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James Hutson
Lindenwood University, jhutson@lindenwood.edu

Review

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James Hutson

Department of Art History and Visual Culture, Lindenwood University, Saint Charles, MO 63301, USA

* Correspondence: jhutson@lindenwood.edu; Tel.: +1 636-949-4863

Abstract: The emergence of generative artificial intelligence (AI) technologies, such as large language models (LLMs) like ChatGPT, has precipitated a paradigm shift in the realms of academic writing, plagiarism, and intellectual property. This article explores the evolving landscape of English composition courses, traditionally designed to develop critical thinking through writing. As AI becomes increasingly integrated into the academic sphere, it necessitates a reevaluation of originality in writing, the purpose of learning research and writing, and the frameworks governing intellectual property (IP) and plagiarism. The paper commences with a statistical analysis contrasting the actual use of LLMs in academic dishonesty with educator perceptions. It then examines the repercussions of AI-enabled content proliferation, referencing the limitation of three books self-published per day in September 2023 by Amazon due to a suspected influx of AI-generated material. The discourse extends to the potential of AI in accelerating research akin to the contributions of digital humanities and computational linguistics, highlighting its accessibility to the general public. The article further delves into the implications of AI on pedagogical approaches to research and writing, contemplating its impact on communication and critical thinking skills, while also considering its role in bridging the digital divide and socio-economic disparities. Finally, it proposes revisions to writing curricula, adapting to the transformative influence of AI in academic contexts.

Keywords: plagiarism; academic integrity; generative artificial intelligence; large language models; originality; digital humanities; copyright; intellectual property rights

1. Introduction

Before 2022, and the widespread availability of generative artificial intelligence (GAI) technologies like ChatGPT by OpenAI (https://openai.com/blog/chatgpt), the concept of plagiarism in academic, literary and scientific contexts seemed relatively straightforward and well-defined [1]. The cornerstone of avoiding plagiarism rested on the principled acknowledgement of original authors. This acknowledgement was necessitated whenever one utilized an exact written or spoken word of a human author. In such instances, it was incumbent upon the writer to not only cite the original author but also to distinctly identify the borrowed words. The identification was typically achieved through the use of quotation marks enclosing the exact text or by distinctly indenting the quoted passage on both sides of the margin, thereby visually separating it from the written discourse under production [2].

Similarly, when paraphrasing—that is, rephrasing or reinterpreting written or spoken communication in one's vernacular—the imperative of citation remained. Paraphrasing demanded more than mere substitution of synonyms; it required a substantial transformation of the original text while preserving its core meaning [3]. Therefore, the framework of plagiarism, rooted in the clear demarcation of original and borrowed material, served as a cornerstone in academic writing. It upheld the values of intellectual honesty, respect for intellectual labor, and the scholarly commitment to the advancement of knowledge through transparent and accountable use

of existing literature [4]. However, the advent of GAI, particularly post-2022, has precipitated a complex reevaluation of these long-standing principles. The ability to generate content that is indistinguishable from human-authored text has blurred the once-clear boundaries between original creation and derivation. Consequently, the academic, scientific, and publishing communities now face the daunting task of redefining plagiarism in the context of AI-assisted writing, a task that extends beyond the traditional realms of citation and paraphrasing to encompass the very essence of creativity and original thought in the digital age [5].

Most of the controversy surrounding scholarly plagiarism surrounds large language models (LLMs). These LLMs like GPT (generative pre-trained transformers) operate on the principles of machine learning (ML) and natural language processing (NLP) [6]. Fundamentally, these models are trained on vast datasets of text, encompassing a wide array of subjects and styles, to learn patterns and structures inherent in human language. During training, LLMs develop an understanding of grammar, syntax, semantics, and even some aspects of context and pragmatics [7]. They employ a technique known as "transformer architecture", which enables them to predict and generate text sequences by understanding the relationships and dependencies between words in a sentence. This method is especially adept at keeping track of connections over long stretches of text, helping the AI write passages that make sense and fit the context well [8]. Once trained, LLMs can perform a variety of language tasks, including text completion, translation, summarization, and content generation, often producing results that closely mimic human-written text [9]. Their ability to generate plausible, coherent text based on given prompts or to continue a given text sequence makes them powerful tools for a range of applications, from creative writing to coding assistance [10].

