education, and technological innovation is needed in order to create a more responsible and equitable digital society. Robust policies and regulations are essential to ensure that digital technologies are developed and used in ways that protect privacy, promote fairness, and prevent discrimination. In October of 2023, President Biden signed an [Executive Order](#) detailing the development and use of AI. It essentially governs "the development and use of AI in accordance with eight guiding principles and priorities" (The White House, 2023). The

principles include topics such as safety and security, responsible innovation and development, privacy, and overall consumer protections. It is clearly a start and states have also enacted their own policies regarding AI.

According to the [Council of State Governments](#) (CSG), 17 states have created bills around transparency and privacy in the use of AI. With the growing use of AI, more bills will be enacted in the future with Virginia, Colorado, and California leading the way. However, in order for policies and regulations to work, it is imperative that enforcement mechanisms be in place to hold organizations accountable for violations and to encourage ethical practices.

Education also plays a crucial role in fostering a responsible digital society. Digital literacy programs need to be implemented and easily accessible for all populations. Programs would include an understanding of how to protect personal data, critically evaluating online information, and recognizing the implications of digital footprints. Integrating ethical training into tech-related curricula can help prepare future developers and policymakers to prioritize equity in their work (Shonubi, 2023). In addition to training, it is important to encourage a diverse population to enter STEM fields, which would allow for a wide range of perspectives.

Overall, technological innovations must be guided by principles of equity and responsibility. Developers should design with safeguards in mind to mitigate bias and prevent misuse. When they adopt best practices for ethical AI that includes using diverse representative training data and implementing mechanisms for user feedback and correction, we all benefit. Fostering a culture of transparency in the tech community can help build trust and facilitate collaboration in addressing ethical challenges.

Learning Outcomes:

Summarize the fundamental concepts of digital and AI literacy and explain why this is an important skill in contemporary society.

Interpret the role that digital literacy plays in human agency, particularly the challenges that citizens face in a world where algorithms and AI shape everyday experiences.

Critique the ways in which bias can be introduced into AI algorithms, and analyze ways to reduce and eliminate these biases to ensure fairness and representation for underrepresented groups.

Recognize the different types of AI and their applications in daily life, as well as the impact they have on social, ethical, legal, and economic issues.

Critique the potential risks and unintended consequences of the use of AI in society, such as job loss, bias, privacy, and security, and evaluate different solutions and recommendations.

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Ethics of Using AI in Higher Education and Its Impact on Academic Integrity

Sinha, S.

Background: Jessica, a diligent third-year student majoring in Computer Science at University X, had consistently maintained a strong academic record. As a member of the university's honor society, she was well-regarded by her peers and professors for her dedication and integrity. However, during her spring semester, Jessica faced a series of personal challenges that significantly impacted her ability to keep up with coursework. Struggling to balance her studies with her personal life, Jessica found herself overwhelmed, particularly in her Advanced Algorithms course. The pressure to maintain her GPA and uphold her reputation as a top student led her to explore alternative methods of completing her assignments. It was then that she discovered an AI-based tool that promised to generate high-quality code for complex algorithmic problems.

The Incident: The final project for Jessica's Advanced Algorithms course was a significant portion of her grade. The assignment required students to develop an original algorithm to solve a given problem, write a detailed report explaining the logic and efficiency of the algorithm, and present their findings in class.

Pressed for time and under immense stress, Jessica decided to use the AI tool to generate the code for her project. She rationalized her decision by telling herself that she would carefully review and understand the AI-generated code before submitting it. However, as the deadline approached, she realized she didn't fully comprehend the intricacies of the code. Despite her reservations, she submitted the project with minor edits, hoping it would go unnoticed.

When Jessica presented her work to the class, her professor, Dr. Thompson, noticed inconsistencies between her explanation and the code. The algorithm, though functional, was overly complex for a student at her level, and certain elements lacked the logical flow typical of her previous work. Suspicious, Dr. Thompson decided to run the code through the university's plagiarism detection software, which had recently been updated to include AI-generated content detection. The software flagged significant portions of Jessica's code as potentially AI-generated.

The Consequences: Confronted with the evidence, Jessica confessed to using the AI tool. The university's academic integrity policy was clear: submitting work that is not one's own, whether plagiarized or generated by an AI, constitutes a serious violation. Jessica was referred to the academic integrity board, where she faced severe consequences. Her final project was given a failing grade, which significantly lowered her overall course grade, and she was placed on academic probation. The incident also led to her suspension from the honor society.

Beyond the immediate academic penalties, Jessica's reputation suffered. Her peers, who once admired her, began to distance themselves, and she experienced feelings of guilt and shame. The misuse of AI not only jeopardized her academic standing but also had a profound impact on her mental health and future career prospects.

The above case study was generated by ChatGPT 3.

Implications of Using AI in Higher Education

Artificial Intelligence (AI) has the capacity for creating and building upon existing personalized experiences, designing efficient frameworks and strengthening effectiveness of affordances of technology. AI's ability in processing large data provides insights on trends in students' behaviors while learning, and as a result can suggest personalizations that may enhance faculty's pedagogical practices to design customized learning experiences that are relevant to meet the needs of their students. To that end tools such as chatbots and adaptive learning systems are instrumental in strengthening student engagement by continually adjusting the speed and level of challenge of the content by evaluating students' engagement. In addition, the ability to provide just in time feedback, identifying areas that are challenging and require attention and standard queries on class policies are helpful for enhancing students' learning and engagement with the content. For faculty, AI can assist with automated grading, managing student gradebook, communications and setting up time to meet with students. This facilitates faculty to spend more time on ensuring that the learning experience is personalized to meet the students' academic levels.

AI is considered disruptive by society, as the speed at which the technology is developing and broadening its scope is faster than the rate at which those involved in development of the technology can develop guidelines for its usage. This poses a challenge in the field of higher education- specially to faculty, students and universities as they do not have adequate time needed to parse out ways by which AI can be integrated within teaching and learning ethically. The focus on ensuring ethical integration is warranted by its pervasive adoption. While AI has the potential to enrich learning experiences, ethically it is imperative that such experiences are inclusive and unbiased.

The focus of this chapter is to explore applications of AI from the lenses of students and higher education institutes (consisting of faculty and school administrators). The first section navigates ethical challenges posed by application of AI powered tools in higher educational institutes, specifically with a focus on biases and surveillance in AI algorithms, impact on decision making for college admissions, grading and data privacy. Complementing ethical concerns of higher education institutes using AI, the second half of the chapter sheds light on the impact of AI powered tools on students' academic integrity.

Ethical Challenges of Using AI in Higher Education

eLearning or electronic learning is defined as any learning that takes place on a digital platform. While eLearning is a relatively modern concept, distance education in the 1950s originates from the usage of slide projectors and television to aid in teaching. BF Skinner in 1954 invented the 'teaching machine' that made it possible for students to receive programmed instructions. This was followed by the creation of University of Illinois's PLATO (Programmed Logic for Automated Teaching Operations) the world's first computer based training program. While the intent of early online learning systems was to distribute information to students, by the 1970s, online learning became more interactive.

Successively, with the advent of personal computing and the internet in the 1980s and 1990s, affordances of eLearning tools expanded. Virtual learning environments empowered students to access information virtually, thereby facilitating learning processes to extend beyond the walls of the classroom. Universities now offer online courses and degree programs to accommodate the needs of busy adult students. eLearning affords discourse (through videoconferencing, webinars, chats, podcasts) between teachers and their students, who are registered to take classes, at times across the globe. However, beyond the numerous benefits that are offered by eLearning, there are risks related to students' privacy, security and ethical considerations that need to be considered (Etambakonga, 2021). Specifically, research indicates that equity, quality of academic program, academic integrity and surveillance are primary concerns (Reamer, 2013).

Building upon existing eLearning, the scope of AI technologies in education has significantly impacted traditional teaching and learning practices. For instance, chatbots offer students individualized teaching support (Chocarro et al., 2021; Nye, 2015; Smutny & Schreiberova, 2020, Yang & Evans, 2019) and feedback (Dawson et al, 2018). AI can be used for automated grading and formative assessments (Dumelle, 2020; Hsu et al., 2021). In addition, AI has the ability to generate virtual reality environments that afford opportunities for students to practice and refine skills, such as language learning (Hannan & Liu, 2021; Luan et al., 2020; McKenzie, 2018) or surgical procedures (Fazlollahi et al, 2022).

In short, AI primarily has two capabilities- generative i.e. creating personalized learning paths, intelligent tutoring systems, content generation tools and predictive i.e. to be able to provide real time learning analytics and feedback, real-time intervention and support and engage in data-assisted curriculum design- to list a few functionalities. AI is able to engage in these processes based on the data that it has been trained upon.

The upcoming sections will explore ethical concerns about using AI tools that may have biases within the data set it was trained upon. that arise on using data that have existing biases

Ethical Concerns About Biases and Surveillance in AI Algorithms

The basic premise of AI algorithms is that the accuracy of the content that it produces is largely dependent on the data it is trained on. If there is a possibility that the data is biased or incomplete, it is likely that these biases will be reproduced and advocated. This in turn could result in the learning experiences not being equitable or inclusive. The hazardous outcome of these inconsistencies is not evenly shared amongst the student population. As an illustration, a study conducted by Yoder-Himes et al (2022), reviewed the outputs of a widely adopted automated proctoring-software that was used to evaluate the likeliness of students' needing additional review and guidance by instructors- on the basis of students' race, skin color or gender. Findings indicated that students with darker skin tones and black students would be more likely to be singled out as requiring instructors' review -owing to the possibility of cheating- as compared to fellow students with lighter skin tones. More importantly, findings of the study proposed that there was an implicit bias towards female students with darker skin tones to be more likely to be identified as needing review- in comparison to male students with darker skin tones and female students with lighter skin tones. The study is important as it highlights ethical concerns related to use of AI technology such as online proctoring, that make decisions that impact education, equity and social justice, on the basis of students' race and gender.

AI powered tools for student device tracking, predictive policing and facial recognition are not an unfamiliar concept in schools. A recent survey by the Center for Democracy & Technology (2023), on middle and high school parents and teachers, reports that over 88% school districts use student device monitoring, 33% use facial recognition and 38% share student data with law enforcement. The intent of AI surveillance, as promoted by software companies that develop them, is to assist schools to support their students' mental health. This implies that algorithms are designed to collect data on students' online activities. As an illustration, for close to a decade, 37 universities have relied upon AI powered tools such as Social Sentinel to support students' mental health by collecting information on their (students') activities from their social media posts (Sen & Bennett, 2022). The intent for this surveillance is noble i.e. to identify students in crisis (who may be at risk or engage in self-harm or violence) and notify administrators. However, some universities have used the service to track students who may be involved in protests by scavenging their social media sites. For example, during demonstrations at a confederate statue at UNC-Chapel Hill, Social Sentinel found students' social media posts related to the protest, by looking for specific keywords and thereby identified students who either participated or supported the incident. Similarly, Social Sentinel reported that a cheerleader at North Carolina A&T alleged that the school mishandled her rape complaint through her social media posts.

AI surveillance can be helpful to enhance security by preventing criminal activities and alerting site managers of potential threats. However, it is critical to ensure that students' right to privacy are not violated in the process. A key ethical concern for using AI for surveillance is the potential for discrimination and bias. For many low-income and minority students, school-sponsored computers are the only means by which they are able to engage and participate in online activities. Knowing that there are AI powered algorithms that track and flag their online activities instill a sense of fear of being criminalized (Sampath & Syed, 2023) and impact students' freedom of expression. 6 in 10 students are hesitant to express their opinions online as they are unaware of the extent to which sensitive information stored on their computer may be viewed by others outside of the school district (Madrigal, 2021). A primary cause for concern is that their personal information and history of web searches on controversial and political topics (such as gun control, abortion, homosexuality) and mental health has the potential to be shared publicly without their consent. Cyber threats or cyber attacks, a reality in today's world, have gravely damaging consequences on individuals. Such attacks are in the form of computer viruses, data breaches and disruption of service threats. Hackers have the potential to gain unauthorized access to a database, corrupt data and steal personal information.

The term ‘surveillance capitalism’ succinctly coined by Zuboff (2020), describes how AI powered tools capture massive amounts of user data by enabling machine learning algorithms to have access to student experiences. Students themselves are unable to protect rights to their privacy if they are expected to use the in-built tools as part of course requirements. For instance, when students sign up for Piazza (an external tool integrated within learning management systems, to facilitate collaboration between students and instructors through a question and answer discussion board), their data is being shared with third-party vendors looking for candidates to fulfill job postings. Thus, the onus of ensuring students’ privacy falls on the higher education institution. Student leaders from Encode Justice, a global youth centered coalition geared to promote human-centered AI, posit that youth are at a stage where they are desensitized to mass surveillance (Sampath & Syed, 2023). They consider AI powered surveillance a threat to their individual autonomy as they are compelled to limit their choices and conform to expected societal behaviors and norms which may impact their creativity and growth.

To reduce the risk of violation of privacy and surveillance, Swartz & McElroy (2023) suggest that students, faculty and staff be key stakeholders when deciding on which AI led tools are to be integrated as part of the learning experience. This will give them autonomy and knowledge of the extent to which their data will be used by external vendors. Faculty can be encouraged to revise their syllabus to commit to transparency, about the kinds of student data that the AI powered tools they mandate in class collect.

Ethics of Using AI to Manage Students’ Data

Universities collect personal and academic information about their students. These data points include demographic information (gender, ethnicity, socio economic backgrounds) and academic information (grades by semester across courses and schools, data analytics on their activities within course shells- time spent on specific pages, assignment submission regularity etc.). There is also potential to capture a more granular level of information about students’ activities on campus (such as the frequency of badge swipes to access libraries, academic buildings, student centers, dining halls etc.).

Usage of AI to manage this data has potential for data breaches and misuse. Universities need to consider multiple approaches to ensure privacy of students’ data. First, they must adhere to data protection laws, such as HIPAA, that ensures confidentiality, secure storage and usage of data only for educational purposes. It is critical to train AI powered tools to strictly follow established protocols. Second, there needs to be transparency in terms of keeping students aware of the ways that AI is gathering and using their data and guidelines that exist to safeguard their information.

Experts, such as Balaban (2024) recommend that all sensitive data be encrypted using robust algorithms so that it is unreadable if it happens to reach the hands of unauthorized users. This includes frequent data backup and testing of restoration procedures. He strongly advises strengthening authentication strategies to prohibit unauthorized access to AI tools that store student data. In addition, he cautions that AI powered tools also have potential to be attacked by malware attacks. These can be mitigated by ensuring that all operating systems are updated with the latest security patches. Given that AI powered tools are trained on datasets, it is critical to keep a close eye on abnormalities, inconsistencies and ensure that there is representation of diversity to reduce bias in outcomes.

Ethics of Using AI for Automating College Admissions

The presence of chatbots on university websites to answer frequently asked questions by applicants has become common practice (Anonymous, 2024). In addition, chatbots review students' profiles to provide personalized guidance and reminder for application deadlines (Evaristo, 2023). The intent behind using such tools is to free admissions staff's time to focus on other aspects of applicants' submissions.

However, the influence of AI in the admissions process extends beyond answering routine questions about the university. Schools such as North Carolina State University make use of Sia, an AI tool to process college transcripts by gathering information on students' coursework and college transfer credits (Evaristo, 2023). A study by Intelligent.com (2023) reports that out of the 346 participating institutions, 87% report that they use AI to influence their final decisions for admissions- 43% using it sometimes and 44% always. Institutions have used AI to review letters of recommendations, transcripts and communicate with applicants. This report shares Diane Gayeski's, professor of Communications at Ithaca College, views that "AI can look at the number of extracurriculars. It can figure out whether you're a captain of your team or the president of the honor society. The technology can take the rubrics given to an admissions reader and give them to AI." In addition, Dr. Gayeski champions AI powered review software as it ignores students' demographic data, such as age, socio economic background, the zip code they live in or even their name, thereby eliminating the possibility of any bias. However, 65% of admissions professionals who were a part of the survey by Intelligent.com expressed ethical concerns over the use of AI. They were perturbed that the entire admissions process would be devoid of the lack of human consideration of specific or special circumstances that may impact students' applications.

In addition, several higher education institutions have concerns that AI may contribute towards existing biases during the application process as opposed to mitigating it. University of Texas at Austin reported using an AI tool, for selection of its PhD candidates, that the institution had created. Using AI as part of their admissions process led them to conclude that the selected applicant pool was representative of the student demographic that had historically been a part of the institutions. As a result, the AI tool was successful in reducing human bias, but unsuccessful in ignoring existing biases in the LLM training data.

Ethics of Using AI for Grading

AI powered assignment grading has helped automate a range of student evaluations- multiple choice questions, short answers, essays and problem-solving written responses. In the case of multiple choice questions, AI led evaluation systems are trained to review the data set i.e. student responses for correct responses from the grading rubric. Natural language processing technology has the ability to make the grading process automated by reviewing students' work for detecting errors and is trained on identifying argument structures (Fu et al., 2018). Machine learning algorithms are designed to analyze student data and develop models for grading based on continued analysis- thereby making it accurate over a period of time.

The process of repeated evaluations trains AI systems to assess new student data/responses against existing rubrics. This is advantageous for students as they have the

opportunity to review their evaluation outcomes faster than it may have taken their instructors to grade their work and would be free from instructors' biases and opinions.

However, using AI to grade assignments questions the validity of the design of the instrument itself to be free from biases of the humans who created them (Yang, 2022). Silverstrone & Rubman (2024) from MIT Sloan School of Management illustrate this point by sharing that AI tools that have been trained on business plans from male-led startups in specific industries, unintentionally are not favorable to business plans that are directed to fulfill gaps in markets catering to women, non-binary or other underrepresented genders.

Arguments against the usage of AI grading tools caution faculty to consider the subscription cost of using such software, possible breach of privacy in terms of instructors' and students' demographic information- HIPAA violations, legal concerns of going against university's grading policy and ethics of sharing student submissions without their consent and betraying students' trust of expecting feedback from their instructor (Kumar, 2023).

Kelly (2024) shares from her discussions with faculty, such as Leslie Layne, from the University of Lynchburg, Virginia that there are several ethical violations in the process of using AI as a grading tool. First, is uploading students' work to the LLM, thereby breaching their intellectual property. The cause for concern is that AI tools can potentially use student submissions as data to train their algorithms. Dorothy Leidner, a professor of Business Ethics at the University of Virginia cautions that this could be damaging for masters and doctoral students who aspire to publish their dissertation and contribute to their area of research. Second, it would be ethically incorrect if done so without students' consent or awareness. It is essential for students that there is transparency in terms of which AI tools are being used to evaluate their submissions and a shared understanding of what content will be uploaded. Third, and possibly most important ethical violation is the intent of using AI as a grading tool- for declarative knowledge (that has a single correct or incorrect response) or as a substitute when there is a requirement for personalized feedback to guide students' understanding, creativity and progress over time. For parents and students, it raises concerns of investing time and large sums of money in terms of tuition, for feedback loops that are AI generated and AI graded.

Academic Integrity in Higher Education Under the Lens of AI

The International Society of Academic Integrity (2021) defines academic integrity as a promise to uphold honesty, fairness, respect, responsibility and courage. The intent of upholding these critical facets is to create a learning environment where credibility, ethical decision making capacities and values are cornerstones to building a culture of integrity at the individual, classroom and university level.

Guerrero-Dib, Portales & Heredia-Escorza (2020) emphasize that academic integrity extends beyond cheating, plagiarizing or copying, as a commitment to the learning process by using available resources ethically and making a genuine effort. However, the onus of maintaining academic integrity is not on students alone. It is imperative that higher education institutions enforce high quality pedagogical practices, curriculum development, research and clear guidelines for what counts as violation of academic integrity.

From a learning perspective, violation of academic integrity shortchanges students' opportunities to gain mastery over the content. This may be attributed to having assistive technologies assign grades without providing qualitative feedback on students' work. Or if

students' submissions are not their own, they miss the opportunity for the instructor to give them guidance based on their level of comprehension and competence.

An immediate challenge to academic integrity has resulted from the impact of AI in the metamorphosis of traditional classrooms. Assessments is an area that has been under scrutiny as the reliability of AI powered detection softwares to detect student submissions that may have been products of generative AI (such as texts, images, videos etc.) has not been completely accurate.

Easy access to free versions of generative AI tools such as ChatGPT has made it possible for available technologies to be put to wrong use, such as plagiarism, perpetuating biases and inequity. Beyond the possibilities that it can be used in the learning process, a larger area of concern is the lack of establishment of shared understanding of ways that such technologies can be abused. Universities are in the process of developing and sharing comprehensive policies around the usage of AI led tools by faculty, staff and students.

The focus of the following sections are to explore challenges to students' academic integrity due to the presence of AI powered tools in their academic environments.

Impact on Academic Integrity in the Form of Plagiarism Due to AI Tools

Plagiarism is defined as an individual not giving credit to the source or copying someone else's work and citing it as their own. From the perspective of building upon existing knowledge, the process of plagiarizing does not add value if the credibility and accuracy of the source is not verified.

Those relying on large language models (LLM) to guide generation of content are faced with a similar dilemma. This is attributed to the fact that LLMs scour numerous online sources that they have been trained upon to construct a response to the user's prompt. However, authenticity of the sources or content available in those sources have not been vetted. This phenomena, called hallucination, produces incorrect content or falsely creates data sources that do not exist. In the early 2000s, the term 'hallucination' was used in the field of computer vision to signify addition of a specific detail to an image. However, it underwent a transformation over the following decade to acquire a shared understanding of it signifying an incorrect or misleading output by AI systems (Maleki, Padmanabhan & Dutta, 2024).