While these tools have proven industry application with efficiency generation, the challenge of identifying AI-generated text, particularly in educational contexts, adds a significant layer of complexity to how writing is perceived and utilized in education. Historically, English composition courses have played a crucial role in academia, operating under the premise that writing is an extension of thinking [11–13]. These courses aim to cultivate in students the ability to express thoughts clearly and cohesively, thereby enhancing their critical thinking and analytical skills [14]. Writing assignments were, fundamentally, seen as a reflection of student intellectual engagement and understanding [15]. However, with the emergence of GAI, these traditional paradigms are facing profound challenges. The difficulty in distinguishing between AI-generated and human-generated text complicates the assessment of the true capability in articulating original ideas on the part of students. The ambiguity directly impacts the fundamental objectives of teaching writing and research. There is a growing concern that the ease of generating sophisticated texts using AI may lead students to rely on technology over developing their own analytical and writing skills, thereby undermining academic integrity [16]. Compounding the issue is that as AI-detecting software has attempted to keep pace with technological developments, the accuracy of such tools has been called into question in many studies [17,18].

The current state of AI-detection software, particularly as exemplified by tools like Turnitin, warrants scrutiny. As of 14 May 2023, Turnitin reported that, among 38.5 million submissions analyzed for AI-generated content, approximately 9.6% contained over 20% of text likely produced by AI writing tools, while 3.5% exhibited between 80% and 100% AI-generated content [19]. This data underscores the increasing prevalence of AI assistance in academic writing. Notably, the AI writing detection model predominantly targets prose text, commonly found in long-form writing such as essays. Its efficacy diminishes when dealing with non-prose formats, including poetry, scripts, code, ordered or unordered lists, tables, or annotated bibliographies [20]. The limitation poses a significant challenge in environments where diverse forms of writing are prevalent. Moreover, the accuracy of these AI detection tools is a matter of ongoing concern. Misidentifications, both in flagging human-generated text as AI-produced and vice versa, necessitate additional layers of human analysis to verify the conclusions of different detectors [21].

Moreover, the rise of AI in educational settings poses significant questions regarding intellectual property rights. When a piece of writing is a product of both human and AI collaboration, it becomes challenging to delineate the boundaries of authorship and original contribution. This situation not only challenges traditional notions of originality and intellectual rigor but also necessitates a reevaluation of what constitutes plagiarism in the digital age [22]. These developments have substantial implications for pedagogical approaches in teaching writing and research. Educators are now tasked with rethinking their methods to ensure that the core objectives of enhancing critical thinking and analytical skills are maintained. This includes developing strategies to integrate AI tools in a manner that complements rather than supplants the learning process, ensuring that

students remain at the forefront of their educational journey [23]. As AI continues to evolve and integrate into various facets of life, including education, adapting to its presence and leveraging its capabilities responsibly and ethically becomes paramount for educators and institutions alike. However, there is a disparity in generational and student-faculty use of these tools.

Data from NerdyNav [24] underscores a pronounced generational and professional gap in the awareness and use of AI tools like ChatGPT. Specifically, 82% of college professors are cognizant of tools like ChatGPT, which is in stark contrast to the mere 55% of K-12 teachers. The disparity in AI-literacy extends to different age groups as well. Among students, those aged 18–34 exhibit significantly higher adoption rates, nearly double, compared to older cohorts. In detail, 13.5% of millennials and Gen Z are engaged with ChatGPT, whereas only 7.9% of Generation X and 7.2% of baby boomers use it. The Silent Generation registers the lowest usage at 5.3%. This lag in awareness and usage among older age groups, particularly in educational settings, potentially contributes to a growing mistrust and scepticism towards the application of AI tools in academic contexts by the younger generation [25]. The rapid adoption of AI by students, outpacing their educators, not only fuels this distrust but also signals an urgent need for rethinking traditional academic policies and pedagogical practices. The situation further highlights the necessity for educators across all age groups and educational levels to become more AI-literate and to develop a nuanced understanding of how these technologies can be integrated ethically and effectively into the educational framework. This adjustment is crucial to bridge the gap between the new capabilities of the tools and the current educational paradigms, ensuring that both teachers and students can navigate this new landscape with competence and integrity [26,27].