From a plagiarism perspective, this process of hallucination is akin to individuals not acknowledging, either the reliability or authenticity of their sources. As an illustration, Lane (2024) shares that Perplexity, an existing LLM, released a particular "story", the day after the original article was published by Forbes magazine using similar wording, illustrations and phrases. Acknowledgement of Forbes, as a source was not present and visually not clearly attributed (besides a small F icon resembling the Forbes logo). This was followed by Perplexity releasing this story to its subscribers through multiple platforms- mobile, web & video. Next, they proceeded to outrank Forbes on a Google search on the topic that was the central theme of the article. As a consumer, one is led (mistakenly) to believe that Perplexity is the credible source of this news story.

The most widely used application of generative AI in higher education is to produce outputs (in the form of texts, images, videos etc.) based on prompts that are provided to LLMs. This

serves as a double edged sword, as while the onus of ethical use of the tool lies with the user, it is not the responsibility of the user if outputs of the tool itself are a result of biases that exist in the dataset that the tool is trained upon. The issue is exacerbated as there doesn't appear to be a tacit understanding of what counts as ethical use of AI tools amongst users.

To illustrate, technologies that serve as adaptive tools and help in predicting texts have been in existence since the 1980s. A device called Predictive Adaptive Lexicon (PAL) was designed as a communication aid and keyboard emulator (Swiffin, Arnot, Pickering & Newell, 2009). The basic premise of the tool was to reduce the number of key pushes or character selections needed while composing a text. PAL was able to complete words based on the user's vocabulary, thereby reducing the number of character inputs necessary to enter any text which in turn led to saving the user's time and effort.

Eventually, the adoption of such technologies gained a wider audience once it integrated with text messaging. Whereas once the technology was used as a tool to aid learning, subsequently it started being used to draft responses without the user having to engage in the process of thinking and crafting responses. This indicates that the purpose and intent of how the tool is used ,determines its outcomes of using the tool.

To be clear, merely the usage of AI tools does not necessarily imply dishonesty. For instance, students may be assigned to use tools such Grammarly or ChatGPT to produce working drafts of assignments to build upon and/or critique for accuracy. In such cases, the tool serves as a learning aid as it affords opportunities to use prior knowledge to make sense of new content (generated by the tool) . However, students need to be clear on the purpose of using AI powered tools i.e. to review and autocorrect original work (for example, possible errors in language and spelling) or if the intent is to use the tool to generate content (that may be in the form of audio, video, text or multimedia) that they would proceed to cite as their own original work.

Impact on Academic Integrity Due to Efficacy of AI Detection Tools

A survey of over 2000 students at 2 and 4-year public and private institutions in March, 2023 indicated that an alarmingly high percentage of students are willing to use generative AI to assist them with school work, even if there exists University mandated policies prohibiting them from doing so (Shaw et al., 2023). Faculty cite preventing students from cheating using AI tools as a primary instructional challenge and threat to academic integrity. To counter this problem, higher education institutions are turning to available plagiarism checking technologies.

In the beginning of 2023, OpenAI released its classifier tool that had been trained to identify AI generated text. The company cautioned that the tool be used in conjunction with other detection strategies and not serve as a standalone solution to determining whether a written piece of text is AI generated or written by a human. The company proceeded to fine tune the classifier based on data sets that compared human generated and AI-written texts on the same topic. However, in July, 2023 the classifier ceased to exist for public usage due to low accuracy of detecting AI generated text (only 26%) and incorrectly identifying human-written text as AI generated (9%- false positive). In their resources for educators, OpenAI continues to invite feedback from educators using ChatGPT in the classroom to strengthen their understanding of the capabilities and limitations of the tool.

In comparison, for more than a quarter of a century, the company TurnItIn has carved a niche for being the industry leaders in supporting online higher education by detecting similarities (not plagiarism) between submitted student work to content in its database, available across the Internet, academic and other student papers. The purpose of their 'Similarity Report' is to generate a percentage that shares the extent to which submitted student work is similar to existing content. In April, 2023 TurnItIn expanded its core philosophy by releasing its latest tool intended to detect texts that have been generated using AI. The company boasts that the new tool detects texts generated by ChatGPT to 97% accuracy. The algorithm is based on a statistical measure that observes patterns in the text for variety. A higher percentage of idiosyncrasy indicates a higher likeness to being human generated.

However, AIHumanizer.ai has challenged that it can bypass TurnItIn's AI detection tool along with a host of other players in the market of AI detection (such as GPTZero, Originality.ai, ZeroGPT to name a few). It promises that it can rewrite AI generated texts by humanizing the content to appear unique and authentic. The company claims that their rewritten content has a low risk of being flagged as plagiarized by detection tools such as TurnItIn, Grammarly and Scribber.

Beyond AIHumanizer, the efficacy of TurnItIn's AI detection tool has not received favorable response from its users in higher education. As a result, several prestigious universities, such as Vanderbilt have questioned the trustworthiness of the tool and have discontinued its usage (Coley, 2023).

Students' academic integrity is constantly challenged by easy access to generative AI. Technological advancements of tools, such as AIHumanizer.ai and GPTMinus1, that mimic their writing styles, potentially position students to have to make the conscious choice of putting in the hard labor themselves, or adopting practices that make it possible to accomplish assignment requirements quickly but may short circuit their learning. In addition, an abundance of YouTube videos and online tutorials focused on techniques to outdo AI detectors, ensure that knowledge of available resources to engage in plagiarizing spreads rapidly to a global audience (Nelson, 2023).

Having AI companies invest resources in developing software that helps distinguish content created by LLMs (developed by them) and human writing, appears to be a logical strategy to address the problem. However, this is not likely to happen as it would be counter intuitive and challenge their corporate agenda of training natural language processors to mimic and simulate writing that is as close as possible to human responses (Alimardani & Jane, 2023).

Impact on Academic Integrity Due to Human Biases Generated By AI tools

Inadvertently misclassifying student written prompts as AI generated is a cause for concern for students, specially marginalized, under-represented groups, people of color and non-native English speakers. While analyzing content that was mistakenly flagged as AI generated, by AI detectors, researchers observed that a large number of such writings were by non-native English speakers (Liang, Yuksekgonul, Mao, Wu & Zou, 2023). In the study conducted by Liang et al. (2023), researchers used an AI detection tool to determine the authenticity of essays that were part of a Chinese dataset and written as practice for taking the Taking of English as a Foreign Language (TOEFL) exam by Chinese students. As a point

of comparison, an equal number of essays written by eighth grade students, part of the Hewlett Foundation ASAP dataset, were also evaluated by the same tool. The researchers noted that the AI detector reported a high false negative rate (61.3%) of the TOEFL essays being AI generated. In comparison, it accurately identified all US student essays as being not AI generated. The cause for concern stems from the fact that non-native English writers, when communicating in English, demonstrate a lower level of grammatical variability and choice of vocabulary. This lowers their text perplexity (i.e. ease at which the generative AI model can predict the next set of words in a sentence) in comparison to native English speakers. This calls for cautioning against the use of low perplexity markers as a criteria for citing AI-generated texts. It is possible that this could unintentionally create biases against non-native English speakers. Overall, this draws attention to the potential of inequality that exists in embracing diversity within the academic community.

Another barrier that this bias illustrates is that AI outputs are not comprehensive to support students' diverse cultural experiences and native languages spoken across the globe. This is a challenge when the intent is for students to be able to find their own voice. Laura Dumin, professor of English and director of the technical writing program at the University of Central Oklahoma fears that students who speak dialects of English, may feel inclined to sacrifice diversity in their writing to mimic the blanket text generated by AI (D'Agostino, 2023).

The issue of marginalization of non-native English speakers by AI detectors extends beyond texts produced by generative AI. Stereotypes propagated by AI generated images and videos expose and promote biases, sometimes unconscious, in people's minds. For instance, AI generated images of women of color, are not a true representation of their projected physical attributes. In comparison, AI generated depictions of white women are closer in likeness. To counter such harmful outputs, some image generator tools do not allow users to enter specific keyword prompts (that have the propensity to be racial in nature), to be used to guide the image generation. However, this runs the risk of downplaying relative importance, experiences and perspective of minorities, in favor of dominance of the majority (Anonymous, 2023). This is potentially harmful in higher education as it questions the existence of diversity in representation of students and faculty within the university.

In the context of a communications classroom, researchers Hu & Kurylo (2024) analyzed outputs from Dall-E, Midjourney and Pika Art for the conventionalized nature of images generated by these platforms to showcase Asians. In the study, they highlighted the similarities between processes adopted by AI and human information processing (learning, perceiving, reproducing) to promote cliched perceptions. Their analysis of available AI generated images and videos shed light on the risks that are generated by AI in reproducing and spreading harmful stereotypes about historically marginalized groups and subsequent biases against them. Communications is a very human centered medium that has the potential to benefit heavily from the vast collection of AI generated imagery. As a result, it is critical that communication students and faculty are made aware of strategies to identify biases in AI generated images to prevent propagation of stereotypical notions about groups of people who are not a part of the mainstream culture.

Accusation of cheating or use of unfair means to complete course requirements, existence of biases in media or propagating stereotypes has the potential to have a severe impact on students' academic and professional lives.

Conclusion

From the case study shared in the introduction section, it is evident that Jessica succumbed to the pressure of compromising her integrity to maintain her GPA. It reflects the rampant focus within academia on outcomes and not on the process of learning. AI provides an abundance of tools that are geared to strengthen one's understanding of the content.

However, misuse of the tools can have a severe impact on academic integrity. This incident emphasizes the possible challenges on ethics and academic integrity due to the easy accessibility to AI powered tools.

Higher education institutes are poised to play a pivotal role in the advancement and integration of AI within their ecosystem. A key role that higher education institutes can play in the future would be to join forces with companies involved in creation of AI powered tools to support design and alignment with ethical standards (Diaz, 2024). This collaboration would be beneficial to develop software that are compliant with universities' policies regarding effective use of student data- thereby reducing the possibility of generating biased and inaccurate content.

AI brings both opportunities and challenges in the context of academic integrity. Importantly, it raises ethical questions, especially when it comes to privacy and surveillance. AI tools can support, but not replace, the work of teachers and administrators in promoting academic integrity. Ensuring honesty in academic work and minimizing cheating also relies heavily on creating a culture of integrity and setting clear expectations for ethical behavior. Higher education institutes need to direct attention to advance AI literacy to all their stakeholders (students, faculty, administration) about the potential risks and ethical usage of AI powered tools. This implies a focus on human-centric AI integration. Higher education institutes need to foster an environment where stakeholders feel empowered to be using AI tools for advancing their knowledge, engage in critical thinking and collaborate with each other.

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Ethical Considerations in AI Deployment

Section II

[Implications of Copyright Law on the Use of GenAI Tools in Education and the Workplace](#)



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Implications of Copyright Law on the Use of GenAI Tools in Education and the Workplace

Hepler, R. C.

Learning Objectives:

1. Analyze implications of current copyright law on AI-generated content in higher education.
2. Apply legal principles, such as the Fair Use doctrine, to hypothetical scenarios involving AI-generated content.
3. Examine the copyright-related ethical considerations of using AI-generated content in education and work.
4. Hypothesize about future occurrences in the world of copyright and their implications on Generative AI tools and products.

Introduction

Before we begin, let me clarify that this chapter is meant for an audience in the United States. Privacy, copyright, and data laws vary throughout the world. Although the principles of United States copyright are similar to those in the United Kingdom, they are not the same. Therefore, please apply these guidelines and examples to applicable laws in your political jurisdiction, wherever that may be.

Jason, an undergraduate student at the College of Southern Utah, has been inspired by the many creators who are using generative AI to

enhance their thoughts and productivity. He knows that his ideas are on par with these creators, and so he sets out to create an illustrated book for children, with illustrations from Ideogram and words from ChatGPT! Before long, Jason has learned how to submit a digital book for purchase and has published his first book. He is looking forward to further expanding his creations through AI! In order to protect his income, and because he does not want people to misuse his work, he submits a copyright registration application to the Copyright Office of the United States.

He is dismayed, therefore, to receive a letter from the U.S. Copyright Office stating that they will not accept his copyright claim for his materials! They state that since Jason used artificial intelligence to create his words and text, he cannot claim to be the author or creator of either product. They state that copyright claims must come from a human author, and that a person who prompts a machine to create something does not currently qualify as an author.

Jason is very frustrated with this turn of events. He put in the effort to create those materials, even if they may have been more removed from his own hands. He formulated the prompts and edited the material that the tools created! Therefore, he submits a copyright claim for another children's book. This time, he does not say anything about the artificial intelligence used to create his materials. He introduces imperfections and does more enduring edits to make it seem as human-made as possible. This must work, because he gets a letter granting him copyright for the book.

Soon, he has nine or ten books that he has published using generative AI tools, and all he had to do was not tell the U.S. Copyright Office that he used AI! One day, though, he gets a letter from the Copyright Office. Somehow, they found out that he used AI to create his materials. While they are not suing him or fining him, which they state that they could, they are removing all copyrights he has to his library of published works.

Can the Copyright Office really do this? Do they truly believe that any AI involvement can remove all creators' rights claimed by the tool user? The answer to both of these questions is "Yes."

Two Conflicting Copyright Decisions

A similar situation actually occurred in 2022. Kris Kashtanova, a renowned digital artist, released a comic book entitled *Zarya of the Dawn*. When she registered for copyright in the United States, she neglected to state that she had used Midjourney to create all of the images in the comic book, with some editing done by her after she selected the images. Whether or not this was a deliberate decision or an oversight due to lack of precedent, the Copyright Office did not care. They immediately notified her that *Zarya of the Dawn* would not be protected by copyright law in the United States. This has been one of the most public occurrences related to AI products and requests for their protection under copyright.

On the other hand, though, there are instances in which authors who use generative AI can receive *limited* rights of copyright. This was evidenced in another decision by the United States Copyright Office that took place throughout the Spring 2024 season. While it initially declined to recognize the copyright of Ellen Rae, an author who used generative AI to rewrite a novel, she appealed for a reconsideration. In response, the United States Copyright Office reversed its decision *to a point*. It still refused to give her copyright over the text. It stated that ChatGPT created the text and it could not copyright any works. However, it *did* grant Ellen copyright over the arrangement, structure, and formatting of the text within the book. While it should be noted that Ellen Rae claimed that generative AI was a tool she used to compensate for mental hardships, the Copyright Office did not explicitly link that claim to the decision it eventually made. This could open up new possibilities for creativity.

There are two more intersections of copyright and generative AI that students, educators, and creators should acknowledge.

1. Many creators are claiming that institutions and individuals that create generative AI tools are infringing upon their copyright protections when they use the creators' works to train the tools.

2. Creators of the tools, and some users, claim that using copyrighted materials to train generative AI models is acceptable under the fair use doctrine, which will be explained in more detail below.

The third intersection of copyright law and generative AI is related to the contract between programmers/creators of generative AI tools and those who use those tools. Can the programmers of AI tools have the right to claim copyright of the materials? Do the prompters alone have that right? Or do the programmers and the prompters share copyright of the works created by the tool? Some tool programmers act as though they do have copyright over the works created by their tools. For example, the OpenAI Terms of Use imply that OpenAI has copyright over all works created by any of their generative AI tools. In their Terms of Use, they completely hand over “their” rights to the tool user, as though they have the authority to do this. Essentially, they act as though they are the party that needs to give permission. However, according to the United States Copyright Office, neither party in this contract has the authority to give any copyright. Since these are derivative works of copyrighted works, OpenAI has no legal right to grant any copyright transfer. The only two ways this can happen is by using public domain and open access materials exclusively or by successfully arguing a fair use defense to the Supreme Court.

OpenAI used CommonCrawl and other open access materials to train their initial models, but they used copyrighted resources such as New York Times articles to refine their product. They are relying on a fair use argument to be legally protected.

These three quandaries will be my focus in this chapter. Can creators copyright AI-generated works? Can programmers and developers train their models on copyrighted works (and if not, what alternatives exist)? Can programmers claim copyright on the works generated by the tools they have trained and fine-tuned?

Understanding the Basics

Before we go into the murky issues regarding copyright law, we have to understand the nature of copyright, including its purpose in the laws of the United States, what it can protect, and what it cannot protect. This includes entities that are not protectable and those items that have passed into the public domain.

Copyright Fundamentals: Core principles of copyright law

The first American copyright law was created in the federal Constitution. This document explicitly mentioned that creators of works would be compensated for uses or purchases of that work. This idea was formally made into its own law in 1790, in a law that described copyright as a way to ensure the spread of information to as many people as possible. In fact, the stated purpose of the Copyright Law of 1790 was to ensure that schools could obtain written works and other intellectual property so they could teach their students.

The Copyright Law of 1976, which was the first copyright law to explicitly mention the fair use doctrine, is also the copyright law that frames all of our current legal discourse regarding copyright.

The concept of copyright is that the creator, custodian, or other owner of this right (or the collected rights under the umbrella of copyright) holds the title to the intellectual property of a particular work. Intellectual property is a creation that was the result of the work of the mind of one or more people. Intellectual properties express ideas through literary, artistic, oral, and other media, including:

- Literary works
- Musical works
- Dramatic works
- Pictorial, graphic, and sculptural works,
- Motion pictures
- Audiovisual works
- Sound recordings
- Architectural works

- Compilations and derivative works

The ownership of this property means that the copyright owner has exclusive rights to control duplications, alterations, performance, display, and dissemination of a particular work, expression, manifestation, and item. Librarians and archivists both work to ensure the widest possible access to all types of work (copyrighted and non-copyrighted) while recognizing that access may be justifiably limited in certain instances.

While it may seem that copyright protects virtually everything in our world, there are some products that are not protected under copyright:

- Ideas
- Processes
- Devices
- Blank books, forms, charts, calendars, etc.
- Laws and judicial opinions
- Titles of works
- Facts and data
- Recipes
- Works that have not been created by humans (including ChatGPT, for the time being)
- Works of federal (and some state) government employees
- Public domain materials

The last category is of special importance to those who train and fine-tune generative AI models. For copyrighted works, developers have to either obtain licenses or trust that a fair use argument will hold up in court (more on that later). However, items created by state and federal governments are always in the public domain and are free to use in any model training. Furthermore, existing copyright law states that *in general*, all works published by private individual or corporations are released into the public domain 95 years after they are published. All of these works are also available to train models. Finally, creators can choose to automatically release their works into the public domain or provide open licenses, such as Creative Commons licenses, that will allow free re-use under certain conditions.

The Three Questions (not Tolstoy's)

When any person considers ethically using generative AI tools for commercial use, there are three main questions that they must ask themselves. These questions are also advisable for those who are using generative AI products for non-commercial purposes:

1. What are the Rights and Responsibilities of the Copyright Owner?
2. What are the Rights and Responsibilities of the Copyright User?
3. Which is Generative AI, the Owner or the User? Or, Is It Both? Or, Neither?

Balance between Consumer and Creator Rights

Although many free and open materials can be used to train models and fine-tune tools, many users and creators would still like to train tools on copyrighted materials. In addition to claiming that using copyrighted works is fair use, they also state that there should be a balance between consumer, programmer, and creator rights. They claim that using these works to train models is not derivative (or infringing), because the text and ideas in the work are used to create an entirely new work. In other words, the use of these copyrighted works is “non-consumptive.” No monetary value is lost in using the copyrighted works. They are not taking the ideas, characters, plot points, or proprietary information from the original work. They are taking syntax, context, and sentence structure, and the other aspects may be reassembled by enterprising users. However, the intent is not to reproduce the material upon which the tool was trained. The intent is to use the data to influence new forms of creativity.

This claim brings up another central issue regarding AI and copyright. According to existing US Copyright Office guidelines, only human creators are allowed to register for copyright protection. Any AI involvement at all (except for minor editors such as Grammarly or Photoshop) disqualifies a product from being protected. To solve this issue, we must answer the question: Is AI a Creator? Can humans who use AI tools to create products count themselves as creators since they were the ones who prompted the tool to create?

The Core Issues

The three questions above and the court case examples illustrate that there are three main actors in all discussions about generative AI and copyright ownership:

1. the creator of original works
2. the programmers who use generative AI tools to generate content while potentially *using* others' original content, and
3. the end users of generative AI tools who consume that generated content, potentially after introducing *other* copyrighted works as part of their own prompts.

AI and Authorship

The court cases mentioned above illustrate the two ends of the political and ideological spectrum regarding generative AI use in “creating” generated works. Some view any AI involvement at all as proof that a work is not worthy of being protected by copyright. Others give the author credit for arranging the outputs and initiating the ideas that led to the generation of the outputs, and other elements of formulating the finished product. Still others are somewhere in the middle. The writing of each of the authors in this book should be enough to demonstrate where they stand on this issue.

While AI use as a *tool* is debated, it is essentially universally acknowledged that an AI tool is not a human. It is not sentient. Therefore, it can not in and of itself qualify for copyright protection of its works. In fact, this was one of the main arguments of the Copyright Office's *Zarya* decision. However, when it decided differently in the case of Ellen Rae, it implied that using AI as a *tool* was allowable practice to an extent. Evidently, it operated under the distinction that while Kashtanova simply used images without significantly changing them, Rae shifted and manipulated the outputs to create something that was clearly different than the original generations. Still, these decisions have not been codified into a law or guideline. The question remains: Does AI use by a human automatically negate their work from being protected under

traditional copyright or at least a partial copyright such as an open license?

Whether or not AI-generated works can be granted copyright under any conditions is in some measure unrelated to the perception of academia regarding AI and authorship. Simply because something is copyrightable does not mean that it is considered part of best practice. Still, many of the arguments for and against copyright are similar to arguments for and against the use of generative AI in academic environments. The other members of Idaho OPAL and I will address these questions in our later chapter.

Programmers' Rights

If an AI user can claim copyright on the arrangement and selection of outputs from generative AI tools, can the programmers or developers claim copyright on the generated output? According to the Terms of Use of OpenAI, the creators of ChatGPT, and Ideogram AI, the creators of the open-access image transformer Ideogram, the company *can* claim copyright over the output. This is evident in the fact that they explicitly *give* that copyright to their users. If they did not think that they deserved the copyright, then they would not feel that they could give that copyright away. Their Services (the apps and the machinations through which they produce generated output) are proprietary and cannot be disassembled or sold, but the Output is completely transferred to the copyright of the user.