Central to bridging AI-literacy across student-teacher populations is the rethinking of what constitutes plagiarism. Given the ubiquity of AI tools—ChatGPT, Bard, Google Gemini, Llama, Grok—being integrated across various platforms including word processing, social media, search engines, and research databases, the traditional approach to plagiarism, which focused primarily on direct citation and paraphrasing, seems insufficient in an era where AI-generated content is seamlessly integrated into student work. The challenge lies in distinguishing AI-assisted writing from entirely original human composition, a task made more difficult by the sophistication of AI in mimicking human writing styles. To address this evolving landscape, educational institutions must develop new frameworks that acknowledge the role of AI in academic writing while preserving the core values of academic integrity. This includes creating guidelines for the ethical use of AI in research and writing and equipping both students and educators with the necessary skills and knowledge to navigate this new terrain. The goal should be to leverage AI as a tool for enhancing the educational experience, rather than as a means to replace the critical thinking and creative processes that are central to learning. By doing so, educators can bridge the AI-literacy gap and foster an environment where technology augments, rather than undermines, the pursuit of knowledge.

2. The Contested and Complicated Understanding of Plagiarism in American Academia

Even before the advent of generative artificial intelligence (GAI), the concept of plagiarism within American academia was fraught with complexities. The understanding of plagiarism in the United States is particularly intricate, underscored by various definitions and interpretations that highlight its contested nature. According to The Oxford English Dictionary, plagiarism is defined as "the practice of copying another person's ideas, words or work and pretending that they are your own." This broad definition encapsulates a range of actions, from the overt to the subtle, all centered around the misappropriation of intellectual property. The Merriam-Webster Dictionary further refines this definition, describing plagiarizing as "to steal and pass off ideas or words of another as one's own." Either through deliberate deception or subterfuge, the maligned practice assumes conscious action on the part of the perpetrator.

The complexities in the American context are further detailed in various academic guidelines, which include a plethora of actions under the umbrella of plagiarism [28,29]. These actions range from the direct, such as copying from a source without quotations or citations, to the more nuanced, like paraphrasing or summarizing the idea of another without attribution. Even subtle acts, such as altering sentence structure while retaining its original words, or vice versa, are considered plagiarism. Additionally, the unacknowledged use of audio, video, or other media sources, submitting the work of another student as their own, or using information from an expert interview without proper attribution, are all deemed to be forms of plagiarism. Furthermore, the scope of

plagiarism in American academia extends to the realms of collaboration and recycling one's work- self-plagiarism [30]. Excessive collaboration on an essay with another person, or the submission of an essay previously written for another class without the consent of both professors, are also viewed as violations of academic integrity.

However, concepts of academic integrity and avoidance of plagiarism are not universal. The American perspective of plagiarism as fundamentally defined as the act of passing off the ideas of another as one's own stands in contrast to various cultural views on plagiarism across the globe, where the concept and its ethical implications can differ significantly. For instance, in East Asian countries like China, Japan, and South Korea, the communal ownership of knowledge often negates the need for individual attribution [31]. This is rooted in collectivist cultures and Confucian principles, where memorizing and repeating authoritative texts is seen as a form of respect and acknowledgement of established wisdom, rather than intellectual theft. In these societies, students are taught that knowledge belongs to the community, and the idea of citing individual authors might conflict with their cultural understanding of knowledge and learning [32]. Similarly, in the Middle East, quoting and paraphrasing well-known religious or political authorities without formal citation is common, as scholars and teachers are expected to recognize these texts as part of common knowledge [33]. Formal citation, in this context, might imply a lack of knowledge, potentially insulting educators and adversely affecting student academic standing. In Eastern European countries, even though formal rules of citation exist, attitudes towards plagiarism are more lenient, with less emphasis on strict adherence to academic integrity [34]. The same attitude is also observed in Latin American educational contexts, where the concept of academic misconduct like plagiarism is not frequently discussed or enforced with the same rigor as in the United States [35]. Conversely, Western European countries, Canada, and Australia align more closely with the U.S. in their approach to plagiarism, emphasizing individualism and adhering to strict guidelines for plagiarism prevention [36,37].

These cultural differences have historically posed significant challenges for international students in American academic institutions [38,39]. The focus on individual intellectual property in the U.S. and the strict enforcement of citation rules can be a source of confusion and frustration for students from backgrounds where such practices are either unknown or viewed differently. The discrepancy between these cultural perspectives on plagiarism highlights the challenges faced in American academia, particularly in an increasingly globalized educational environment. The integration of GAI technologies further complicates this landscape, as they bring new dimensions to the creation and use of academic content. This evolving scenario necessitates a continual reevaluation of the definitions and perceptions of plagiarism, ensuring that they remain relevant and effective in upholding academic integrity in a rapidly changing world.

3. The Inevitability of AI in Academic Research and the Peer-Review Process

The use of AI in academic research is not new, but the expanded capabilities represent a significant shift from traditional methodologies, bringing forth efficiencies and complexities [40]. The systematic process of academic research, traditionally characterized by meticulous, stepwise progression, finds a new ally in AI, given its prowess in handling tasks that can be segmented into discrete steps [41]. The integration of the ever-expanding free set of AI tools at each stage of the research process not only illustrates the potential of the technology but also underscores the nuanced interplay between technology and human intellectual endeavor. In the initial stage of research, where one begins with a general topic, AI can serve as a powerful aid. Utilizing algorithms for topic modeling, AI can analyze extensive datasets to unearth prevailing themes and trends within fields as diverse as population studies, UI/UX, microbiology, and the humanities [42]. This broad overview, informed by improved analytical capabilities, assists researchers in effectively narrowing down their topics of interest. Furthermore, AI-powered databases like Perplexity AI, Consensus and Elicit can collate and summarize millions of search parameters by suggesting specific examples or niches within a broader area, aligning with researcher interest based on previous searches, publications, and current trends [43].

Once a topic is narrowed down, depending on the field, the next phase typically involves seeking the latest established monographs and/or articles on the subject. Here, AI-driven literature discovery and management tools come into play. By employing NLP, these tools are adept at understanding the context and relevance of texts, thus proving invaluable in initial literature reviews [44]. They can efficiently locate and recommend pertinent research, streamlining the literature search process. Moreover, AI can expedite the identification of

relevant chapters or sections within large volumes of work. Text mining and NLP enable the swift location of terms in indexes, footnotes, endnotes, and bibliographies, accelerating the process of pinpointing specific information within broader texts [45]. The task of reviewing sources cited in monographs, traditionally a time-consuming endeavor, can be substantially automated. AI tools can parse bibliographies and integrate them with academic databases to compile and organize more focused studies and articles relevant to research topics [46]. In considering the different approaches and arguments of experts in the field, AI algorithms can analyze content, tone, and perspectives, providing an overview of diverse scholarly viewpoints as does Scite.ai [47]. This analysis aids researchers in understanding how their research question or methodology fits within the broader academic discourse. Equally important is the role of AI in managing citations. New citation tools can efficiently handle the recording and formatting of citations, ensuring accuracy and adherence to various academic styles throughout the research process [48]. This automation not only saves time but also reduces the likelihood of errors, a critical aspect of maintaining the integrity of scholarly work. At the same time as GAI demonstrates the ability to handle many tasks in research, it is also being leveraged to address issues in the next phase in the scholarly journey-peer review.

The peer-review process in academic publishing, while essential for maintaining academic integrity and ensuring the quality of published research, is beset with several significant issues [49]. One of the primary concerns is the inherent subjectivity of the process [50]. Editorial decisions in scholarly publishing are largely subjective, and heavily influenced by individual competencies and motivations of editors and reviewers [51]. This subjectivity can lead to biases in knowledge representation and perpetuation of the "Matthew effect", where already established researchers receive more recognition, thus exacerbating inequities in the diffusion of scientific ideas [52]. Additionally, editors hold significant power in the decision-making process, which is not always transparent or democratic. This can lead to conflicts, particularly when the commercial interests of publishers or the personal interests of editors come into play [53]. Still, another major concern is the limited pool of reviewers available for conducting peer reviews. A small group of researchers tends to carry out the majority of the reviewing work, raising questions about reviewer exhaustion and the potential impact on their professional and personal relationships [54]. This situation can also affect the quality and diversity of reviews, as overworked reviewers may not be able to provide as thorough an evaluation as necessary. Additionally, the relationship between editors and reviewers can be influenced by various factors, including professional networks and personal biases, further complicating the peer-review process [55].