No matter how much these institutions want to act as though they own the copyright, no federal or state agency has ruled or decided on the reality of these claims (or, really, inferences). It could be that since the AI tools are meant to be part of the creative process rather than the creator of the final product, the courts or the Copyright Office could eliminate all developers' claims to copyright.

Authors' Rights

The original authors of works that have been used to train AI models claim that their copyright has been infringed upon and that the institutions who gather copyrighted works must be punished. They usually support their

arguments by stating that the AI-generated works are “derivative” of their own works. This essentially means that the resulting image, text, or video retains enough identifiable aspects of the first work to suggest a relation between the two works. It also means that the creator of the secondary works owes compensation in some form to the creator of the original work.

Court cases revolving around claims by the original works’ creators have had mixed results, with courts mostly deciding in favor of the generative AI creators. Two recent court cases against Stability AI and their tool, Stable Diffusion, illustrate this point. One of the lawsuits against them was brought by the media corporation Getty Images. The other was initiated by a small group of individual art creators. In the first case, the court dismissed all arguments against Stability AI. In the second case, the court dismissed all but one of the arguments against Stable Diffusion. The only argument allowed was that Stability had violated the copyright of one artist of the group of three. With fair use arguments claiming that model training is an allowable defense for alleged copyright infringement, it could be that Stable Diffusion is not held in violation of copyright after all.

Ethical and Legal Considerations in Academia

Now that we have talked about the relationship between original creators, the developers of the AI tool, and the consumers of the AI-generated products, let’s progress to the implications of these agents and relationships in academia. How does the fact that AI tools can use copyrighted works to develop generative output affect their perception and use in academia? What types of tools are perceived more favorably in academia than others? How does artificial intelligence use impact the perception of a student in academia? How do academic integrity and intellectual property policies impact the use of AI in academia?

Navigating the Evolving Landscape

Educators and students are both responsible to stay informed about the changing legalities and ethical considerations regarding generative artificial intelligence. Do not rely on others, particularly news sources, to tell you what you can or cannot do or should or should not think about these issues. Read [Justia.com](https://www.justia.com) to discover court cases related to this topic, look at C-SPAN recordings of federal

government proceedings, and read releases from the Copyright Office to understand and interpret their decisions.

Kashtanova's and Rae's copyright decisions by the United States Copyright Office are only the beginning events in this chain, and there are many ways that generative artificial intelligence could be seen as a new type of creator, a positive creative tool, or an interloper in the creation process. We should all act according to best practices while remaining cognizant of the legal restrictions of federal and state governments.

Intellectual Property Rights

Central to the discussion of copyright, especially as it relates to generative AI tools, is "intellectual property." What exactly does "intellectual property" mean? This term refers to the original creative products of one or more individuals. These products are referred to as "works," and they contain intellectual ideas, efforts, and concepts. The creators of these works have similar rights as owners of tangible property. They can control anything done with this intellectual property. This is why book authors sell licenses to creators of *derivations*, such as audiobooks, translations, film adaptations, sequels, abridgments, and other works that are *derived* from their original work.

How does this affect generative artificial intelligence tools and their outputs? Well, arguments against generative artificial intelligence argue that these tools violate intellectual property rights. In other words, opponents of generative AI use claim that in consuming copyrighted works for training purposes (or fine-tuning, in the case of works uploaded for specific prompts), generative AI tools always make unlicensed derivative works. They state that creators of these tools and those who use them should pay for licenses for derivative works.

There are open-source generative AI tools, such as LLaMa for text and Ideogram for images, but these tools only use public domain

images or licensed images that have been granted for open-source use. These tools are not in danger of violating any copyright laws.

But what if a tool is not open-source and *does* use copyrighted works? OpenAI, along with the ACRL and ALA, claims that use of copyrighted works in training data does *not* violate copyright law because it constitutes *fair use*. The “fair use doctrine” states that an individual or group may use a copyrighted work to create *transformative* works if their use fulfills two or three of four factors:

1. the purpose and character of the use, including whether such use is of a commercial nature or is for nonprofit educational purposes;
2. the nature of the original copyrighted work;
3. the amount and substantiality of the portion used in relation to the copyrighted work as a whole; and
4. the effect of the use upon the potential market for or value of the copyrighted work.

Supporters of using copyrighted works in training data claim that using these works is fair use according to 1 and 4 because the tool does not retain or transmit the main points of the copyrighted work unless explicitly asked. Even if it is asked to do so, it only transmits these in summary as a commentary on the original work. It will not use the central elements of the copyrighted work. Instead, it learns about *syntax* and *communication* from these works and stores the metadata about the information and data in the works. This type of use is what supporters call “non-consumptive.” Other supporters refer to a related concept called “non-expressive use,” which is an argument frequently used by creators of search engines, databases, and other systems and products that use context and metadata to provide resources to users.

While the “fair use” argument certainly seems compelling, it is important to note that a fair use argument is an *argument*, not an *allowance*. In other words, the validity of a fair use claim is determined by the *court*, not by the plaintiff or the defendant. Therefore, if you are considering using a generative AI tool, be sure

that you can document and justify any fair use argument you wish to make.

A similar concept to “intellectual property” rights is that of “moral rights.” This idea originated in France during the French Revolution as one of the natural rights that all individuals possess. As time passed, the idea that a person’s artwork was inextricably connected to their sense of self spread to other countries in Europe. In 1923, the Berne Convention officially recognized moral rights as a legal factor in the general European community. These rights influence the expectations that original creators should be attributed when their works are used. Also, it is expected that the use of works will be respectful, so as to not besmirch the intent, honor, or integrity of the original creator.

Currently, moral rights are only codified in the United States as they relate to visual works. Textual and audio works are not associated with moral rights in legal discourse. However, this could change as the nature of creation evolves through generative artificial intelligence use. Best practices in the United States recommend respecting the moral rights of all creators, except for the creation of satirical or parody works.

Practical Implications in Higher Education

How should we act now that we know this background information about ethical issues? Let’s look at some example scenarios.

Example 1: Dario, the Digital Media Student

Background:

Dario, a digital media student at a mid-sized college, utilizes AI tools for creating visual content as part of his coursework. He employs generative AI software to produce images for a project that aims to illustrate the progression of digital art over the decades.

Challenge:

Dario faces a copyright issue when one of the images generated by the AI closely resembles a well-known copyrighted photograph from the 1980s, leading to an ethical dilemma regarding copyright.

Although Dario is reasonably sure that the photographer will never know about the copyright infringement, he still wants to do the right thing. The concern arises over the AI's training data and whether it included copyrighted materials without proper licensing.

Best Practices and Argument for AI Use:

Dario had read up on best practices for AI use in digital media from resources like the American University's Center for Media & Social Impact and the Creative Commons website. He ensures that the AI tools he uses are from reputable providers who transparently disclose their data sourcing and training methods. Dario argues that his use of AI is crucial for educational purposes, enabling students to learn and experiment with new forms of media creation. He stresses that the AI-generated image, while reminiscent of past styles, is inherently a new creation, showcasing AI's ability to learn from existing art to generate novel works. This use supports educational advancement and promotes innovation within the constraints of fair use, as outlined in the copyright guidelines provided by his institution's digital media department.

Example 2: Emina, the Computer Science

Graduate Student

Background:

Emina, a graduate student in computer science, is working on her thesis, which involves the development of an AI model that summarizes academic papers. She uses existing research papers as training data for her model. She has released it to the public as part of what she sees as her professional responsibility to share advancements with the general public.

Challenge:

The challenge arises when a publisher claims copyright infringement, asserting that Emina's AI model illegally uses copyrighted texts to train its algorithms.

Best Practices and Argument for AI Use:

Emina has thoroughly documented her process, adhering to best practices in AI and machine learning outlined in resources like the IEEE's "Ethically Aligned Design" and the Association for Computing Machinery's Code of Ethics. Emina argues that her use of AI serves a critical educational purpose by contributing to academic research and knowledge dissemination. She highlights that her model's training on copyrighted texts falls under the fair use exemption for educational purposes, as it transforms the original works for a scholarly analysis without undermining the market for the original texts. Emina points out that the AI-generated summaries provide significant educational benefits, facilitating quicker access to research insights and fostering broader academic engagement.

Best Practices

What can the examples above show us about best practices regarding generative AI Tool use in higher education institutions?

In both cases, the students make compelling arguments for the responsible use of AI in educational settings, emphasizing the importance of ethical considerations, transparency, and adherence to established best practices. These case studies highlight the nuanced balance between copyright law and the innovative use of AI technologies in higher education, advocating for policies that support both the protection of intellectual property and the advancement of educational tools.

If you search for best practices regarding generative AI use by students in higher education, you will see dozens of websites offering guidance. As stated above, formal "best practices" have not been established by any governing organization. In this case, the best thing

that practitioners can do is to follow general guidelines regarding technology use or use of copyrighted works and apply those general recommendations to specific uses.

Here are some of the most common ideas in best practices lists, both unique recommendations regarding AI and specialized implementations of general recommendations by professional organizations:

- Verify the information sources in generative AI outputs, including all citations and quotes.
- Document which products, or portions of products, were created with AI
- Communicate with faculty members about your use of AI and follow course, department, and institution policies.
- Edit the output heavily after you receive it from a generative AI tool, especially if you are using text outputs.
- Use AI as a discussion tool and collaborator rather than a provider of a “finished” product for submission.
- Consult with librarians, instructional designers, and other professionals in your institution for information about policies, recommendations, well-intentioned practices, and other suggested courses of action.

Conclusion: The Future of AI and Copyright in Academia

If you extrapolate from the past arguments and examples in this chapter, you can see that there are three general categories of hypothetical futures for generative AI use in the context of copyright:

1. The argument by the Association of Research Libraries (ARL) and the American Library Association (ALA) that “training generative AI models on copyrighted works is fair use” is accepted by the federal government. Regulated integration of copyrighted works becomes the norm for generative AI tools of all types.
2. The Copyright Office continues to hear implementation and output use cases on an individual case-by-case basis, considering the authors’ statements and arguments and the differences between the AI output and the finished product.
3. The argument that any use of copyrighted works is not fair use and should be licensed or punished will be supported by federal government institutions. This will cause each AI institution to choose one of four routes: either rely on open access and public domain materials, become an underground industry reliant on plagiarism, develop a “salutary neglect”-like relationship with governments, or pay for licensing of all copyrighted materials used in training, which will drastically increase user costs.

In any of these future states, students and educators will have to proactively think of new ways to integrate generative AI tool collaboration with their workflow. In any of these three scenarios, generative AI tools will still exist. They will still be enhancing creativity and productivity. And you students will still be responsible for making the next decade’s decisions regarding technology and intellectual property. Choose wisely!

Disclosure

Generative AI was actually not used much in the creation of this chapter. The author did use it to formulate ideas for the discussion questions, but they did not use the AI suggestions in any of the questions that ended up in the chapter. They also used it to formulate ideas for the Practical Implications Examples. They heavily expanded on the initial uses proposed by the AI tool.

Discussion Questions

1. How does the current requirement for human authorship in copyright law challenge the copyrightability of AI-generated works?
2. What effects would the legal recognition of AI as an author have on the academic community?
3. Consider a scenario where an AI program creates a piece of art or a research paper. Who should hold the copyright - the AI, the programmer, the institution that owns the AI, or the prompter?
4. How could students and educational institutions prepare for future developments related to copyright and generative AI content and tools?



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Perspectives on AI and Ethics

Section III

[How to use AI to Help, Not Hinder, Your Learning](#)

[Will Robots Replace Us?](#)

[Validity Issues and Ethics Concerns of AI-Assisted Assessment](#)

[Exploring the Dual Facets of Artificial Intelligence](#)



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How to use AI to Help, Not Hinder, Your Learning

Fensie, A.

Objectives

By the end of this chapter, you will be able to:

- explain the role of motivation in learning, and how AI can help, not hinder, motivation.
- explain how knowledge is formed, retrieved, and stored, and how AI can help, not hinder, knowledge building.
- identify use cases for various generative AI tools to help you learn.

Vignette

Dr. Vasquez teaches an undergraduate class in the Gender Studies program called “Women in American Society”. She is concerned about some of her students. Several of the latest essays that were turned in were obviously generated by an AI chatbot without any work from the student. Some students just didn’t turn in the essay, and she is worried about whether they will be able to stay caught up in class. She asked her TA, Ahmed, to reach out informally to some of these students to find out what was going on.

Ahmed reports back that Martina admitted to using ChatGPT because she just wasn’t really interested in the topic and had other assignments she was trying to complete at the same time. Greg admitted to using Co-Pilot to write the essay and said that they are not comfortable with writing and just don’t know how to get their thoughts out in academic text. Louisa had not turned in the essay because she works full-time and had a sick child at home. She had done the reading and outlined her essay but had not had the chance to draft it yet. Dr. Vasquez wonders how she can help her students like Martina, Greg, and Louisa to use generative AI to help, not hinder their learning.

The Problem

Generative AI chatbots burst onto the scene with widespread adoption at the end of 2022, surprising many people with their ability to generate a variety of types of text that are

generally indiscernible from human-written text. Some students have found that AI chatbots make it so much easier to cheat, while other students are afraid that AI will ruin our lives and want nothing to do with it. It's unlikely that schools will be able to prevent students from using AI in their learning and effective use of AI chatbots is fast becoming a requirement in many occupations, so it is important that teachers and students alike learn how AI can help the learning process and when it should be avoided because it disrupts the learning process.

Motivation

Aspects of Learning In general, AI should not be used to do the work of the learning objective. If the goal of a learning task was to use well-written prose to describe an important event in your life, then asking ChatGPT to write this for you would not only be unethical, but it would cheat you out of the learning experience. The goal was to improve your writing ability and generative AI did that work instead. However, if the goal of the learning activity was for you to understand the interplay of factors that brought the Cold War to an end, then asking an AI chatbot to help you think through the various events and situations can actually be useful in helping you meet this goal. If you do the work of understanding and explaining the end of the Cold War with the help of generative AI, then you are doing the work of the learning objective. If writing skill is not the objective of the learning activity, then generative AI can be helpful in providing you feedback on your writing or ways of phrasing your ideas about the end of the Cold War that may make them clearer to the reader. Further resources for distinguishing appropriate use of AI for learning are presented by [Ditch that Textbook](#) and [Kate Meyer](#).

In order to determine when it is appropriate to use generative AI for your learning, it is first important to understand how learning happens. In this section, we will explore some of the most important components of your learning journey: motivation and the formation and retention of knowledge. Each section will provide examples of how you can use generative AI to help and not hinder these aspects of learning.

What is it and how does it work?

Why do you do the things you do? Some things you do without thinking too much about them because they are habits or automated, like the procedure for riding a bike. Some things you plan ahead for and go on autopilot because they are part of your routine, like riding the subway to campus. Most of the rest of your actions are either a reaction to a trigger or are things you choose to do for a reason. This reason is your motivation. Motivation also sustains your actions toward achieving a goal. Interestingly, success at a task, like learning, increases your motivation for completing similar tasks. So, even if you don't feel like learning about something, by forcing yourself to get started, you might grow the motivation you need to continue.

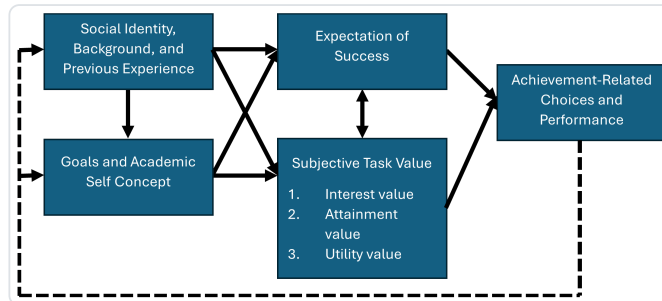
You may have heard of extrinsic motivation, where you choose to complete a task for an external reward, such as a grade or money, and intrinsic motivation, which stems from internal rewards like satisfaction and personal growth. Researchers have defined and studied motivation in several ways, but we will unpack one of these models here so you can see how AI can help or hinder your motivation for learning.

According to the Situated Expectancy Value Theory (SEVT) by Eccles and Wigfield (2020), our motivation is determined by contextual and situational factors, like social identity, background, and previous experience, as well as goals and academic self-concept, or what you believe about yourself in terms of learning. These all influence the key determinants of

motivation: expectations for success (ES) and subjective task values (STV). Your choices and performance all return to feed your previous experiences, goals, and academic self-concept, influencing further motivation (see Figure 1). Let's explore this in a little more detail so we can understand what these components mean for you.

Figure 1

Simplified Model of Situated Expectancy-Value Theory by Eccles and Wigfield



Note: This figure summarizes the main components of the SEVT described in Eccles & Wigfield, 2020.

Eccles and Wigfield (2020) define expectancies for success as “individuals’ beliefs about how well they will do on an upcoming task” (Eccles & Wigfield, 2020, p. 3). Your judgment about how well you will do on an assignment or assessment (like a quiz or exam) is determined by your social identity, background, previous experiences, your goals, and your academic self-concept. Whether you think you will do well on the learning task is not enough to motivate you, however. Motivation is also influenced by your unique view about how valuable it is for you to complete a given task.

Subjective Task Values (STV) are viewed differently by each individual learner. Overall value is determined by intrinsic value, attainment value, utility value, and cost. Intrinsic value is “the anticipated enjoyment one expects to gain from doing the task for purposes of making choices and as the enjoyment one gets when doing the task” (Eccles & Wigfield, 2020, p. 4). You might not think that a learning activity can be particularly enjoyable, but they can be! Utility value is “how well a particular task fits into an individual’s present or future plans” (Eccles & Wigfield, 2020, p. 5), or a means to an end. Even though you may not realize it, every time you get started with homework, you are thinking to yourself, “How useful is this task? Will it help me reach any of my goals?” If the answer is that it is not useful and won’t help to get you where you want to go, you are much less likely to do the assignment. Attainment value is “the relative personal/identity-based importance attached by individuals to engage in various tasks or activities” (Eccles & Wigfield, 2020, p. 5). In other words, how much better will you feel about yourself by doing the learning activity well? When we weigh up the cost to benefit ratio of completing a learning task, we assess:

1. Effort cost – the perception of how much effort it will take to complete a task and whether it is worth doing so;
2. Opportunity cost- how much doing one task takes away from one’s ability or time to do other valued tasks; and
3. Emotional cost -the emotional or psychological costs of pursuing the task, particularly anticipated anxiety and the emotional and social costs of failure. (Eccles & Wigfield, 2020, p. 5)

It is important to note that all of these factors can be influenced by others within your social sphere: parents, friends, classmates, etc. For example, if you hear a friend talking about how much they enjoyed a class because of how much they learned, this might increase your intrinsic value, or interest, in taking the class yourself. You may also be subject to stereotype threat where thinking about negative societal expectations of your identity (e.g., girls are not good at math, people of color are not academically successful, etc.), can lead you to believe in these stereotypes, avoiding the learning task because of the emotional cost and low attainment value (Beilock et al., 2007; Steele, 1997).

One final note about motivation: mattering matters! What you are learning has to matter to you in some way. If there is no emotional connection to the content, such as curiosity or empathy, the information will not be remembered. The brain is too efficient to learn something that is not meaningful (Immordino-Yang, 2015). Emotional connections to course content can provide further task value.

How can AI help?

How can you use generative AI chatbots to help with your motivation? Let's examine some of the components of the SEVT model.

Expectation of Success: You have an exam coming up. What are your expectations for success? It would be nice to have some verification of how well you know the content so you can be more accurate in your expectation for success. Unfortunately, we often over-estimate how well we know course content because we are just familiar with the content (Brown et al., 2014; Deslauriers et al., 2019). We might be able to recognize it, but really knowing it requires you to come up with the information on your own and apply it. You can use an AI chatbot to test your knowledge of the content. Take out your study guide, then ask ChatGPT, Bing, Gemini, or Claude to prepare you for the exam. Here's an example.

[AI Chatbot Example: Study for an Exam](#)

Intrinsic Value: You're in college on a football scholarship and economics is the last thing you want to learn. If you can't find a reason for wanting to learn the course content, then you are going to struggle to stay motivated in the class. Maintaining your GPA to keep your scholarship might not be enough. Ask your favorite chatbot to give you a reason to learn economics. Adjusting the prompt and settings can really help you get a useful response. Check out this example:

[AI Chatbot Example: Increase Interest in Course Content](#)

Cost: Suppose you think of yourself as "not a math person" and are now thinking about the assignment for your stats class. Could you just plug the questions into Wolfram Alpha to get the answers and submit them? Sure. Would this help you learn the content? Absolutely not. But you're weighing the costs of completing this assignment: the effort is probably more than it's worth, it's going to take way too much time that you could be spending on other assignments, and the emotional cost will be high, too—you hate math and know that the whole experience will be frustrating and you're not sure you will be able to understand the assignment in the first place. Can generative AI help? Check out this example of using a chatbot as a companion tutor to help you through a stats assignment:

[AI Chatbot Example: Personalized Stats Tutor](#)

How will AI hinder?

Anything that interferes with the motivation cycle described above can potentially hinder your motivation for learning. You may also be surprised to know that if something is too easy, in other words has no cost associated with it, you will likely have no interest in the task either. If you let generative AI do an assignment for you rather than with you, you risk lowering your motivation for continuing to learn. As mentioned above, feeling successful with learning will increase your motivation to continue learning, but if you don't give yourself an opportunity to be successful, you will miss out on this spark.

Memory and Knowledge

What is it and how does it work?

The goal of learning is to distil new knowledge and skills from our experiences to such a level that we can then apply them in other ways. In order to do this, we need to form the memory, remember and use knowledge or skills at the right time, and be able to store these memories for long-term use. This section of the chapter breaks down each of these three steps with examples that you may see in your own learning.

Forming Memories. Forming memories happens when we have experiences that we process in some way. If you want to remember something, it will be important to first pay attention to it, then be sure to process it deeply so that the memory is formed. This is called encoding, and it actually changes your brain. Each time a memory is formed, new connections are made between brain cells. In fact, all of your memories are really just electrical signals moving throughout your brain with unique collections of brain cells activated.

Processing can happen in several ways with the most effective being thinking through how the new idea fits into what you already know. After all, “memory is the residue of thought” (Willingham, 2009, p. 54). If you are presented with new information that you cannot relate to in any way, you will likely not remember it. In this case, you can try using a metaphor that reminds you of something you do know well so you can use that structure to help build memories of the new concept.

When I mentioned the electrical signals moving throughout your brain, did you picture it? Try picturing it now. Imagine the idea of a new connection being formed between two brain cells to represent learning this concept. You can use the metaphor of an anchor and a boat connected by a chain. The anchor at the bottom of the ocean represents the knowledge you already have, like knowing that the brain is made up of clusters of little cells, while the boat is the new information about forming connections between cells to form memories. Now, imagine a bolt of electricity moving from the anchor to the boat and back again. That is your new memory of how learning happens.

If you do have some background information about what is being taught in class, then use that to help you understand the new information. Think about how it connects or contrasts. If the learning experience is connected to a strong emotion or sensory stimulus, then that helps to more deeply encode the memory.

Memory Retrieval. Once you have formed the memory, you have to be able to recall it when needed. Especially when it is time to take the test. Remember how I suggested that you try to think about new information in terms of what you already know? These can be cues to help trigger your memory. If you think about a memorable experience that you can relate in some way to the new information you are learning, then thinking about that experience can help you to recall the new information when you need it. Perhaps you are learning about the

immune system in your biology class, and you are finding it difficult to remember how antibiotics interact with the cells. You remember how tense you felt watching the season finale of the Last Kingdom. Attacks were coming at Uthred's castle from all sides. How did he defend himself? Use this metaphor to help you to understand and remember how pathogens invade the body, the components of the immune system, and their functions. Then, when it's time to remember the role of antibiotics in the next class discussion, you can remember the Danish army coming to the rescue in the battle against the Scots.

Every time you recall a memory, those connections between the cells get stronger, making it easier to remember in the future. Think of it like first tying a thread from the anchor to the boat, then each time the bolt of electricity runs between them, signifying the recall of that memory, the thread becomes thicker until it becomes a rope, and eventually a chain. If you can recall content without any cues or hints, then that makes the memory even stronger. This is difficult to do, but struggling during encoding and retrieval is actually good for you as it makes for stronger memory traces.

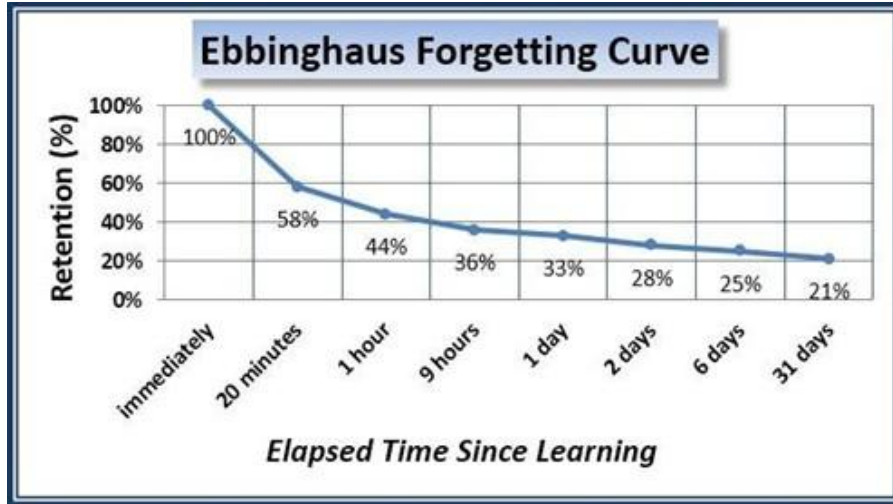
Memory Storage. It's the beginning of the semester and you have just learned a new concept in your introduction to economics class: price and quantity controls. You think you have a good grasp on it now, but what happens in 6 weeks when it's time for the midterm exam? Will you remember it well enough to answer questions correctly? Will you remember it well enough to be able to discuss the concept in an essay? Getting the information in your brain and out again is important for learning, but for the information to really be useful, you have to be able to store it for the long term.

One of the best ways to store information in your mind is to access it at regular intervals. If you have to struggle to remember the information, even better! Desirable difficulties like this can improve learning. While you are asleep at night, your brain begins to sift through everything it has experienced that day and in recent days, looking for connections to what you already know and trying to decide if it is worth keeping or getting rid of. There is only so much room in your skull for all of those new connections to form, so part of the maintenance of your brain each night while you sleep is to trim the connections that are not needed and clean out any other brain refuse. If you spend six weeks without thinking about price and quantity controls, your brain will clean house and that memory will likely be lost or much more difficult to retrieve. Research suggests that you should revisit this information at least 10-20% of the amount of time before you will be tested (Carpenter et al., 2012). If the midterm is in 6 weeks, then you should add a note to your calendar somewhere between six and twelve days from now to study that concept again. This will provide you with a small but noticeable boost in remembering the information.

If you really want to improve storage, you can use the results of an interesting experiment conducted over 100 years ago (Murre & Dros, 2015). Herman Ebbinghaus taught himself lists of nonsense words, testing himself on his ability to recall them after increasing periods of time. Unsurprisingly, the longer the gap before he tried to recall the list, the less he could remember. You can see the results in Figure 2.

Figure 2

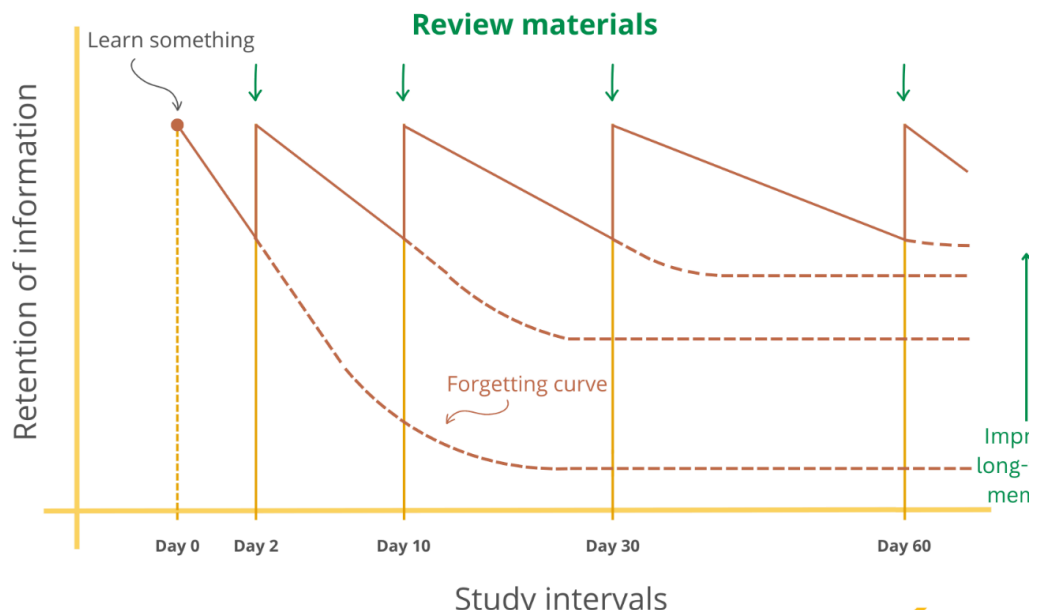
Ebbinghaus Forgetting Curve



Fortunately, Ebbinghaus tried recalling some of the lists multiple times and found that the curve became less steep with additional efforts to recall the words until it almost disappeared. This proved that actively recalling information strengthens the memory, especially when it is spaced to occur just before the information would otherwise be forgotten. A lot of research has been conducted on spaced studying since then, and some scientists have even developed a formula to predict an optimal study schedule to retain new knowledge (Pashler et al., 2009). You can see a sample study schedule in Figure 3.

Figure 3

Forgetting Curve Modified by Spaced Recall



A word about the word “review”. This does not mean to just look at the same material again. You have probably been taught to highlight as you are reading and to re-read your notes to study. You might be surprised to find that these techniques are generally ineffective (Dunlosky et al., 2013; Leonard et al., 2021). Instead of “review”, consider “retrieve”. The more time you spend effortfully trying to remember or retrieve knowledge, the better you will remember it in the long run.

A similar process happens in your brain when you are learning a skill, whether it be mental or physical. Building the memory requires connecting the skill to one you already have, and instead of just trying to remember the skill, you actually have to use the skill. In other words, practice, practice, practice. The plus side is that these procedural memories stay in your brain for most of your life, and often just need a little brushing up when they haven’t been used for a while.

How can AI help?

Now that you know how memories are formed, let’s look at how generative AI can help in this process. You can use AI tools to assist with forming the memories, retrieving the memories, and improving the storage of memories. Here are some examples of each:

Forming Memories: You are taking Introduction to Biology and are learning the parts of the cell. All of the parts look like aliens, they have long difficult-to-pronounce names, and you’re not quite sure why you even need to learn this! Remember what we said about improving encoding? You can use generative AI to request metaphors to help you understand this foreign content, elicit emotional reasons for learning the content, and give you ideas for learning the parts of the cell through multiple sensory experiences. Here is an example:

[AI Chatbot Example: Forming Memories](#)

Retrieving Memories: You have an essay to write for a class, but you are very anxious because you “are not a good writer”. You feel completely comfortable talking about the topic, but just freeze up when it is time to put thoughts on paper. While grammar and mechanics are included on the grading rubric for the essay, the purpose of the paper is not to demonstrate your writing ability, but to demonstrate your ability to analyze the topic. Here is an example of a conversation with Claude that shows how this tool can be used to help you organize your thoughts and generate content to help you write the essay that says what is really in your mind.

[AI Chatbot Example: Writing an Essay](#)

Improving Memory Storage: The memory that is stored is only as good as the one that was initially formed and then strengthened with recall. Instead of just reading a chapter multiple times or skimming it again before the exam, make sure you understand what you are reading first, and then set up a schedule of spaced retrieval to help you retain the information over time. Here is an example of a conversation with Claude that shows how you can improve the knowledge formation and retention so that the information stays in your memory until the exam.

[AI Chatbot Example: Remember Chapter Reading](#)

How will AI hinder?

Anything that interferes with or disrupts the memory formation, retrieval, and storage system described above will lead to forgetting or more difficulty in recalling and using information you have learned. It is so easy to cut corners with AI, which can save you time and effort that you can devote to other endeavors, but you don't want to cheat yourself out of the learning experience. If you are learning a skill, like editing a paper in your English class, don't let AI do the work for you. Do the editing yourself first to practice the skill, then you can ask ChatGPT to edit the document to check your work.

Suppose your professor assigns some dense research articles for you to read for homework. It would be so much easier to just upload the paper to Claude and ask for a summary, as described above. However, you will be missing out on a lot of the thinking that needs to happen for the memories to be formed. A better idea is to ask Claude for the summary and some things to think about as you read the article, and then read the article yourself. You'll actually find that it is easier to understand once you have read the simpler summary.

Solving the Problem

Martina used ChatGPT to write the essay on the importance of women in government because she just had no interest in the topic and had many other assignments due that week, too. Martina could have had a conversation with ChatGPT, Claude, Gemini, Co-Pilot, or any of the other generative AI chatbots to help her see why writing the essay was relevant to what matters in her own life. According to the Situated Expectancy Value theory of motivation, Martina did not value the task because she was not intrinsically interested, did not think it was useful, and thought the effort and opportunity cost was too high because it would keep her from completing the other assignments for her other classes. A conversation with an AI chatbot could have helped to increase her interest, find value in the assignment, and help make the process easier by helping her to organize her thoughts and provide feedback on drafts of her essay.

Greg used Co-Pilot to write the essay for a different reason: he had estimated low attainment value and high emotional cost for completing the essay assignment because of his perceived writing ability. He had thoughts about women in American government, but he just didn't know how to organize them in a way that expressed what he was trying to say. Instead of asking Co-Pilot to write the essay for him, he could have used the tool to help him write the essay as described in the example above.

Louisa did not turn in the essay at all because of challenges with balancing work, family, and school, a common barrier for nontraditional learners in higher education. She had done the readings and outlined her essay, but she just didn't have the time to actually write the essay. A generative AI chatbot could have been her companion during this process to speed up the process in her limited available time. Louisa could have used the speech to text feature on her ChatGPT app to dictate her thoughts, provided the outline to the chatbot, then asked the tool to help her edit the dictated draft. This would give Louisa a draft to read over and make adjustments to in order to ensure that her thoughts on the topic were well represented.

Dr. Vasquez is right to be concerned about how her students are and are not using generative AI in their learning. Without guidance, many students are unsure about when it is okay to use these chatbots, while others may use them to save time because they think they won't get caught. Understanding the learning process can be helpful in identifying appropriate uses of these tools when completing learning tasks, whether graded or not. An [AI policy statement](#) like the one created by Dr. Lorien Lake-Correl and Dr. Torry Trust that

outlines specific use cases for generative AI based on the learning process would be helpful for her students.

Discussion Questions

1. Use the Situated Expectancy Value Theory to describe your motivation for an assignment you recently completed or have coming up. In the areas that detract from your motivation, how could you use a generative AI tool to help you increase your motivation?
2. Consider the memory formation, retrieval, and storage process described above. Use this process to describe something that you learned last year. How could a generative AI tool be used to improve this process?
3. Even if you are using generative AI in a way that helps and does not hinder your learning, there may still be other ethical issues to consider. What might some of these be?

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Will Robots Replace Us?

Understanding the Instructor Perspective on Generative Artificial Intelligence

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By Idaho OPAL

Learning Outcomes

After reading this chapter, students will be able to

- Understand the educator perspective on generative AI use in college courses.
- Appreciate how educators and instructional designers are using generative AI.
- Learn how to create acknowledgement statements and track version histories for AI use in academic assignments.
- Develop strategies for communicating with instructors about AI use.

Introduction

Roberto has always been a straight A student. He is planning to apply to medical school, so his learning is personally important to him. However, writing has never been his favorite subject. Roberto has heard of generative AI tools like ChatGPT, but he does not feel like using the tools is ethical, and after a few half-hearted attempts at prompting, he is not even sure that they are useful. Besides, he has developed a unique essay drafting process over the years that really works for him. To overcome writer's block, he often starts his papers by dictating his thoughts about a topic into a talk-to-text program. He then adds sources, edits and organizes, and finally, he uses Grammarly as a tool to check his grammar and syntax before submitting the final paper.

For an ethics course, Roberto is assigned to write a paper applying two ethical theories to a problem and explaining his personal stance on the issue. He chooses to apply utilitarianism and deontology to the problem of

whether we should eat meat. Roberto follows his normal writing process. He reads the assigned materials, chooses quotes to support his points, and decides on a stance. Then he dictates his ideas into the Notes app on his phone to create a very rough draft of the assignment. After adding the quotes, editing and revising his text, organizing his information, formatting his paper in APA style, and running it through Grammarly for a final check, Roberto feels confident that he has met the assignment requirements. He submits the paper.

The next morning, Roberto receives an email from his instructor accusing him of plagiarism. The email states that the instructor has given him a 0 for unauthorized use of generative AI. Roberto is confused. He has not plagiarized his paper. The ideas and labor are his own. He has used this same process in high school and college papers for years, and he uses Grammarly because previous instructors have recommended it. He checks the instructor's syllabus for information about academic integrity and the use of generative AI, and he does not find any information there. How should Roberto respond to this accusation? Why does his instructor think he has used ChatGPT when he hasn't?

If you're a college student, you probably are at least somewhat familiar with generative AI tools. First introduced in November 2022, Open AI's ChatGPT and its rivals such as Google Gemini, Microsoft Copilot, and Anthropic's Claude quickly changed the landscape for educators and students alike. Students must navigate a wide range of policies and stances from their instructors, from those who embrace AI tools to those who prohibit any use of AI in the college classroom. Institutions often lack clear academic integrity policies to address the use of AI, and instructors do not always have syllabus policies that explain the acceptable uses of AI in their classes.

As educators, we believe that most students don't want to cheat. But many are confused about these tools and how they can be useful—and harmful—in education. In this chapter, our goal as educators and instructional designers is to help you understand how your teachers are also grappling with this new technology and to give you some practical strategies for addressing challenges and differences around the use of generative artificial intelligence when you encounter them.

Why Your Teachers Are Worried: AI as a Disruptive Technology

With all the benefits provided by artificial intelligence to students, educators, administrators, and workers, you might ask “Why are my instructors worried about students using generative AI tools for educational purposes? After all, they could (and should) be using it in their own work!”

The answer lies in a concept called “best practices.” You may have heard it referenced in theoretical articles or introductory materials for your field. This phrase refers to the commonly accepted procedures, theories, and

paradigms in a field. All projects, actions, and workstyles are compared to these ideals (Alyahyan & Düşteğör, 2020). What many people seem to forget, however, is that like all ideals, human agents often fall short of best practices in many ways. Additionally, best practices are frequently created for a person's present situation, or they represent the way that things have been for a long time. In other words, they are related to the average situation, abilities, and priorities of people in a particular field. Any changes, such as revolutionary technologies like generative AI, render some of these best practices and ideal circumstances inadequate or even impossible. However, some best practices or foundational theories can be easily adapted or applied to changes. These models and theories describe the necessary *elements* of a situation, not necessarily the exact manner in which these elements must be *present*

Not all of your educators are worried about generative AI, but some are very concerned. This is because they view AI as undermining the best practices followed by educators and students for years. In other words, they view generative AI as a “disruptive” technology. A disruptive technology is one that *at least* significantly alters a long-held perspective or way of working. There is a chance that this disruption could be larger or smaller than expected, and if it is sufficiently large, the new technology could result in a complete shift in the economy of a particular field. An example of this seismic shift is reflected in an argument that “AI will replace teachers because it is more expensive to hire a human teacher than to subscribe to an AI tool,” or “Students will only use AI to cheat on assignments, and so we must completely change all of our assignments or our courses will be worthless.”

There are four main perspectives held by educators regarding generative AI. These perspectives are similar to initial viewpoints about almost every new technology. Also, virtually every field has analogous fears to these regarding generative AI and other technologies. These perspectives can be summarized as follows:

1. Fear that student use of generative AI tools such as ChatGPT primarily creates new forms of preexisting unethical practices (for example, plagiarism).
2. Fear that generative AI tools undermine systems and norms of online learning.
3. Confidence that students want to use generative AI tools in effective and constructive ways.
4. Confidence that educator use of generative AI tools results in innovative products and efficient workflows to enhance instructional design, implementation, and assessment.

In this chapter, we are focused on helping students rather than reassuring faculty, so we will focus our comments on the student perspectives reflected in this list. The chapter on the faculty perspective will cover the second and fourth ideas.

Instructor Fears about Unethical Student Use of Generative AI Tools

Let's make one thing clear: There are numerous examples of students who have used generative AI ethically in classroom settings and for completing assessments. Many faculty at our institutions have worked with students to create an acceptable use policy for generative AI in their courses. Students and instructors have held themselves accountable to these agreements, learning together how to incorporate generative AI tools to augment human intelligence.

For example, where previously students might have been limited by time and resource constraints to create a simple web page to demonstrate a skill, they can now create a multi-page website using templates and other AI-generated resources. Generation of page templates, images, landing page material, and other digital artifacts requires a knowledge of prompt engineering, which is how we interact with large language models like ChatGPT to produce content. Prompt engineering is a skill that requires critical thinking, problem formulation, and a knowledge of the generative AI tools that are most efficient and appropriate for the content they want to create.

However, in part because not all faculty understand how generative AI tools work, many educators are issuing chilling warnings to students prohibiting the use of generative AI tools of any kind. While these instructors are limiting their students' access to potential study and creative aids, instructors do have the right to set these policies for their classrooms. Unfortunately, some educators like Roberto's teacher take their zeal for "traditional" education a step too far and paradoxically turn to AI tools such as GPT Zero (or even ChatGPT!) to "detect" whether or not a student has used generative AI for an assignment. Around 95% of detectors are meant to discern the origin of text, but there are an increasing number of AI-image detectors as well.

If using AI-based detectors to "detect" AI-generated work seems hypocritical, you're right. Educators who demand that their students refrain from using generative artificial intelligence should also refrain from using it to assess their students' work. Furthermore, much of the fear regarding generative AI use by students is based on the assumption that students will not use it ethically or effectively. If educators believe in the reports created by these "detectors," they are not using these "tools" ethically or effectively. They are putting faith in the "determinations" of artificial intelligence.

Several news articles have highlighted stories of students who were [falsely accused](#) of using generative AI in their assignments. Later, we learned that the charges were spurious. In the early days of generative AI, educators sometimes accused entire classes of using generative AI based solely on the claims of AI tools, such as the infamous case of the [Texas A&M professor](#) who asked ChatGPT whether his students had cheated. False claims of intellectual dishonesty using AI are disproportionately initiated against English language learners, students whose prose is overly technical, and students whose speaking and writing voice are either outside of the norm or who adhere too closely to it. More than once, each of us has created reports based on our personal writing and received a 100% "AI-generated" score. In other words, we are sympathetic with Roberto and students like him.

In our view, the solution is not to rely on faulty plagiarism checkers to detect generative AI use. Instead, both students and faculty who use generative AI should be transparent about their use of AI up front. Preferably, this should happen through citations and acknowledgements. We also recommend that you track your [version history](#) for every document you write for a class, especially if your instructor asks you to.