As well, racial biases and the impartiality of reviewers are other critical issues. Racial biases in the peer-review process have also been a point of concern. In psychological science, for instance, a hierarchy in research publications has been identified, with race and racism being underrepresented in top-tier journals. This issue is compounded by the overrepresentation of White editors and authors, and the underrepresentation of participants of color in research, indicating systemic inequality within the field [56]. Such biases not only limit the diversity of perspectives in research but also perpetuate racial disparities in the field. Likewise, the impartiality of reviewers is another critical issue in the peer-review process. Factors such as author nationality, prestige of institutional affiliation, reviewer nationality, gender, research discipline, confirmation bias, and publication bias all influence reviewer impartiality. These biases can range from subtle to influential, impacting the integrity of the peer-review process and potentially compromising the quality of the scholarly record [57]. Furthermore, the complex social dimensions of bias, such as professional or personal relationships between authors and reviewers, can introduce different kinds of biases into the peer-review process, affecting its fairness and objectivity.

The advent of AI in the peer-review process is already changing the way academic manuscripts are evaluated and mitigating several of the challenges traditionally associated with human peer review [58]. AI peer-reviewers offer a level of objectivity that can significantly reduce the subjectivity and biases often found in human evaluations [59]. By programming AI systems to assess manuscripts based on specific, predefined criteria, the influence of personal biases, prejudices, or conflicts of interest that may affect human reviewers can be minimized. This approach ensures that manuscripts are evaluated solely based on the merit of their content, fostering a more equitable review process [60]. Furthermore, the capability of these tools to process and analyze large volumes of text rapidly provides quick, consistent feedback to authors and editors, which is crucial in fields where research is rapidly evolving. This consistency and efficiency in AI-led evaluations can reduce the time from submission to publication, an essential factor in advancing scientific discovery.

The integration of GAI into the peer-review process significantly alleviates the burdensome workload on human reviewers, mitigating issues such as reviewer fatigue and ensuring the maintenance of high standards of academic rigor and integrity. By automating preliminary evaluations, these tools efficiently filter submissions, allowing only those that meet specific criteria to proceed for human review. This not only streamlines the review process but also enables reviewers to focus on the more nuanced aspects of manuscripts, enhancing the quality and thoroughness of reviews. Moreover, GAI aids in identifying suitable reviewers by matching expertise and research interests, further increasing the efficiency of the process. Additionally, the capability to detect plagiarism and other forms of academic misconduct bolsters the integrity and reliability of scholarly publications [61]. As GAI evolves, its role in academic peer review is poised to complement human expertise, fostering a more robust, fair, and efficient system of scholarly evaluation, despite the significant disruptions these new processes may cause to the traditional academic worldview and identity.

4. Disruptions in Education: Past and Future

The introduction of LLMs like ChatGPT in academia has not only stirred concerns about cheating but also instigated a profound reevaluation of the identity and role of postsecondary educators. This disruption echoes a historical pattern where educational paradigms are challenged and reshaped by technological advancements [62]. The role of undergraduate education, traditionally seen as developing a student's foundational knowledge in a discipline, faces a potential overhaul with the advent of AI, which can automate the acquisition of background knowledge, history, vocabulary, and nomenclature of various fields. The potential for AI to assume these foundational teaching roles raises questions about the future structure of higher education, particularly the role of graduate-level education where more specialized, critical thinking and research skills are emphasized [63].

Historically, education has undergone several technological disruptions, each reshaping the methods and content of learning [64]. For instance, the introduction of the chalkboard in 1801 marked a significant shift in instructional methods. This innovation enabled teachers to visually share information with a larger group of students simultaneously, fostering a more interactive and collective learning environment. The advent of photography in 1839 enhanced educational materials with visual documentation, providing students with a more engaging and detailed understanding of subjects ranging from history to science. The invention of the mechanical calculator by Blaise Pascal in 1642 transformed the study of mathematics (leading to controversy in the 1970s) [65]. By simplifying complex calculations, it allowed students and scholars to delve deeper into mathematical concepts without being bogged down by tedious computations. Pertinent to the discussion here, the 1960s witnessed the emergence of word processors that revolutionized the creation and editing of written documents. This technology made writing more efficient and accessible, changing how students and academics compose and revise their work [66].