What's In Your Syllabus?

To better appreciate how your instructors' attitudes may affect your education, let's take a closer look at how the faculty concerns we previously identified may have shown up in your course syllabus. As we mentioned earlier, there's a wide range of approaches to how students may use generative AI in college classrooms. Here are three examples of syllabus policies from Professor Lance Eaton's crowdsourced [syllabus policy](#) document that represent the most common approaches: All, some, or none.

Any use of generative AI tools is allowed:

1. In this case from Wharton School of Business, Professor Ethan Mollick allows all uses of generative AI and even requires it for some assignments:

I expect you to use AI (ChatGPT and image generation tools, at a minimum), in this class. In fact, some assignments will require it. Learning to use AI is an emerging skill, and I provide tutorials in Canvas about how to use them. I am happy to meet and help with these tools during office hours or after class.

- If you provide minimum effort prompts, you will get low quality results. You will need to refine your prompts in order to get good outcomes. This will take work.
- Don't trust anything it says. If it gives you a number or fact, assume it is wrong unless you either know the answer or can check in with another source. You will be responsible for any errors or omissions provided by the tool. It works best for topics you understand.
- AI is a tool, but one that you need to acknowledge using. Please include a paragraph at the end of any assignment that uses AI explaining what you used the AI for and what prompts you used to get the results. Failure to do so is in violation of the academic honesty policies.
- Be thoughtful about when this tool is useful. Don't use it if it isn't appropriate for the case or circumstance." –Ethan Mollick, Wharton University, business courses

When you read through this syllabus policy, does it make you feel excited or concerned? We have found that some students are actually concerned about using generative AI, either because they aren't sure how to use it or because they are afraid they will be accused of cheating. Remember that most college classes that allow any use of AI also ask students to cite and

document their use. Ethan Mollick has been on the forefront of considering how students can use these tools to improve their learning and assignments. If your syllabus has a policy like this one, you should definitely follow up with your professor any time you have questions or concerns about how to use AI.

Some use of generative AI is allowed under specific circumstances:

2. In this example from Professor Liza Long at the College of Western Idaho, you can see how some AI use is allowed and even encouraged, but other uses are not allowed:

I encourage students to use generative AI tools for the following

types of tasks:

- Outlining content or generating ideas.
- Providing background knowledge (with the understanding that ChatGPT and other generative AI programs are sometimes wrong—Wikipedia is a better resource for background information right now)
- Checking essay drafts for organization, grammar, and syntax.

We will use generative AI occasionally for class activities.

If you choose to use generative AI tools for your essays, you **MUST**

do the following:

- Cite the AI tool (see this resource for more information on how to do this).
- Write a brief acknowledgment statement at the end of your work explaining how and why you used an AI tool. Include the prompts you used and links (when available).
- I reserve the right based on my assessment of your assignment to require you to revise and resubmit all or parts of the assignment if I conclude that you have not used AI tools appropriately.

If I suspect that you have used generative AI tools, and you have not included the required citation and acknowledgement statement, then you will need to meet with me either in person or through Zoom to talk about the assignment. This conversation will include knowledge checks for course content.—Liza Long, College of Western Idaho, English 102

This “middle of the road” approach is common in courses that emphasize writing. It allows students to use generative AI in certain circumstances but wants students to produce their final product. Like the first example, this example requires the student to cite and acknowledge AI use. If you have questions about what is and isn’t allowed, you should work with your instructor.

Suggestions for Acknowledging Use of AI

With both the first and the second examples, it's a good idea to get in the habit of citing and acknowledging your use of generative AI tools. Before you use any tool, ask yourself this question: "Why and how am I using generative AI?" Reflecting on how and why you are using generative AI can help you to ensure that you are not cheating yourself of important learning opportunities when using these tools.

Monash University provides helpful [recommendations](#) for how to acknowledge when and how you've used generated material as part of an assignment or project. If you decide to use generative artificial intelligence such as ChatGPT for an assignment, it's a best practice to include a statement that does the following:

- Provides a written acknowledgment of the use of generative artificial intelligence.
- Specifies which technology was used.
- Includes explicit descriptions of how the information was generated.
- Identifies the prompts used.
- Explains how the output was used in your work.

The format Monash University provides is also helpful. Students may include this information either in a cover letter or in an appendix to the submitted work.

I acknowledge the use of [insert AI system(s) and link] to [specific use of generative artificial intelligence]. The prompts used include [list of prompts]. The output from these prompts was used to [explain use].

Academic style guides such as APA already include guidelines for including appendices after essays and reports. Review Purdue Owl's entry on [Footnotes and Appendices](#) for help.

For more information about how to cite generative AI tools, we recommend going to the style guide's official website (e.g., APA, MLA, Chicago, etc.). Since this field is rapidly evolving, checking the website will provide you with the most current guidelines.

No Use of Generative AI Is Allowed

3. A final common approach is to prohibit the use of generative AI tools entirely. Here is an example from Professor Tara Perrin, an Instructional Design teacher at Middle Tennessee State University: Use of an AI Generator such as ChatGPT, MidJourney, DALL-E, etc. is explicitly prohibited unless otherwise noted by the instructor. The information derived from these tools is based on previously published materials. Therefore, using these tools without proper citation constitutes plagiarism. Additionally, be aware that the information derived from these tools is often inaccurate or incomplete. It's imperative that all work submitted should be your own. Any assignment that is found to have been plagiarized or to have used unauthorized AI tools may receive a

zero and / or be reported for academic misconduct.–Tara Perrin,
Middle Tennessee State University, Instructional Design

If Roberto's instructor had included a syllabus policy, this final example probably most closely aligns with the instructor's attitude toward generative artificial intelligence. Students may wonder exactly how instructors will enforce a policy like this one, and they should. As we noted previously, generative AI detectors are not accurate and notoriously and unfairly [target](#) English language learners. But this syllabus policy brings up an important ethical point for instructors who may be opposed to any use of AI tools in the classroom: These tools were created from human labor without proper attribution. The main AI companies are currently defending [lawsuits](#) for copyright violations.

There are plenty of ethical concerns associated with generative artificial intelligence, and we have found that students who are educated about these concerns sometimes prefer not to use or interact with generative AI tools. Maybe you are one of those students. We will explore this and other challenging scenarios later in the chapter, but first, let's consider the opposite approach. Why are some instructors like Ethan Mollick above embracing generative artificial intelligence?

The “Postplagiarism” World

While some faculty are still responding (or not responding) to generative AI tools by hoping they'll go away, others, ourselves included, believe that with the advent of generative artificial intelligence, we are now living in what some may call a "postplagiarism" world. We want to share this perspective with you so you'll understand how some instructors are increasingly integrating AI into their classrooms.

An increasing number of professionals are supporting the idea that using copyrighted materials to train generative AI tools falls under the Fair Use doctrine (see, for example, Eaton, S., E.,, 2023). *Postplagiarism* is a movement promoting the idea that in our society, using copyrighted works to create new things is not unethical. This concept offers a new interpretation of the saying that "imitation is the sincerest form of flattery."

Postplagiarism, combined with the idea of "non-consumptive use" promoted by those who argue the Fair Use doctrine defense, suggests that even if a user reproduces the ideas of another work more or less verbatim, the dissemination of an idea takes precedence over the original authorship of specific words or characters. In this view, what truly matters is productivity and the spread of ideas.

You may have encountered open education resources (OER) in your courses. Many practitioners in the Open Education movement align with postplagiarism ideology. "Open EdTech" or "Neo-EdTech" combine open pedagogy (a teaching approach that incorporates OER) with the principles of experiential learning.

The accessibility of AI tools and their products, even with basic technological knowledge, opens up new possibilities for students. In this paradigm, students can potentially create their own AI tools—essentially

developing their *own educational technology*. Ideally, students will learn course material and then input this knowledge (along with relevant sources) into their tools. These student-created tools and products can then be shared with peers, embodying the spirit of open access and open pedagogy.

This emerging landscape presents exciting opportunities for collaborative learning and knowledge creation. As AI becomes more integrated into educational settings, students may find themselves not just consuming information, but actively participating in the creation and dissemination of educational content. While this brave new world of education offers promising possibilities, it also raises important questions about the nature of learning, authorship, and academic integrity that we must continue to explore and address.

As you navigate your academic journey in this evolving context, it's crucial to engage critically with these new tools and ideas, always maintaining open communication with your instructors about your methods and thought processes. The goal is not to replace traditional learning with AI, but to harness these new technologies to enhance and deepen your educational experience.

Pedagogical Theory and Best Practices in Instructional Design

Let's return to the concept of best practices we discussed at the beginning of this chapter. There are two main educational and instructional design theories that can easily be applied to education with generative AI tools. They are [Gagne's Nine Events of Instruction](#) and [Bloom's Taxonomy](#).

Robert Gagne, an educational technologist who created training videos for both military groups and formal education institutions, was one of the foremost twentieth-century researchers who investigated what people need from their teachers and environments to be able to learn. Through a rigorous process and years of experience, he developed a list of nine events that all educators need to take their students through to provide a complete learning experience:

1. Gaining attention
2. Informing about the course objectives
3. Stimulating recall of prior learning
4. Presenting stimuli for future learning
5. Providing learning guidance
6. Eliciting appropriate performance
7. Providing feedback
8. Assessing performance
9. Enhancing retention and transfer (Gagne, 1985, pp. 243-256)

All of these events and actions can be performed just as well with generative artificial intelligence as they can without these tools. While AI is “disruptive” in that it provides new ways for learning, it is not “disruptive” in that it completely negates all of our previous knowledge about education and how people learn. In fact, generative AI tools may enable more

effective learning at the highest level of Bloom's Taxonomy by fostering open pedagogy and the creation of new materials, which demonstrates the most in-depth knowledge of a topic or skill.

How Instructors Are Using AI

Now that we've covered some theoretical and pedagogical approaches to generative AI, let's look at how some instructors are actually using generative artificial intelligence in the classroom and beyond. According to a 2024 poll, [72%](#) of faculty are using generative AI tools in their classrooms (Ruediger et al., 2024). The examples below are certainly not all-inclusive, but they represent some common ways instructors are experimenting with generative AI tools.

Designing Assessments

As we saw above from the syllabus policies we reviewed, some instructors are embracing AI to design assignments. For example, in her first-year writing courses, Liza Long incorporates generative AI tools to provide formative feedback on students' brief writing assignments. Students interact with AI tools weekly to refine and narrow their research questions, improve their essay organization, brainstorm creative hooks and titles for their papers, or clearly define their target audience. In a literature class she teaches, she co-wrote the textbook, [Critical Worlds](#), using ChatGPT 3.5 so that she could evaluate how well the tool worked for literary analysis. In this class, students now use a generative AI tool to "write" their rough drafts, then critique the AI output to improve those drafts and ensure that they are factually correct.

Scaffolding Assignments with AI Support

Joel Gladd, another English instructor, uses generative AI tools to provide scaffolding and support for his students. For example, he has created custom GPTs to help students interact with and better understand difficult reading assignments.

Assessing Assignments

An obvious use case for professors is to have generative AI tools help with grading tasks. But is this ethical? Long does not use generative AI tools for summative (final) assessments, and she has ethical concerns about feeding student work into generative AI models that are training on the data we provide. For Long, the concept of informed consent is critical. The formative assessment tool she uses does not provide any student data to training models. When she uses student work to demonstrate these tools, she obtains the student's consent first.

What do you think? If you use generative AI to assist with assignments, is it ethically permissible for instructors to use these tools to assist with grading? We'll discuss this question at greater length later in the chapter.

“Boring” Writing: Business Correspondence, Recommendation Letters, Emails

One of the least ethically murky areas for generative AI use for most college instructors is for “template” writing such as recommendation letters and email drafts or business correspondence. This is the kind of writing that does not require much original thought or input. Drafts can be easily customized to the specific audience and purpose, saving time.

Research and Scholarship

Just as students have faced some pushback for using generative AI tools in their writing, instructors are also experiencing challenges with generative AI tools in research and scholarship. A 2023 paper found that “an AI language model can create a highly convincing fraudulent article that resembled a genuine scientific paper in terms of word usage, sentence structure, and overall composition” (Májovský et al., 2023). The pressures on scholars to publish research likely contributes to the use of generative AI tools, just as pressures on students to be successful may incentivize unethical AI use. However, there are some useful applications of generative AI in research for both students and professors. AI can assist with data analysis, for example, or check a paper to ensure that it is coherent and organized. And tools like Perplexity.ai can help scholars to locate applicable research more quickly than a Google Scholar or library database search can.

How to Have Hard Conversations with Your Teacher

But what happens when you and your teacher don't see eye to eye about the use of generative artificial intelligence? Let's return to Roberto's situation and provide some suggestions for how he can advocate for himself. This section will provide you with specific guidance for navigating situations involving faculty and AI in the classroom. We'll explore three common scenarios: first, when a student is required to use AI in a course but feels uncomfortable doing so; second, when a student wants to use AI as part of their workflow, but the course bans it; and third, when a student is accused of unauthorized AI use. Knowing a little bit about how your instructors are thinking about AI use in their class, as well as some key institutional protocols around academic integrity violations, will help you make more informed choices.

When You Don't Want to Use Generative AI

Some students are rightly uncomfortable with using AI. What should you do if a teacher *requires* it? First, know that AI is a developing technology, and the ways that AI can be implemented (or avoided) in a classroom vary widely. Keep in mind the instructor's intent. AI is increasingly in demand in the workplace; as higher education is increasingly expected to justify how a course fosters “durable skills” that translate to the workplace, AI is going to become one of those bridgeable technologies that will be difficult for faculty

to carve out of their syllabus. Or, your instructor may include AI assignments not to promote using it uncritically, but rather to encourage savvy awareness around its limits and capabilities. If you want to resist or critically engage with AI, for ethical or other reasons, your ethical stance may be perfectly compatible with using it in a controlled environment.

If you want to remain in a section even if it requires using AI, establish a line of communication early on to see if you can complete alternate assignments, such as arguments that engage critically with the exercise and provide explanations for how the technology may be limited or unethical. Faculty who allow opt-out sometimes provide sample chatbot conversations. Ask the faculty member if they would be able to provide these for you to engage with and reflect on, if you do not want to use the technology yourself.

You should also look for what platform(s) the instructor expects students to use in the course. Does the institution provide safe and secure access to something like Microsoft Co-Pilot or ChatGPT for Enterprise? Are they working with a company that uses the APIs of Anthropic, OpenAI, or another company but within a contained environment that doesn't share your data? If not, the instructor may be requiring you to sign up for a service that violates basic expectations around privacy. If the nature of the course content involves highly personal work, press them on this issue. You can of course find ways to transfer to another section early in the semester, if you feel it's not in your best interest to remain in that section.

When You Want to Use AI, But Your Teacher Doesn't Allow It

Other students have partially or fully integrated AI into their workflows, and this will create some friction with courses that “ban” AI. As faculty, we have been in many departmental meetings in which we discuss how frustrated instructors are that their students seem to be using ChatGPT to complete their discussion forums. Discussion forums, in particular, are infamous assignments that students like to outsource to AI—they seem low stakes, and students who do report using AI to complete them state that they did so because of stress and lack of time (so, time management is a major issue). If you scour subreddits such as [r/chatgpt](#) and [r/college](#), you'll find plenty of instances where students admit this. But, at the same time, many others in those same forums report being accused unfairly, and as faculty, we have all seen this happen.

You can probably appreciate that faculty feel frustrated and insulted when they suspect that students are attempting to pass the course without engaging with content that the faculty have dedicated their lives to learning and teaching. Faculty begin to suspect that every high-performing submission is AI-generated.

If you want to use AI in a course, but the syllabus has a ban, you should seek clarity about what that “ban” means. For example, some instructors may clarify in a writing course syllabus that students should complete their rough drafts unassisted. Faculty do this because they are [tracking research](#) that shows students tend to perform worse over the long-term on a particular skill if they first attempt it with AI assistance and then later do not have access to that technology. In other words, students would have

become more proficient in a particular outcome with no assistance at all. But, with proper scaffolding, students can be expected to learn something unassisted and *then* practice incorporating AI into the workflow. In some courses, this means students start with an unassisted rough draft, receive human feedback, then ask for AI feedback, and finally can use AI to help address the feedback they received. What's important is that students are forced to *make choices* to solve a particular problem, and instructors need to assess those rhetorical moves. Restricting AI use and then allowing it at other times is increasingly common.

Another way to qualify what AI assistance looks like is whether it's upstream or downstream of someone's workflow when completing a task (such as designing an app or writing an essay). Upstream of a rough draft often involves research, note-taking, and brainstorming. Then within each of those stages, a course may have even smaller tasks. At any point, AI can assist. Consider the research stage: there are a slew of research tools now, such as Elicit and Perplexity AI, that leverage LLMs to do "semantic" rather than "keyword" searches. This is an emerging form of research that allows researchers to access archives differently than in the past. Even if your instructor expects you to practice keyword searches, you may want to cross-check with an AI-infused platform to see what you might have missed (and vice versa). Even if a writing course "bans" AI, this upstream usage is likely not within the scope of the ban, but technically it's "using generative AI" to help complete a task.

Downstream of a workflow is where instructors tend to focus—what you actually submit to your LMS (Canvas, Moodle, Blackboard, etc.). It's here that you should pay careful attention to syllabus language around generative AI and what is allowed in submissions. As we explained above, there is a range of AI tolerances in higher education, from highly tolerant to outright bans. A ban often means that when you submit an artifact (an essay, infographic, digital portfolio, etc.), it must be entirely your own, without the assistance of AI (not "generated"). Plugging an outline into ChatGPT and asking for an essay would be an example of a generated essay, even if the initial seed was your own work. Asking ChatGPT to check your spelling and grammar *may or may not* be considered generated text, depending on the syllabus language.

The categories of "assisted" or "unassisted" submissions are becoming complicated. What's odd about blanket bans is that they're impossible to enforce consistently. A student can ask ChatGPT to brainstorm topics, outline their essay, create a very rough draft, and then completely rewrite it in their own words and infused with their own ideas and research, and the submitted text would not technically be "generated" in the way the syllabus language intended, even if the final product represents a mesh of human and machine labor. Ethan Mollick calls this mix of human and machine labor a "centaur," a workflow routine that increasingly explains how many students, faculty, and workers use these technologies. Technically the draft adheres to the expectation of "non-generated text." However, you should still have a good faith conversation with the instructor about your workflow to establish trust and clarity.

When You Are Unfairly Accused of Unauthorized AI Use

What happens if you're unfairly accused of using generative AI, like Roberto? Unfortunately, as of this writing in 2024, such accusations are extremely common. It will be helpful to know that a high percentage of faculty are just trying to figure out this technology themselves. They're learners, just like you, and they're applying an older framework (plagiarism) to a new technology (generative AI). Most higher education institutions did not update their academic integrity policies to include artificial intelligence until 2023. Until most faculty have fully wrapped their heads around how to teach and assess in a way that "fits" with how students are engaging with a course, it will help to keep that in mind.

So how can you deal with an accusation like this? We have seen that when a student is accused and receives a zero for an assignment (whether it's a low stakes discussion board or a higher stakes exam or paper), it's extremely important to continue the conversation and ask to meet with the faculty member to demonstrate your proficiency. Start there. Rather than lashing out in anger (even though your anger is understandable), show them you're eager to demonstrate that you're engaging with the course content. Set up a Zoom meeting or, better, visit them in person, as soon after the accusation as you can.

Second, know your institution's protocols around academic integrity violations. This is extremely important. If a student receives a "0" for an assignment, and the instructor believes it's AI-generated text, the instructor needs to follow institutional protocol by notifying academic integrity officers, usually by submitting an academic integrity violation report. Students can challenge this, and you should, if it comes to that—but first, start with a sincere and eager communication with the instructor. When reporting a student, faculty must be able to demonstrate "with reasonable certainty" that the student has committed a violation. It doesn't have to be 100% certainty, but rather something they could argue successfully in an academic integrity hearing.

When you meet with the instructor, ask how they determined your submission was AI-generated. As mentioned above, AI-checkers are highly flawed. AI cannot be used to detect AI with certainty. If communication breaks down, and you challenge the grade, make sure you are aware of institutional appeal deadlines (usually available in your college catalog). Do not hesitate to appeal the grade if your instructor is unwilling to work with you after that initial meeting.

Finally, what this entire scenario demonstrates is that it's often helpful to leave a digital trail of your work. As we mentioned previously, tracking your version history can be one way to do this. Google Docs and Microsoft Word have histories with timestamps that show the progress of your work. If you're particularly concerned, you can download Chrome extensions, like [Cursive](#), that record your labor in a more granular way. It's a good practice to write first in Word or Google Docs, etc., and then copy your work into the LMS. That way, you can prove your labor.

If you've been accused of using AI and you *did*, keep in mind the same steps provided above regarding unfair accusations (reach out to demonstrate your engagement, know the academic integrity reporting process, etc.), but the best thing to do is simply to ask for an opportunity to redo the assignment or complete an oral assessment. Know that most faculty truly do want to work with you, and if they see a good faith effort to re-engage, they usually will accept a redo or alternate assessment.

Conclusion

As we've explored throughout this chapter, the integration of generative artificial intelligence in higher education classrooms presents both exciting opportunities and complex challenges for students and instructors alike. As Roberto's dilemma demonstrates, it's clear that navigating the use of AI in academic settings requires thoughtful consideration and open communication.

Let's summarize the key themes we've covered:

1. **Instructor Perspectives:** We've seen that faculty views on AI range from enthusiastic adoption to cautious skepticism to outright denial. Understanding these perspectives can help you navigate your courses more effectively.
2. **Ethical Considerations:** The emergence of AI in education has raised important questions about academic integrity, plagiarism, and the nature of original work. As we move into a "postplagiarism" world, it's crucial to engage critically with these ethical dimensions.
3. **Practical Applications:** We've explored how both students and instructors are using AI tools for various tasks, from research and writing assistance to assessment design.
4. **Policy Variations:** As demonstrated by the syllabus examples, policies on AI use can vary widely between courses and institutions. Being aware of these differences is essential for academic success.
5. **Communication Strategies:** We've discussed how to approach difficult conversations with instructors about AI use, whether you're seeking to use AI in a course that prohibits it or defending yourself against unfair accusations.

As you move forward in your academic journey in this AI-enhanced landscape, keep these key takeaways in mind:

- **Stay Informed about AI and Focus on Your Own Learning:** Keep up with the latest developments in AI and how they're being applied in your field of study while also being mindful that your use of AI enhances rather than replaces your own critical thinking and skill development. Never rely blindly on output from generative artificial intelligence tools.
- **Be Transparent:** When using AI tools, always be upfront about it. Use proper citation and acknowledgment practices. Also, keep records of your work process, including prompts used and how you've incorporated AI-generated content.

- **Communicate Openly:** Familiarize yourself with your institution's and individual instructors' policies on AI use. If you're unsure about AI use in a course, don't hesitate to have a respectful conversation with your instructor.

Remember, the goal of your education is not just to complete assignments, but to develop critical thinking skills, subject expertise, and the ability to navigate complex ethical landscapes. AI tools, when used thoughtfully and ethically, can enhance this process rather than shortcut or subvert it.

As we continue to explore the implications of AI in education, maintaining open dialogue between students and instructors will be crucial. By approaching these tools with a combination of curiosity, critical thinking, and ethical consideration, you can harness the benefits of AI while preserving the integrity and value of your education.

The future of education is being shaped by these technologies, and you have the opportunity to be at the forefront of defining how they're used. Embrace this responsibility with thoughtfulness and integrity, and you'll be well-prepared for the AI-augmented world that awaits at the successful conclusion of your academic studies.

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Validity Issues and Ethics Concerns of AI-Assisted Assessment

*The data collection of this chapter is assisted by ChatGPT 4.0.

Learning Objectives:

1. Provide an overview of AI's role in assessment, emphasizing the importance of validity and ethics in AI-based assessment systems.
2. Explore the concept of validity in AI assessment, including definitions, types, and challenges, with real-world examples and case studies.
3. Investigate possible solutions to the ethical concerns surrounding AI in assessment, covering bias, fairness, privacy, transparency, accountability, and regulatory frameworks.
4. Offer strategies and guidelines to address validity and ethics concerns in AI-based assessment, highlighting collaborative efforts and future trends in the field.

Introduction



Read this article online and discuss this question in the title with your peers.

[Professors are using ChatGPT detector tools to accuse students of cheating. But what if the software is wrong?](#)

Do you ever imagine that one day you could be accused of cheating based on an AI detection tool as a university student?

This nightmare became a reality for several students at UC Davis in 2023. As reported by USA Today, an AI detection tool flagged these students' work as potentially plagiarized, leading to false cheating accusations and significant distress. This incident not only highlights the growing presence of AI in educational assessment but also underscores the critical importance of addressing validity and ethics in these systems.

This story well illustrates the significance of our topic: the validity issues and ethical concerns of human-led AI assessment. Human-led AI assessment is an approach where AI tools assist in evaluating and analyzing data, but the final decisions and interpretations are made by human experts, ensuring that the assessment process remains guided by human judgment and ethical considerations. It is a prime example of how AI, while powerful, can falter in high-stakes environments such as education. The technology, meant to uphold academic integrity, instead created a scenario where its own validity was questioned, and ethical considerations were thrust into the spotlight.

In this chapter, I aim to delve into the intricacies of AI's role in assessment, focusing on the paramount importance of validity and ethics. AI has revolutionized various fields, including education, where it promises efficiency and objectivity. However, as the UC Davis incident illustrates, these systems are not infallible and can lead to significant errors and ethical dilemmas. Through a problem-based approach, I will explore the concepts of validity in AI assessments, investigating definitions, types, and the challenges we face in ensuring that these systems measure what they are supposed to measure accurately and fairly.

Validity in AI assessment is multifaceted, encompassing construct validity, content validity, and criterion validity, among others. Each type presents unique challenges, particularly in the context of AI, where algorithms may misinterpret data or apply inappropriate standards. Real-world examples, such as the UC Davis case, provide a

stark reminder of the consequences of neglecting these validity concerns.

Moreover, the ethical landscape of AI in assessment is fraught with validity issues such as bias, fairness, privacy, transparency, and accountability. The false accusations at UC Davis stem from a lack of transparency and accountability in the AI tool's decision-making process. These ethical concerns must be addressed to build trust and ensure that AI systems in education serve all students equitably. Bias in AI, for instance, can perpetuate existing inequalities, while privacy issues can arise from the extensive data collection required for AI systems to function effectively.

In addressing these concerns, this chapter will offer strategies and guidelines to enhance both the validity and ethics of AI-based assessments. Collaborative efforts between educators, technologists, and policymakers are essential to develop robust frameworks that govern the use of AI in education. Future trends in AI assessment will also be discussed, highlighting the potential for advancements that prioritize ethical considerations and rigorous validation processes.

By starting with the real-world vignette of the UC Davis incident, this chapter aims to engage readers with a tangible example of the significant impact that validity and ethical issues in AI assessment can have on students' lives. Through this lens, I will provide an in-depth exploration of the topic, equipping educators, students, and policymakers with the knowledge and tools to navigate the complex landscape of AI in educational assessment.

New discipline-----The science of evaluation for AI models



What does the science of evaluation for AI aim for?



It is aimed to assess how well AI systems perform tasks they're designed to do.

This discipline is crucial for ensuring that AI technologies are effective, reliable, and ethical in their applications.

Objectives of the Science of Evaluation for AI:

1. Performance Assessment:

- Its primary goal is to evaluate the performance of AI systems in executing their intended tasks. For instance, in healthcare, an AI system designed for diagnosing diseases would be evaluated by comparing its diagnoses against the consensus of expert human practitioners. This involves measuring the accuracy, precision, recall, and F1 score to quantitatively determine the system's performance.

2. Reliability and Fairness:

- Assessing AI's reliability entails examining how consistently the system performs under various conditions. Fairness is another critical factor, ensuring that the AI does not favor any group unfairly and operates equitably across diverse populations.

3. Transparency and Accountability:

- Transparency in AI systems means making the decision-making processes understandable to humans. This involves elucidating how the AI arrives at its conclusions, which is essential for building trust and ensuring accountability.

4. Handling Real-World Situations:

- AI systems must be evaluated for their ability to manage diverse and challenging real-world scenarios. This includes testing their robustness and adaptability to unforeseen situations.



What problems in our learning and life can we use the science of evaluation to investigate?

The science of evaluation for AI is a multidisciplinary field that addresses the complex challenges to ensure that AI systems are trustworthy, ethical, and effective. By focusing on comprehensive

evaluation metrics and methodologies, this discipline aims to enhance the reliability and impact of AI technologies across various domains.



Science of Evaluation for AI addresses the Key Issues such as:

1. Detecting and Combating AI-Generated Disinformation:

- One significant issue is the ability of AI to generate and spread disinformation. Evaluation frameworks must be developed to detect such disinformation and implement strategies to combat it effectively.

2. Evaluation and Measurement Tools for Trustworthy AI:

- Developing tools and methodologies to evaluate AI systems for trustworthiness. This includes metrics and benchmarks that ensure the AI operates as intended and maintains integrity.

3. Streamlining Data Model Creation:

- Utilizing platforms, MLOps systems, and tools to streamline the creation of data models. This is essential for efficient AI development and deployment.

4. Customized Local Models:

- Creating and evaluating customized local models that cater to specific needs and contexts. This involves ensuring these models are optimized and effective for their intended applications.

5. Setting Benchmarks and Managing Risks:

- Establishing benchmarks for AI performance and identifying potential risks. This is crucial for maintaining safety standards and managing the inherent risks associated with AI technologies.

6. AI Safety and Risk Research:

- Conducting research focused on AI safety and risk management. This includes studying potential hazards and developing strategies to mitigate them.

7. Healthcare AI Evaluation:

- Specifically evaluating AI applications in healthcare to ensure they meet the stringent standards required in medical practice. This involves rigorous testing and validation against clinical benchmarks.

8. Optimization of AI Models:

- Continuously improving AI models to enhance their efficiency and effectiveness. This includes fine-tuning algorithms and processes to achieve optimal performance.

9. AI Ethics and Equity:

- Ensuring that AI systems adhere to ethical standards and promote equity. This involves evaluating the ethical implications of AI decisions and their impact on different populations.

10. Leveraging Technological Collaboration for Public Good:

- Promoting collaboration among technologists, policymakers, and other stakeholders to leverage AI for public good. This involves developing policies and frameworks that support the ethical and beneficial use of AI.

Understanding validity issues in AI-assisted Assessment



Validity refers to the degree to which an assessment accurately measures what it is intended to measure. The concept of validity applies to any assessment be it in the context of AI checkers or AI-assisted assessment. In the context of AI-assisted assessment,

ensuring validity is critical to guarantee that the conclusions drawn from the assessment results are accurate and meaningful. There are over 150 types of validity. The following are several common types of validity, each with its own focus and importance:

1. **Construct Validity:** This type assesses whether the tool truly measures the concept it intends to measure. For example, if an AI tool is designed to evaluate critical thinking skills, construct validity would ensure that it accurately captures all dimensions of critical thinking.
2. **Content Validity:** This type examines whether the assessment content covers the entire range of the concept being measured. An AI tool assessing mathematical ability should include a comprehensive set of problems that cover all relevant areas of mathematics.
3. **Criterion Validity:** This type involves comparing the AI assessment results with other established measures or outcomes. For instance, an AI tool's predictions of student performance could be validated by comparing them with actual grades or standardized test scores.
4. **Face Validity:** Though more superficial, face validity considers whether the assessment appears to measure what it is supposed to measure. If the AI tool is user-friendly and intuitively aligned with the assessment goals, it is likely to have high face validity.
5. other types of validity such as _____



Choose one type of validity from above and discuss the relevant validity issues that you are concerned with if **AI-assisted assessment is applied to a course of your majors.**

Challenges and Considerations in Ensuring Validity in AI-Assisted Assessment



To ensure validity in AI-assisted assessments poses several challenges and requires careful consideration of various factors:

1. **Data Quality and Bias:** The accuracy of AI assessments heavily depends on the quality of data used to train the algorithms. Biases in training data can lead to skewed results, affecting the validity of the assessment. Ensuring diverse and representative data sets is crucial to mitigate this issue.
2. **Algorithm Transparency:** The black-box nature of many AI algorithms can obscure how decisions are made, making it difficult to assess their validity. Transparent algorithms that allow stakeholders to understand and verify the decision-making process are essential for maintaining validity.
3. **Dynamic Learning Environments:** Educational settings are dynamic, with constantly evolving curricula and student needs. AI tools must be adaptable and regularly updated to ensure they remain valid and relevant in changing environments.
4. **Contextual Factors:** The context in which an assessment is administered can significantly impact its validity. Factors such as the testing environment, the stakes of the assessment, and individual student differences must be considered when evaluating validity.
5. **Ethical Implications:** Ethical considerations, including fairness, privacy, and accountability, intersect with validity issues. Ensuring that AI assessments do not unfairly disadvantage any group and that students' data are protected is essential for maintaining both ethical standards and validity.



Food for Discussion

- **Debating the Balance:** How can we balance the need for sophisticated AI algorithms with the necessity for transparency and understandability? Should simpler, more interpretable models be preferred over complex, opaque ones?
- **Role of Human Oversight:** What is the appropriate level of human oversight in AI-assisted assessments to ensure validity without undermining the efficiency and objectivity that AI brings?
- **Adapting to Change:** How can AI systems be designed to adapt to the evolving nature of educational environments while

maintaining high validity standards?

- **Mitigating Bias:** What strategies can be implemented to ensure that AI tools are trained on unbiased data and that their application does not perpetuate existing inequalities?
- **Ethical Frameworks:** What ethical frameworks should be established to guide the development and implementation of AI-assisted assessments, ensuring that validity and fairness are upheld?

By understanding and addressing these validity issues, educators, researchers, and policymakers can work towards creating AI-assisted assessment systems that are accurate, reliable, and equitable, ultimately enhancing the educational experience for all students.

Ethics Concerns in AI-Based Assessment

- A. General Ethical Implications of AI-assisted Assessment
- B. Ethical Guidelines for Designing and Implementing HCI of AI-Based Assessment Systems

Real-World Examples and Discussion

Group work: Discuss or debate the relevant validity issues and ethics concerns of human-led AI assessment in these real-world examples. Your discussion can follow three key questions of formative assessment: where we are now? Where we are going? How to get there? (Black & Wiliam, 2009)

1. How can we ensure that AI-based assessment tools are both valid and fair?

Proctorio Controversy: Proctorio, an AI-based proctoring software widely used in educational institutions for remote exams, faced scrutiny over its validity and ethical implications. Students reported instances of racial bias and privacy

concerns, alleging that the software unfairly flagged certain behaviors as cheating based on cultural differences.

2. What are the potential ethical concerns of using AI in assessment according to your observation in your life? and how can they be addressed?

Amazon's Recruiting Tool: In 2018, Amazon scrapped an AI-based recruiting tool after discovering bias against female candidates. The system, trained on resumes submitted over a ten-year period, consistently downgraded resumes containing the word "women's" or from all-female colleges. This incident underscores the ethical considerations in AI-based assessment, emphasizing the need for transparency and accountability in algorithmic decision-making processes.

3. Illustrate with one example from your real-world experience on how bias has manifested in AI-assisted assessment systems, and what steps can be taken to mitigate it?

Bias in Automated Essay Scoring: Automated essay scoring systems, which use AI algorithms to evaluate written responses, have been criticized for perpetuating bias. Research has shown that these systems often favor essays written in a certain style or language, disadvantaging students from diverse backgrounds. Such findings underscore the importance of ongoing validation and refinement of AI-based assessment tools to minimize bias and ensure fairness.

4. What role do you think should you play in managing your use of AI-assisted assessment?

Facial Recognition in Grading: Some universities have experimented with AI-powered facial recognition technology to monitor student engagement and assess their understanding during lectures. However, concerns have been raised regarding the validity of using facial expressions as indicators of comprehension and the potential invasion of

students' privacy. This example illustrates the complexity of integrating AI into educational assessment while upholding ethical standards and ensuring validity.

5. What role do you think should educational institutions play in regulating the use of AI-assisted assessment?

AI in College Admissions: Colleges and universities are increasingly using AI algorithms to assist in the admissions process, raising concerns about fairness and transparency. Critics argue that reliance on AI may exacerbate existing inequalities in access to higher education, as the algorithms could inadvertently favor applicants from privileged backgrounds. This case highlights the ethical dilemmas inherent in using AI to make high-stakes decisions that profoundly impact individuals' lives and futures.

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Williamson, B., & Eynon, R. (2020). Historical threads, missing links, and future directions in AI in education. *Learning, Media and Technology*, 45(3), 223-235.



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Exploring the Dual Facets of Artificial Intelligence

This chapter will be separated into two sections: **Informative** section will provide a brief backbone to the AI environment while the **Productivity** section will provide aspects of how-to integrate with other AI tools and applications.

Learning Objectives:

Understanding...

- What a Framework is and how it's used in Generative AI
- What a Dataset is and the relationship it has with a Framework
- How “prompt engineering” works with AI Image Creation Tools
- How to work with “camera lenses” in AI Image Creation Tools
- How AI integration creates a “workflow”
- Some of the dangers that AI present

INFORMATIVE -

What is...

... AI?

... Generative AI?

... a Chatbot?

01. What is AI?

Let's start by establishing what Artificial Intelligence, a.k.a. AI, is. It is part of the Computer Science curriculum. Its goal is to program machines to do the tasks normally done by humans.

Some key points to AI include: Learning; Problem Solving & Reasoning; Natural Language Processing, a.k.a. NLP; and Perception.

AI is useful for Task Oriented work and Pattern Recognition within Data.

02. What is Generative AI?

This is a form of AI that allows users to create new content, whether it's text, images, music, narrations, animation or video.

Some key points to Generative AI, or Gen-AI include: Content Creation; Understanding Complex Concepts; Learning from Data; and Education. The latter can be used as part of a Teacher-Student environment or as an Individual Training tool.

Gen-AI is notably useful for Content Creation, Learning and Creativity.

On a side note:

The term, “prompt engineering” is thrown around alot these days. It's just a fancy way of saying, “programming”. In the scope of this paper, we will focus on ChatGPT, which happens to be the “user interface” you will be working in. The programming language you will use is English, if you're in an English speaking country.

Some areas in which Gen-AI can be used.

- Instructional Design
- Teaching & Education
- Research and Publication
- Graphic Design
- Presentation Design
- Social Media Design
- Video Post Production
- Marketing
- Project Management
- Workout Trainer/Coach
- Language Translator
- Note Taker

- Brainstorming Ideas
- and so much more...

03. What is a Chatbot?

A computer program designed to simulate human conversation, perhaps demonstrating intelligence and emotion through either text or voice. The latest versions of ChatGPT can do many if not most of the items listed above.

04. Utilizing ChatGPT as more than just a chatbot.

ChatGPT is a very powerful tool that can do much more than just a Chatbot. Billions of parameters from a wide spectrum of data have been fed into the ChatGPT system to train it to respond to the user.

05. What is a prompt?

The input field at the bottom of your screen in which you type your request or questions is where you type your prompt.

A prompt is a well structured, multi part set of instructions that includes everything ChatGPT needs to return a fully specific response.

Most people will simply type what comes to mind with an idea for what they want the AI to generate. In reality, it may not be so bad.

However, there are better ways to structure a well-crafted prompt. For example, the anatomy of a well-crafted prompt comes in several parts. One way may be to provide ChatGPT with some details or context to set up the AI. Next, give your ChatGPT a persona, a role to play by telling the AI to “become” a person in a specific position. Then, provide ChatGPT with a task or a number of tasks you are looking to accomplish. Finally, what do you want the output or format to look like?

This is known as a “framework”. In the next section we will dive deeper into frameworks and list various frameworks that can be utilized to get the most out of ChatGPT.

06. What are Frameworks? Applying Frameworks

As I mentioned before, a framework is a well structured set of information and instructions for the AI to complete.

The framework I mentioned above is RTF - Role, Task, Format.

It follows the “set up” which is the context you provide ChatGPT about the situation you are working in.

ChatGPT is fed a large amount of data. The framework narrows the scope of the data to be as specific as possible in order to meet your needs.

Examples of Roles:

- High School (English, Social Studies, Spanish...) Teacher
- Social Media Designer
- Project Manager
- Senior Graphic Designer
- Non-Profit Grant Writer
- Graphic Designer
- Data Analyst
- etc.

ACT like a [name of the position: 5th Grade Science Teacher; Project Manager, Personal Assistant, Dessert Chef, Personal Trainer, etc.] with years of experience in [name of specialty].

[Click ENTER - ChatGPT will generate a list of responsibilities and topics to cover.]

Your TASK(S), is/are to: [In as much detail as possible, describe what you need **help with**. This can be more than one item. (Just be mindful not to overwhelm the AI.)

Examples of TASKS:

- Outlines
- Cover Letters
- Blog Posts
- Script, Essay
- Article

- Headline and Sub-Headline
- Social Media Post
- Email or Email Response
- Text Translation
- etc.

NOTICE: I said “**help with**”. Asking ChatGPT for “help” in a task may, in some cases, have the AI ask you questions in return in order to supply you with better results.

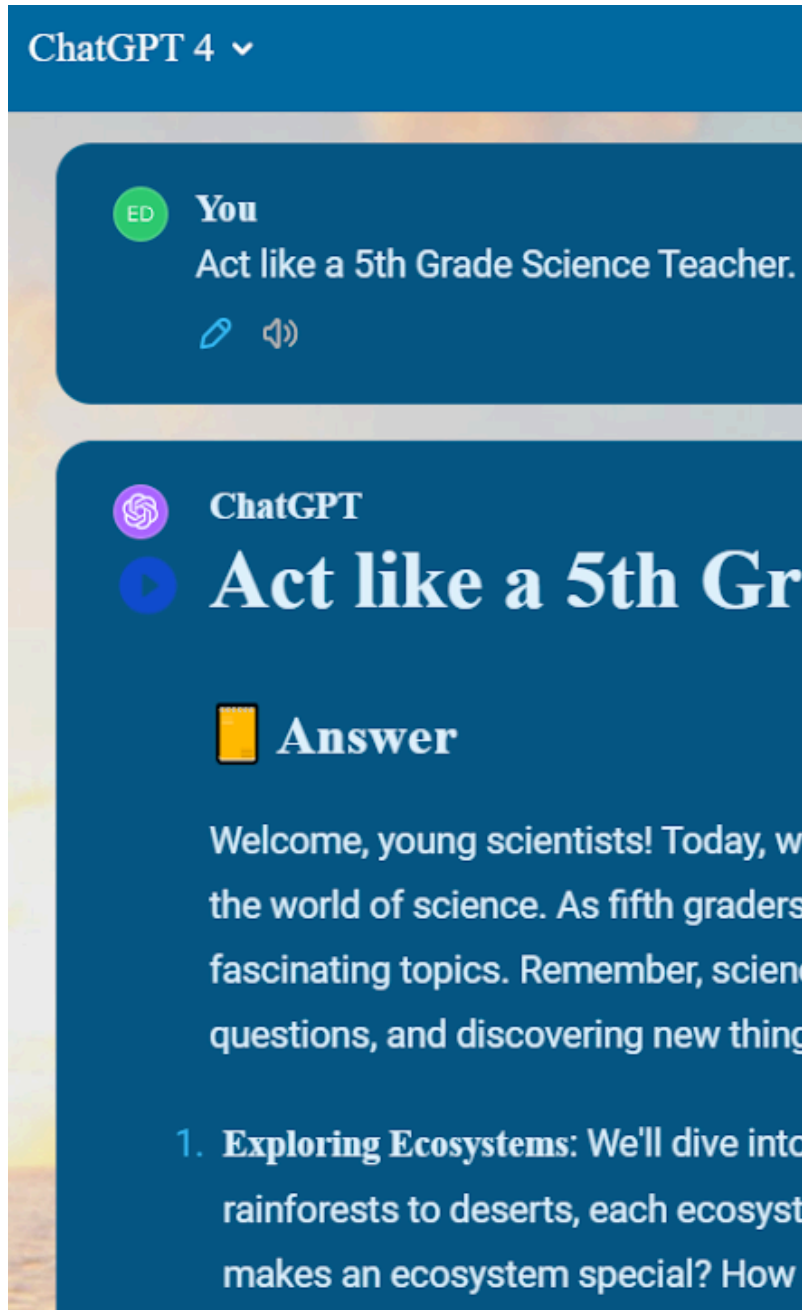
I want the results in a table FORMAT.