At the close of the twentieth and beginning of the twenty-first centuries, there was a flurry of advances that are still impacting education today. Google, launched in 1998, transformed the landscape of information retrieval, making it vastly easier for students and educators to access a wealth of resources and data, thereby enhancing the research process. Wikipedia, introduced in 2001, became a pivotal online resource for students and educators. Its comprehensive and easily accessible content has made it a primary go-to source for quick information gathering. The launch of Massive Open Online Courses (MOOCs) in 2008 democratized higher education. These online courses offered free, high-quality education from top institutions to anyone with internet access, breaking down geographical and financial barriers to learning. In 2009, Grammarly, an AI-driven writing assistant, began enhancing written communication with real-time grammar and spell-checking. Its technology improved the quality and clarity of writing for students and professionals alike. The 2010s saw the rise of AI-driven tutoring systems, such as Carnegie Learning's MATHia, which offered personalized and adaptive learning experiences. These systems leveraged AI to tailor educational content to individual student needs, revolutionizing the way personalized education is delivered. Each of these previous educational technologies not only brought about significant changes in how education was imparted and received but also prompted educators and institutions to continually adapt and rethink their teaching methodologies. This historical perspective underscores the recurrent nature of educational disruptions caused by technological advancements. Similar to past innovations, AI and LLMs present both challenges and opportunities for education. While they

may potentially automate certain aspects of teaching, particularly at the undergraduate level, they also open new avenues for enhancing and personalizing learning experiences. As with the introduction of earlier technologies, the integration of AI into education requires a reimagining of teaching methods and curricula to leverage these new tools effectively. Educators must adapt and evolve alongside these technological changes to ensure that students are equipped with the skills and knowledge needed to thrive in an increasingly digital world. Students are increasingly aware of the need to gain these skills and have different perceptions of AI in the classroom than their teachers.

The most recent research has elucidated student perceptions of AI in education, which are multifaceted, reflecting a blend of enthusiasm for its potential benefits and concerns over its possible downsides [67]. The utilization of AI tools like ChatGPT by students has sparked a variety of reactions, ranging from appreciation for their utility in aiding learning processes to apprehension about their impact on academic integrity and skill development. A study by Bergström et al. highlighted these mixed sentiments among students regarding the use of ChatGPT [68]. While acknowledging the extensive capabilities of the tool in assisting with academic tasks, many respondents expressed concerns that overreliance on ChatGPT could negatively affect learning outcomes. There is apprehension that the ease of completing tasks with AI assistance might lead to diminished creativity, self-reliance, and originality in student work, potentially widening the gap between high-achieving and low-achieving students. The risk of plagiarism and the consequent compromise in the quality and originality of student work were also noted as significant concerns.

On the positive side, students have found AI tools like ChatGPT, Grammarly, Zotaro, and Speechify immensely helpful for various academic tasks. ChatGPT and Grammarly are particularly valued for improving sentence structure and clarity of expression, making written communication more scholarly or concise [69]. These tools are especially beneficial for international students and those for whom English is a second language, as they help rewrite and condense content [67]. Additionally, speechify can convert written information into audio format is highly appreciated by graduate students who need to process large volumes of reading material. GitHub Copilot, likened to having a Stack Overflow assistant, is praised for its ability to provide code snippets based on short prompts, making learning coding more efficient. Furthermore, students recognize the importance of AI tools in fast-tracking tedious processes and preparing them for the job market [70]. The ability of AI to generate bibliographies instantly, for example, saves significant time and effort. Students are generally adaptable and have taken the integration of AI tools in stride, incorporating them into their daily routines. AI tools are becoming as ubiquitous and essential as calculators and search engines once were, known for aggregating information in ways previously not possible. Looking to the future, students acknowledge the inevitability of the integration of the tools into the workforce and the necessity of being AI-literate to remain competitive. They are aware of the need for policies and guardrails to mitigate unintended consequences and ensure ethical use. As AI continues to evolve, students express a desire to take responsibility for shaping the future implications of AI in society and their careers, recognizing the importance of understanding and navigating this new technological landscape.