Examples of FORMATS:

- An Essay
- PowerPoint Outline
- a VBA code
- HTML
- Bullet Points
- a Spreadsheet
- a Summary
- A Table
- etc.

At every stage, the more you can craft a more well written prompt, the better your outcome will be.

07. An example of RTF in action can be viewed in the following pages:



Screenshot of the RTF framework from ChatGPT 4.

Here we have the AI take on the persona of a 5th Grade Science Teacher. This is the **ROLE**.

This pulls in the datasets just for 5th Grade Science while leaving the other Sciences and Grades alone.

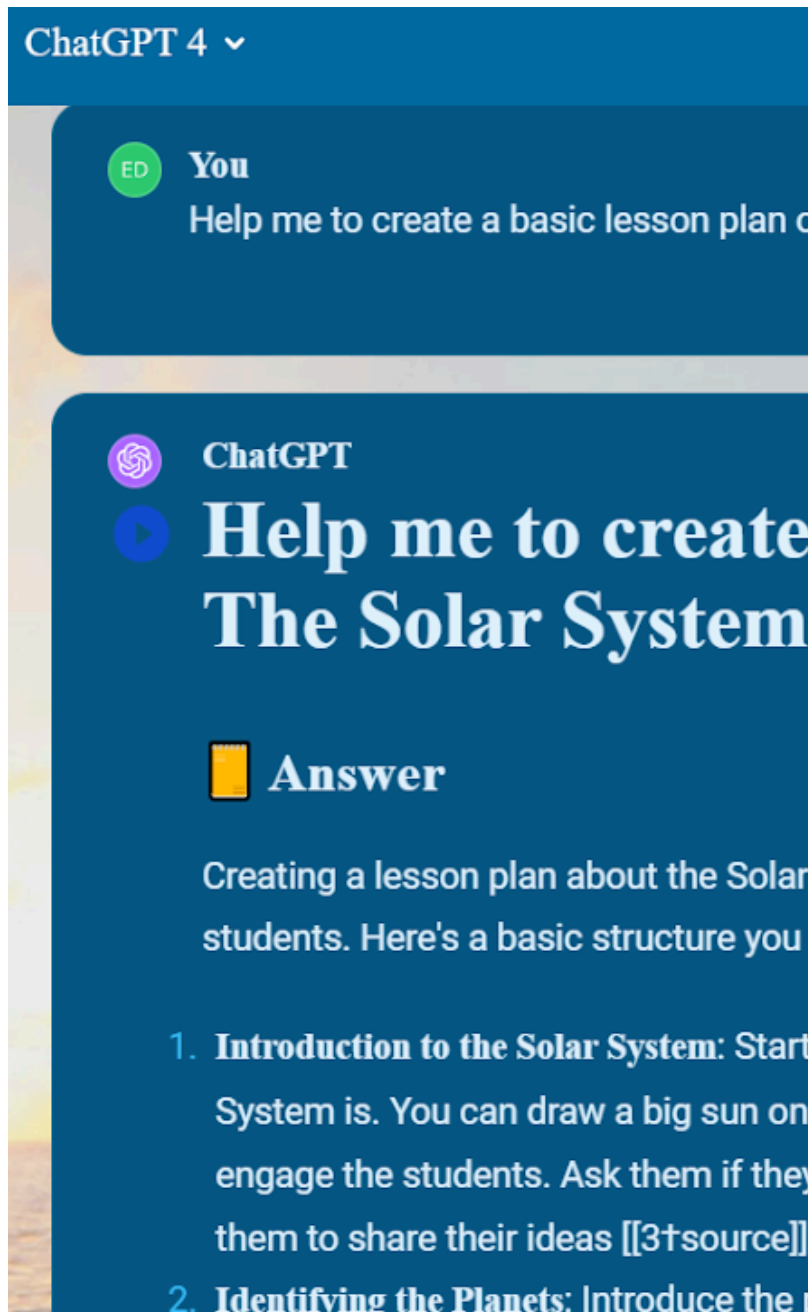
Note that ChatGPT provides you with some basics of what a 5th Grade Science Teacher should be familiar with.

Now, we work on the **TASK**. In this example, we have a series of **TASKS** for ChatGPT to help create.

From the list of options above, we want the AI to help create a basic lesson plan on The Solar System.

As a Subject Matter Expert, or SME (formerly known as Content Specialist), we check to make sure the information is accurate.

At this point we can also add or remove information we feel is either not essential or irrelevant.

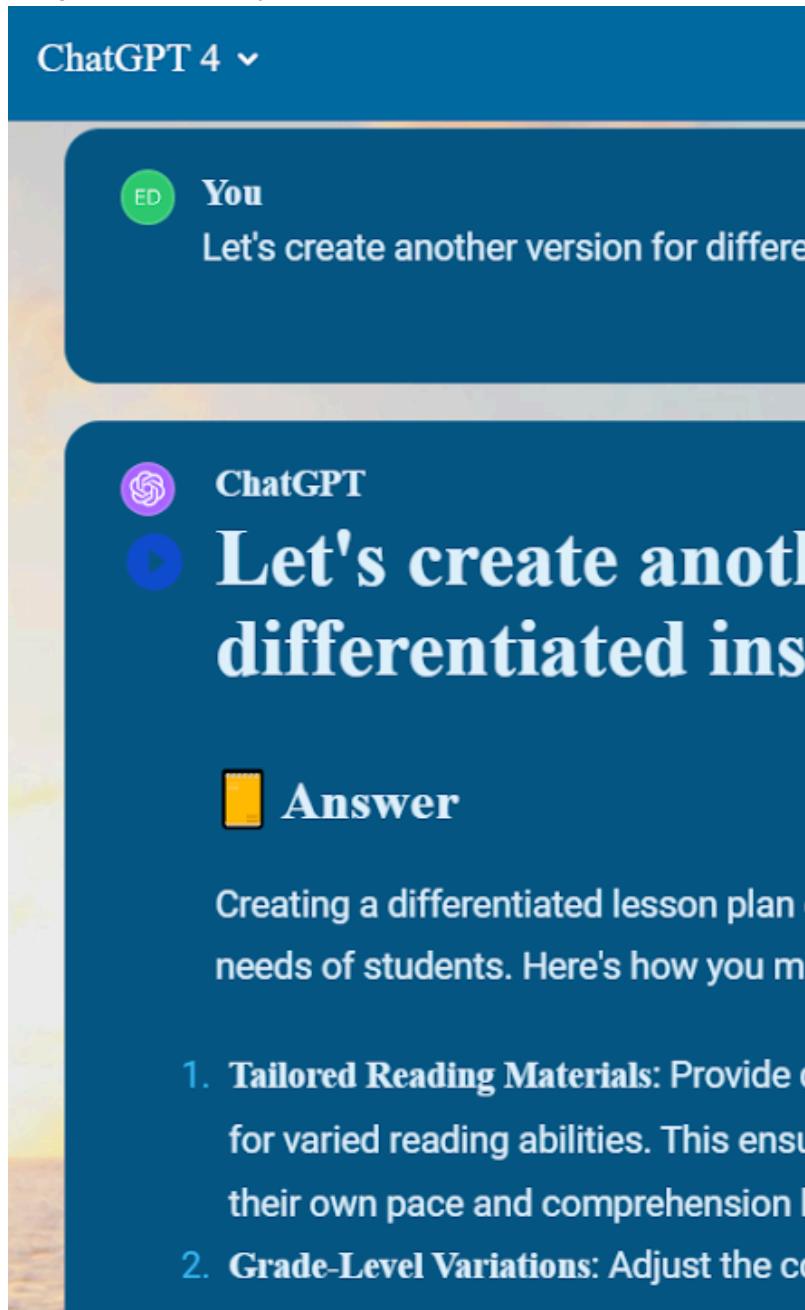


Since ChatGPT remembers what it generated in the previous prompt, we can ask it to generate variations of the last prompt.

We can also refer back to a specific prompt with a simple “copy & paste”.

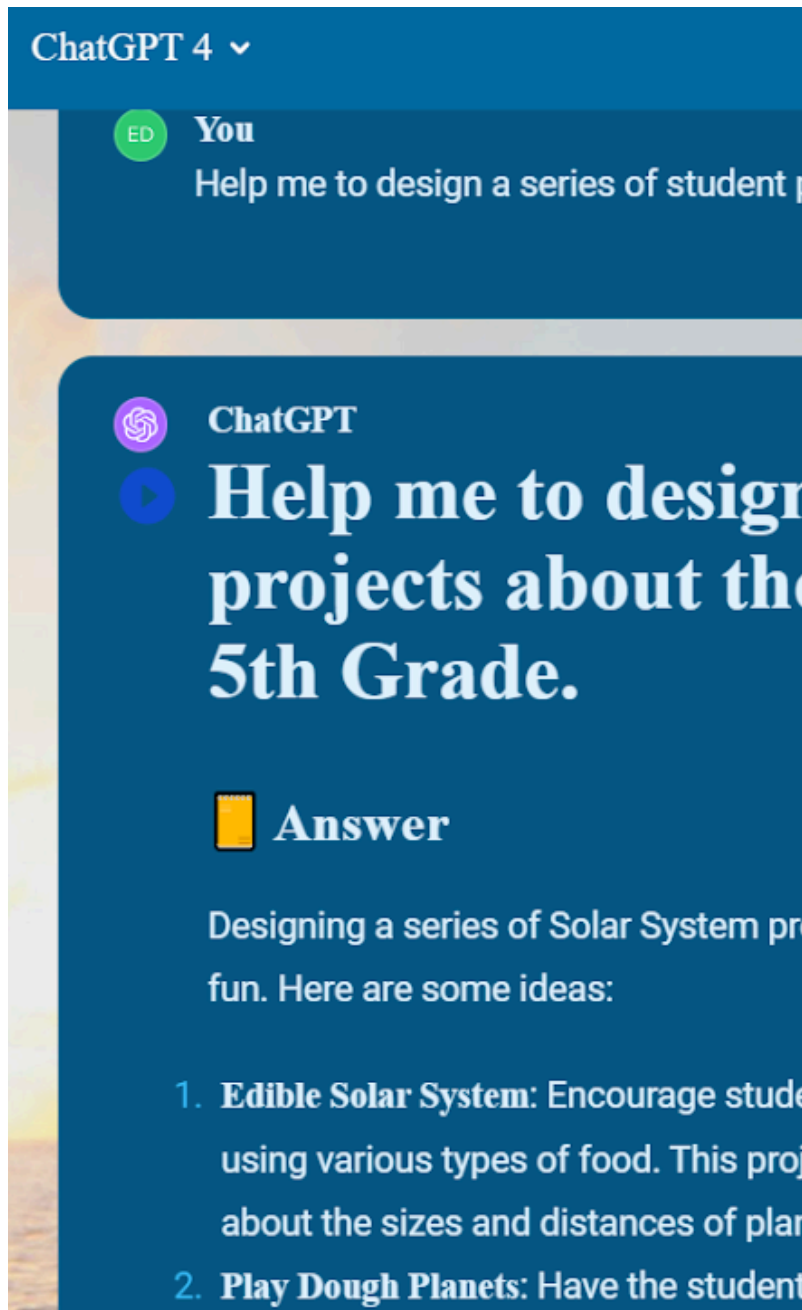
Here, while still working in TASKS, we are looking at the same lesson plan on The Solar System, but with variants for differentiated instruction. The purpose behind this is that not everyone learns

things the same way others do.

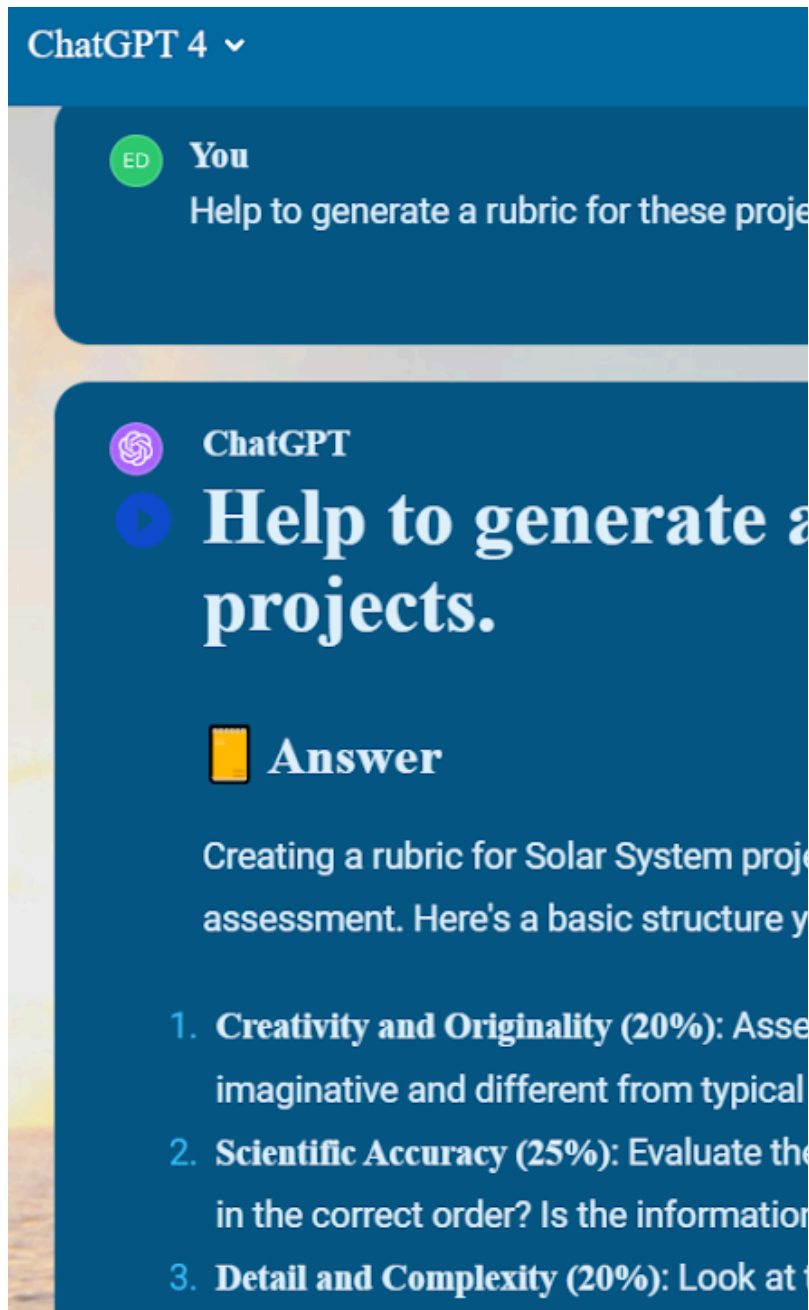


Now we are working with the original lesson plan on The Solar System and we want ChatGPT to generate ideas for a series of science projects students can pick from.

At every level, we must check and double check the information the AI is giving you.



Screenshot of the RTF framework from ChatGPT 4.



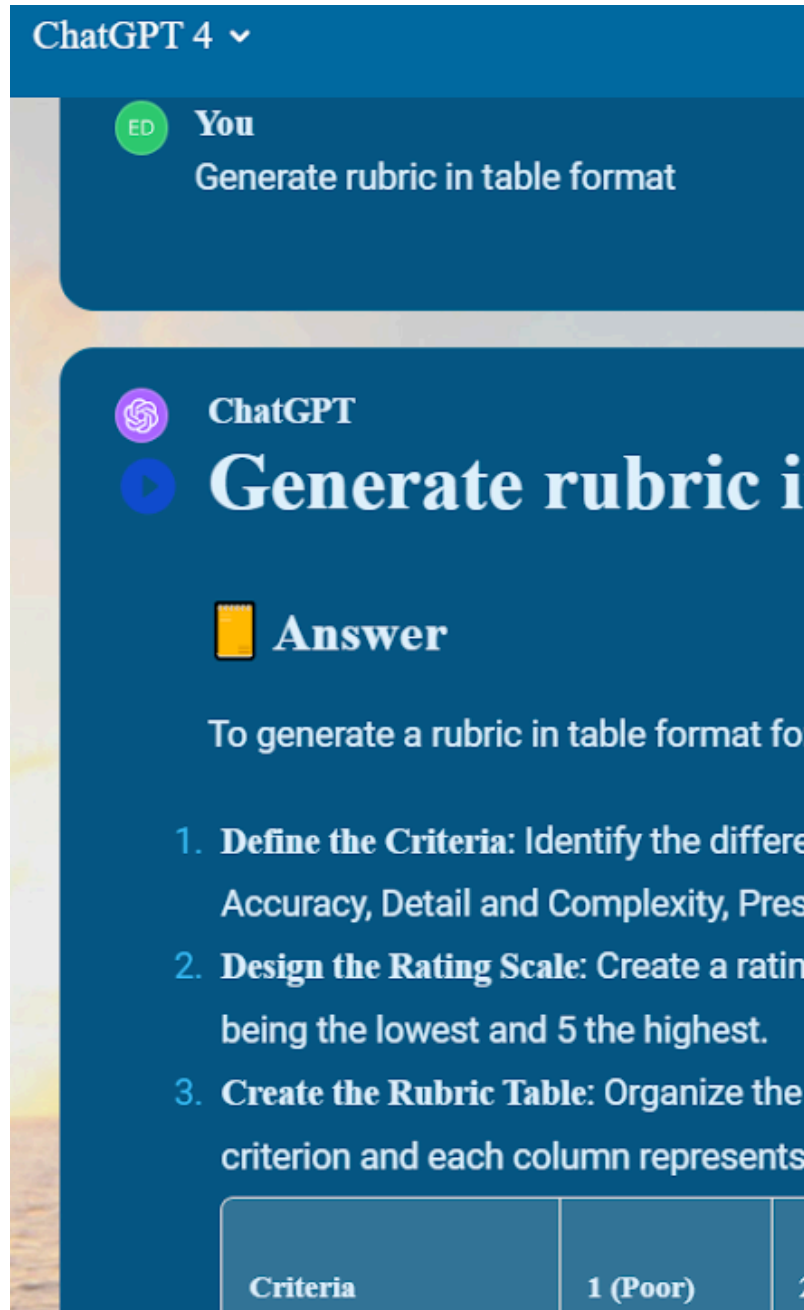
And as always, you can add or remove items you see fit or non-essential.

We need to evaluate those projects. With that we enter the **FORMAT** stage.

Simply ask ChatGPT to help you create a Rubric in which to grade and evaluate the projects.

Notice in this example the AI provided the criteria and the percentage of the overall grade.

This is part 1 of 2 as you see what we do on the next page.



Screenshot of the RTF framework from ChatGPT 4.

Here is part 2 of 2.

Generated in a table format gives you a more traditional Rubric. You can combine the information from part 1 or you can add your own information into each cell.

This is how the RTF

(Role, Task(s), Format) framework looks in action.
The more complex, or involved the framework is, the more information you will get.

Screenshot of the RTF framework from ChatGPT 4.

08. What are Datasets? Maximizing the behind the scenes.

A good way to describe Datasets would be to take a look behind the interface. Imagine opening up ChatGPT and taking a look inside it.



Image generated in Leonardo AI and finalized in Photoshop.

Now imagine looking at a huge wall of boxes. Within these boxes are sets of data that have been organized and labeled appropriately for the AI to reference.



Image generated in Leonardo AI.

Datasets are placed in their specific categories. So a general ChatGPT prompt would pull information from many datasets,

whereas a well-crafted prompt would pull more specific information.



Image generated in Leonardo AI and finalized in Photoshop.

In one box, you'll find every move ever made in the game of chess. In another box, everything we know about the Space Program that is Declassified, while in another box, what we currently know about the Solar System. One box may contain everything we know about the Civil War and so on. The amount of data fed into these AI tools are massive. In the case of ChatGPT as of this writing, it is undisclosed. OpenAI, the company that created ChatGPT, will only state that there are billions of parameters for the AI. Meaning, there is a lot of data involved and there are also a lot of safety protocols in place.

“Safety Protocols”?

Yes. The safety protocols are there to ensure several things such as: Password Protection, Security Software, Dual Factor Authentication, Data Backups, Secure Communications and more. Add to all that, ChatGPT works to ensure the information it pulls is solid. It's **not** always perfect. There will be times when a “hiccup”, a glitch, or the AI “hallucinates” and gives false or misleading information. Which is why **it is vital** that the user proofreads the information that comes from ChatGPT and every other available AI tool.

Another set of safety protocols includes the ability to detect if the request from the user has inappropriate language, is considered illegal, or is of ill intent. In such cases, the AI will generate a sort of “error message” and will not comply.

09. The connection between Frameworks and Datasets

In Education, it's the difference between "Act as a Science Teacher" vs. "Act as a 5th Grade Science Teacher". The more detailed and descriptive your prompts are, the better the output from ChatGPT will be.



Image generated in Leonardo AI and finalized in Photoshop.

Using a framework helps the AI to pull data from specific datasets that are geared towards the needs of the user as opposed to pulling data that may have some relevance but not all of it may be useful to the user.

10. Types of Frameworks

| | |
|------------------|---|
| R-T-F FORMAT | Act as a ROLE Create a TASK Show as |
| A-P-E | ACTION PURPOSE EXPECTATION |
| T-A-G GOAL | Define a TASK State the ACTION Clarify the |
| E-R-A | EXPECTATION ROLE ACTION |
| G-C-A | GOAL CONTEXT ACTION |
| R-I-S-E STEPS | Specify the ROLE Describe the INPUT Ask for |
| | Describe the EXPECTATIONS |

| | |
|---------------------|---|
| R-I-S-K | ROLE INFORMATION STEPS KNOWLEDGE |
| R-A-C-E | ROLE ACTION CONTEXT EXPECTATION |
| S-T-A-R | SITUATION TASK ACTION RESULTS |
| C-A-R-E | Give the CONTEXT Describe the ACTION Clarify the RESULT |
| | Give the EXAMPLE |
| D-I-V-E | DATA INSIGHT VERIFY EXECUTE |
| R-C-A-F | Act as a ROLE Provide CONTEXT Suggest ACTION |
| | Show as FORMAT |
| C-O-A-S-T | CONTEXT OBJECTIVE ACTIONS |
| SITUATION TASK | |
| T-R-A-C-E | TASK REQUEST ACTION CONTEXT |
| EXAMPLE | |
| S-P-A-R-E | SITUATION PROBLEM ASPIRATION |
| RESULTS | |
| | EXPECTATION |
| S-P-A-R-K | SITUATION PURPOSE ACTION RESULT |
| KNOWLEDGE | |
| G-R-A-D-E | GOAL REQUEST ACTION DETAILS |
| EXAMPLES | |
| G-U-I-D-E | GOAL UNDERSTANDING INFORMATION |
| DIRECTION | |
| | EVALUATION |
| C-L-E-A-R | CHALLENGE LIMITATION EXPECTATION |
| ACTION RESULT | |
| R-O-S-E-S | ROLE OBJECTIVE SITUATION |
| EXPECTATION STEPS | |
| R-A-S-C-E-F | ROLE ACTION STEPS CONTEXT |
| EXAMPLES FORMAT | |

This is NOT a definitive list. As ChatGPT improves more frameworks will rise and will be added to this list. This list should be enough to get someone who has never used ChatGPT started in the right direction.

Try them all out. There is no one solution to rule them all. See which framework works best to give the absolute best result. You may find yourself using several frameworks on a project.

As part of your framework are TONES. These TONES give a certain essence to your words and can help improve the quality of your

results. You may use a Professional Tone; a Humorous Tone; Persuasive; Descriptive; Informal; Friendly; Formal; Confident; etc.

PRODUCTIVITY -

Incorporating Image Prompts into a Framework or a ChatGPT outline.

Now that you have some understanding on Frameworks and how they work together with Datasets to pull the most relevant information for you, let's dive deeper by some creativity to all this.

ChatGPT remembers the last thing it typed in any prompt you've created. In our example above when we used RTF, within your Tasks, you have a few items. You can highlight, copy and paste those items inside quotation marks for a new prompt, where you ask ChatGPT to help generate appropriate image prompts for each of your Tasks.

These new image prompts may be used in any AI Image Creation Tool, such as MidJourney, Dall-E, Blue Willow, Runway ML, Pika Labs and/or Leonardo AI, just to name a few.

The images created can then be utilized to create a Slide Deck, a.k.a. "PowerPoint Presentation".

Now, the output that ChatGPT provides you for creating AI-Generated Images may or may not be solid. You may have to manually edit and re-word it. You will know what needs to be done the first time you try it out.

If you find yourself in need of adjusting your Image Prompts, the next section will provide you with some tips to improve these prompts.

11. Understanding Prompt Engineering for Image Generated AI Tools

Both ChatGPT 4 and ChatGPT 4o have the capabilities to generate images. The makers of ChatGPT also created Dall-E and have

integrated that Image Creation AI into these latest versions of ChatGPT.

To activate Image Creation, begin your prompt with: Use Dall-E to generate the following image: “Replace this text with your Image Prompt here inside quotation marks.”

As I mentioned before, you may need to adjust your prompt if you’re not satisfied with the current results.

Here are some guidelines to help the AI (ChatGPT or any other AI Tool) to produce the desired image.

When working with Image Creation AI tools Prompt Engineering goes beyond “just type what you want”. There are parameters that can be added to bring your creation to look the way you envision it.

Here are some guideline to help the AI produce the desired image:

Direct Description: Start with the basics by directly describing the scene or object you want to generate. Include details like colors, setting, and mood.

Mood and Atmosphere: Besides physical attributes, add emotional or atmospheric elements to your prompts, like “serene,” “chaotic,” or “mysterious,” to influence the overall tone of the image. Think about the lighting and how it will help set the mood.

Style Specification: Mention specific artistic styles or periods, like “Impressionist,” “Art Deco,” or “futuristic,” to guide the visual style of the generated image.

Chain-of-Thought Prompting: For more complex images, break down the prompt into a series of logical steps or elements that build on each other, guiding the AI through the creative process more effectively.

Inclusion and Exclusion: Clearly specify what you want to include or exclude from the image. This can help refine the results to match your vision more

closely.

Perspective: Think about the angle you want for your shot. A “bird’s eye view” vs a “worm’s eye view”. Should your image be at eye-level?

By mixing and matching these techniques, you can experiment with how different prompts affect the AI’s output, learning to tailor their prompts for the best results.

12. Working with Camera Lenses

In your image prompt you may want to include a certain look, style and feel that you would get from using different types of camera lenses. AI can replicate all that even if you do not know or understand how camera lenses work.

To create prompts that generate images with a blurred background using camera lenses, you can apply principles of photography that achieve a shallow depth of field, leading to the desired bokeh effect. Here’s how to incorporate these principles into your prompts:

Specify a Wide Aperture: Mention using a wide aperture lens in your prompt, as a wide aperture (low f-number, like f/1.8 or f/2.8) is crucial for creating a blurred background. This setting allows more light to enter, focusing sharply on the subject while blurring the background.

Use Long Focal Length Lenses: Include details about using a long focal length lens in your prompt, as lenses with longer focal lengths (e.g., 85mm, 135mm) can help achieve more pronounced background blur.

Mention Distance Between Subject and Background: Emphasize the importance of the distance between the subject and the background in your prompt. Placing the subject further away from the background enhances the blur effect.

Consider the Brenizer Method: If applicable, you can also mention the Brenizer Method, which involves stitching multiple images taken with a long focal length lens and wide aperture to create a panorama with a shallow depth of field.

By incorporating these camera lens characteristics and shooting techniques into your prompts, you can guide the AI to generate images that mimic the shallow depth of field and blurred background effect achieved in photography.

13. Utilizing ChatGPT to generate a Slide Deck

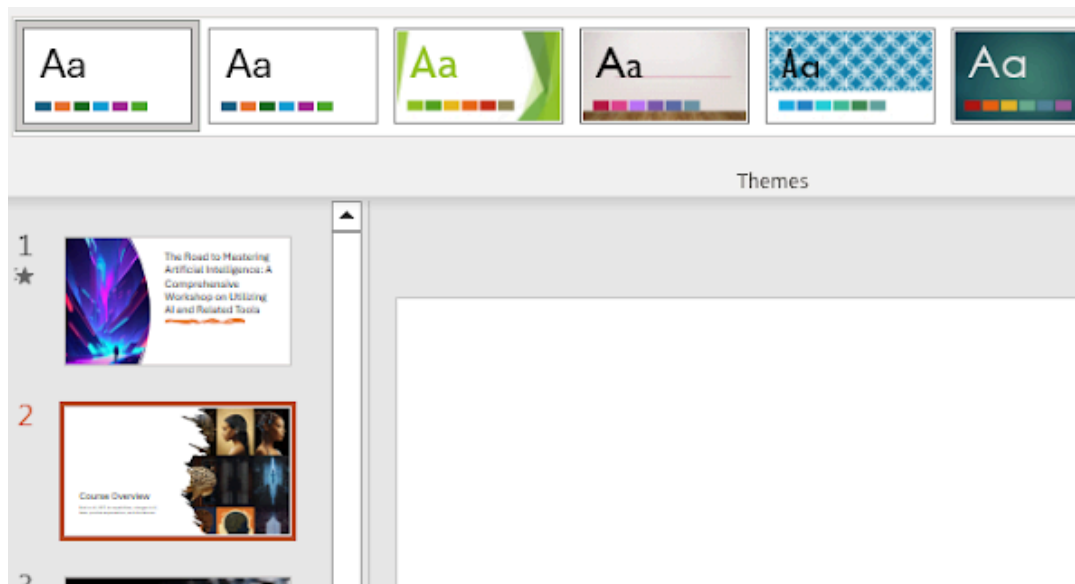
Outline

Another way to use frameworks is to create content for what we refer to as a Slide Deck, or a PowerPoint Presentation.

Why Slide Deck?

Simple. We use other tools to give great presentations without using PowerPoint itself.

That's not to downplay or bash PowerPoint. It has some really amazing features and its own AI for some incredibly beautiful slides.



Screenshot of PowerPoint using its own AI inside Designer.

Some AI tools that can be used to create presentations include: Tome AI, Gamma App, SlideBean AI, Beautiful AI, Pitch, and Polotno Studio - which is somewhat like Canva.

Within ChatGPT, you can tell the AI to create any number of slides and provide you with a Title slide, Headlines and Sub-Headline for each slide on the topic of your choosing.

Here is a simple template for ChatGPT:

Help me create an outline for [subject]. The audience for this presentation is [demographics]. The outline should include: Headlines, Sub Headlines, and Important Points. Make a [#] of slides.

Here is the same template in action in ChatGPT 4o:

Help me create an outline for [how-to make a peanut butter sandwich]. The audience for this presentation is [kids in Middle School]. The outline should include: Headlines, Sub Headlines, and Important Points. Make a [6] of slides.

Here is the response from ChatGPT 4o:

Slide 1: Introduction
Headline: Welcome to Peanut Butter Sandwich Making!

- Sub Headline: What We'll Learn Today
 - Important Points:
 - Brief overview of the process
 - Importance of following instructions

Slide 2: Gather Your Ingredients and Tools
Headline: Ingredients and Tools Needed

- Sub Headline: What You Need

- Important Points:
 - Two slices of bread
 - Peanut butter
 - Knife for spreading
 - Optional: jelly, honey, or other spreads

Slide 3: Preparing Your Workspace

Headline: Setting Up Your Workspace

- Sub Headline: Clean and Clear
 - Important Points:
 - Wash your hands
 - Clear your workspace
 - Have all ingredients and tools within reach

Slide 4: Spreading the Peanut Butter

Headline: Spread the Peanut Butter

- Sub Headline: Step-by-Step Guide
 - Important Points:
 - Open the peanut butter jar
 - Use the knife to scoop peanut butter
 - Spread evenly on one slice of bread

Slide 5: Adding Additional Ingredients (Optional)

Headline: Add Jelly or Other Ingredients (Optional)

- Sub Headline: Customizing Your Sandwich
 - Important Points:
 - Open the jelly jar (if using)
 - Use a clean knife to spread jelly on the other slice of bread
 - Other options: honey, banana slices, etc.

Slide 6: Completing Your Sandwich

Headline: Finish and Enjoy!

- Sub Headline: Putting It All Together
 - Important Points:
 - Place the two slices of bread together, spread sides facing each other
 - Cut the sandwich (optional)
 - Clean up your workspace
 - Enjoy your delicious sandwich!

14. Integration of ChatGPT into other AI Generative tools and Applications

With Generative AI tools, designing presentation materials has jumped forward by leaps and bounds as well as put an end to both “writer’s block” and the “creative block”. Understanding these tools and how they can be integrated well with each other opens new possibilities and opportunities of creative freedoms.

The best part is that these integrations are not set in stone. They can integrate into AI tools currently bombarding the industry. The one concern when integrating one AI with another AI is the amount of text one AI can generate as well as how much text an AI can accept.

Some have restrictions on the word count it can handle. This means your prompts need to be well-crafted. You may need to work in

phases in order to achieve your desired objectives.

Integration is not limited only from AI to AI, it can also involve integration into applications you already use such as PowerPoint, Word, Excel, Photoshop, Illustrator, Premiere, Blender, Maya, and many more products.

15. What is a “Workflow”?

A “workflow” is the path one takes to complete a project. How will you begin a project and what course will you take to reach the final product/project? Think about what your project is and when it is due. Now think about the tools you will need to complete the job. This, alpha-to-omega, or beginning-to-end, is your workflow.

Where AI comes in as a tool will require the user time to figure out which tool will work best for the immediate tasks at hand. Along the way, as part of your workflow, you may need additional information or training. Keep that in mind as you create a schedule for when to start the project and when the due date is.

I use a two-prong approach.

My first workflow is to look at what the finished product is supposed to do. What it's supposed to look like and when is the deadline? Then breakdown the “Big Picture” into smaller manageable “chunks” that get dropped into a timeline that begins 3 days before the actual deadline and ends up to a date that begins “tomorrow”.

Why tomorrow?

Simple. The project cannot begin today since I have no resources at the moment to work with. If the calendar goes into “yesterday”, we know that is not possible and certain small “chucks” will need to be combined.

My second workflow, and these are broad strokes, is to **analyze** the project requirements, I will then **design** the project. Then **develop** it, **implement** it and finally **evaluate** it. Evaluation of the project allows

me to make improvements prior to the deadline. This is known as the ADDIE method and I tend to apply this to most projects in tandem with my first approach.

16. Some DANGERS to watch out for when using Generative AI tools.

Generative AI tools, while powerful, come with several potential dangers that users need to be aware of. One significant risk is the possibility of generating inaccurate or misleading information. AI systems, including ChatGPT, can sometimes produce what is known as "hallucinations," where the output appears confident and plausible but is factually incorrect. This can lead to the dissemination of false information if not carefully reviewed and verified by the user. It is important for the user or Subject Matter Expert to follow and check the information as you would do for any research project. Do not solely rely on the ChatGPT or any AI's output.

Another danger lies in the ethical implications of AI-generated content. These tools can be used to create deepfakes, misleading images, or text that can deceive audiences. This misuse can lead to serious consequences such as misinformation, manipulation of public opinion, and even reputational damage. It is crucial to use generative AI responsibly and ensure that content created is ethical and accurate.

Privacy and data security are also major concerns when using generative AI tools. These systems often require large amounts of data to function effectively, and there is a risk that sensitive information could be inadvertently included in the AI's outputs. Users must be vigilant about the data they input and ensure that they are not violating privacy regulations or exposing confidential information. It is strongly recommended to never upload any personal information into an AI such as ChatGPT.

Finally, there is the risk of dependency on AI tools, which can stifle creativity and critical thinking. Relying too heavily on generative AI for tasks such as writing, designing, or decision-making can lead to a decline in human skills and judgment. It is important to use these tools as aids rather than replacements, ensuring that human oversight and creativity remain central to the process. Earlier I stated that, AI can 'put an end to both "writer's block" and the "creative

block”, although this is true, AI is ONLY a tool and NOT a solution. A tool is only as good as the artist/writer who wields it.



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Appendices

[Appendix A](#)

[Appendix B](#)



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Appendix A

Open and Free Generative AI Tools

Hepler, R. C.

Generative AI Tools

“The use of modern gadgetry cannot supplant the use of proper techniques and principles” - Theodore Schellenberg

“The Machine is only a tool after all, which can help humanity progress faster by taking some of the burdens of calculations and interpretations off its back. The task of the human brain remains what it has always been; that of discovering new data to be analyzed, and of devising new concepts to be tested.” - *I, Robot*

[Futurepedia: The Largest AI Tools Directory](#)

Search for any tools you wish, and then click the “Free” and/or “Open Source” selections in the “Filter” box to look at freely available materials.

Text

ChatGPT: chat.openai.com

Google Bard: bard.google.com

Bing.AI: bing.com/?/ai

Claude: claude.ai

Llama 8b: [Llama 8b on Groq](#)

Create Text Generators:

ChatGPT: chat.openai.com

You: you.com

HuggingChat: <https://huggingface.co/chat/assistants>

Image

Getimg.ai: getimg.ai

Craiyon: craiyon.com

Dall-e 2: openai.com/dall-e-2

Freeflo: freeflo.ai

Canva Free Text-to-Image Generator: canva.com/your-apps

Microsoft Designer: designer.microsoft.com/

Stable Diffusion: <https://easydiffusion.github.io/>

Ideogram: ideogram.ai

Lexica: lexica.art

Playground: playground.com

Leonardo.ai: leonardo.ai

Adobe Firefly: firefly.adobe.com

Text-to-Speech Audio

Text-to-Speech Online: <https://www.text-to-speech.online/>

Bark: <https://huggingface.co/spaces/suno/bark>.

TTSMaker: <https://ttsmaker.com/>

Uberduck: <https://app.uberduck.ai/text-to-voice>.

Speechify: speechify.com

Speech-to-Text

Whisper AI:

<https://colab.research.google.com/drive/1B0k7t9GXVW4DRnxFbKPIWjdVE-P7WDMs?usp=sharing> or huggingface.co/spaces/openai/whisper.

Music Audio

Riffusion: riffusion.com

MusicGen: [MusicGen - a Hugging Face Space by facebook](https://openai.github.io/musicgen/)

Suno: [Suno.ai](https://suno.ai)

Udio: ud.io

Video

Adobe Express Animate-from-audio tool:

<https://new.express.adobe.com/tools/animate-from-audio>.

Capcut: [capcut.com](https://www.capcut.com)

Chromox: <https://chromox.alkaidvision.com/>.

Teach-O-Matic: <https://www.teachomatic.net/>.

Typpo: typpo.app

Website Design

Deblank: deblank.com

Skybox: skybox.blockadelabs.com

Education

Eduaide.ai: eduaide.ai

Nolej.ai: nolej.ai

App.QuestionWell.org: app.questionwell.org

Claude.ai: <https://claude.ai/chats>.

Teach-O-Matic: teachomatic.net/

AI Content Checker - see [Guidance on AI Detection and Why We're Disabling](#)

[Turnitin's AI Detector](#)

Copyleaks

GPT2 Detector



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Appendix B

Workflows Incorporating Open and Free AI Tools

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Creating Videos with GenAI Tools

1. Create text prompts for image and moving picture generators, and scripts for the video audio, using prompt engineering techniques with a text generator such as ChatGPT, Bard, or Claude. ChatGPT is the most recommended tool for this step.
2. Convert the video script to an audio format using an audio generative AI tool such as text-to-speech.online, Bark, TTSMaker, or another open or free service.
3. Use the text prompts you created in step 1 for image generators with Dall-E, Getimg.ai, ideogram, or designer.microsoft.com.
4. Use text prompts for video generators you created in step 1 with tools such as typpo.app, teach-o-matic, or Chromox.
5. Combine all of these using your favorite audio and video creating software, including free offerings like those from Canva and CapCut.

Creating Images with Captions with GenAI Tools

1. Create text prompts for image generators using prompt engineering techniques with a text generator such as ChatGPT, Bard, or Claude. ChatGPT is the most recommended tool for this step.
2. Use the text prompts you created in step 1 for image generators with Dall-E, Getimg.ai, ideogram, or designer.microsoft.com.
3. If you do not want to create the captions yourself, you can put the images into a text generator, such as Claude or ChatGPT, and ask it to come up with a good caption for the image. Make sure the caption is descriptive and follow accessibility guidelines.
4. For optimum accessibility and equity, make sure to use text generators to create alt-text for the image. Or, write it yourself. Microsoft, Harvard, W3C, and other resources have excellent resources on writing high-quality alt-text.

Creating Cover Images with GenAI Tools

1. Create text prompts for image generators using prompt engineering techniques with a text generator such as ChatGPT, Bard, or Claude. ChatGPT is the most recommended tool for this step. Be sure that you tell the text generator to consider optimum cover or banner image traits.
2. Use the text prompts you created in step 1 for image generators with Dall-E, Getimg.ai, ideogram, or designer.microsoft.com. Be sure to include the parameters of the cover image suggestions for the particular site.

3. For optimum accessibility and equity, make sure to use text generators to create alt-text for the image. Or, write it yourself. Microsoft, Harvard, W3C, and other resources have excellent resources on writing high-quality alt-text.

Creating a Podcast Episode with GenAI Tools

1. Create scripts for the podcast audio using prompt engineering techniques with a text generator such as ChatGPT, Bard, or Claude. ChatGPT is the most recommended tool for this step. Also create image prompts for podcast section markers if you want to.
2. Convert the script to an audio format using an audio generative AI tool such as text-to-speech.online, Bark, TTSMaker, or another open or free service.
3. For podcast sections, use the text prompts you created in step 1 for image generators with Dall-E, Getimg.ai, ideogram, or designer.microsoft.com.
4. If you want video to accompany the podcast, you have multiple options. For AI-generated video such as a digital narrator you can use Adobe Express Animate-from Audio, Chromox, Teach-O-Matic, or Typo. If you want to include moving images from your screen or something like that, you can play the audio, record the screen without sound according to the speech of the audio, and then save that moving image.
5. Another option is to include still screenshots of your content and then have the audio speak while the image is displayed throughout a particular section. If you want to bring note to certain areas of the screen, you can use a highlighter to

create different versions of the screenshot and then put those versions according to the audio.

6. If you want to create music for the podcast, you can use open source music creators such as Magenta. However, I recommend using open access music productions available on Openverse, Freegal, or another open source music source.

7. Combine all of these using your favorite audio and video creating software, including free offerings like those from Canva and CapCut.



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