5. Strategies for Teaching Research and Writing with GAI

In the age of rapidly evolving AI technologies, particularly generative AI, there is a growing need to adapt teaching strategies in specific gateway courses that all students take to learn research and writing like English composition. The incorporation of AI tools like ChatGPT in the writing process presents both challenges and opportunities for educators. Students, increasingly AI-literate, are utilizing these tools for various aspects of writing, from summarizing lectures to generating bibliographies. This trend necessitates a reevaluation of pedagogical approaches to ensure that students not only acquire writing skills but also develop critical thinking and problem-solving abilities. Pedagogical strategies for incorporating AI in the writing process are multifaceted. For example, instructors can use AI to generate example sentences specific to course topics, highlighting stylistic principles of clarity and prompting students to revise for clarity and explain their revisions [71]. This practice encourages students to engage critically with AI-generated content, enhancing their understanding of language and style variations. Furthermore, AI can be utilized as another peer reviewer, where students solicit specific feedback on their drafts and critically evaluate the feedback received. This approach not only aids in improving student writing but also fosters their analytical skills in evaluating and implementing feedback.

In addition to these strategies, the Yale University Press suggests leveraging AI to find and explore models for different writing styles and genres, helping students to understand and adapt these models in their writing [72]. Emphasizing a process-oriented approach, such as the MPG (Model-based, Process-oriented, Genre-focused) approach, breaks down writing tasks into smaller, manageable steps, integrating exchange and feedback from teachers and peers. This method shifts the focus from the end product to the writing process, encouraging students to produce, reflect, choose, and edit, making the use of AI less attractive for completing entire tasks. On the other hand, Stanford University's Teaching Commons offers a sequential guide for instructors to adapt their pedagogical choices around course learning outcomes, diversify course activities and assignments, and test generative AI themselves to understand its capabilities and limitations [73]. They also recommend incorporating live writing in class to foster engagement and critical thinking and encourage outside-of-class writing to promote student ownership of their learning and progress. Finally, the Harvard Writing Project has developed a framework for designing assignments in the age of AI and a list of current AI writing tools, providing instructors with resources to navigate this new landscape effectively [74]. This framework helps educators design writing tasks with care, from model collection and analysis to a well-designed, multi-step process of producing, reviewing, and editing a text. The integration of AI in the English composition classroom requires a thoughtful blend of traditional and innovative teaching methods. By leveraging AI tools judiciously, focusing on the writing process, and encouraging critical engagement with AI-generated content, educators can equip students with the necessary skills to succeed in an AI-influenced academic environment. These strategies not only enhance students' writing abilities but also foster their critical thinking, creativity, and problem-solving skills, which are crucial in the age of AI.

6. Conclusions

The rapid advancement and integration of generative artificial intelligence (GAI) in educational and academic settings are reshaping our understanding of creativity, originality, and the collaborative writing process. As we navigate this new landscape, it becomes increasingly clear that both policy and pedagogical frameworks within educational institutions must evolve to address the unique challenges and opportunities presented by GAI technologies. These changes are not just confined to the realm of education; they have significant implications for the professional research publication sector, necessitating a reevaluation of practices and standards in scholarly writing and peer review. At the same time, the changing nature of creativity and originality in the age of GAI calls for a nuanced understanding of these concepts. Creativity is no longer solely the domain of human ingenuity but is now a collaborative endeavor between humans and AI. This collaboration requires a redefinition of originality, particularly in academic writing, where the line between human-generated and AI-assisted content is increasingly blurred. Educators must guide students in navigating this complexity, ensuring that the use of GAI enhances rather than diminishes their creative and analytical skills.

The implementation of best practices in teaching and learning with GAI is crucial. These include leveraging AI tools to supplement traditional teaching methods, focusing on the process of writing rather than solely on the product, and encouraging critical engagement with AI-generated content. Educators should design assignments that integrate AI in meaningful ways, fostering student critical thinking, creativity, and problem-solving skills. Furthermore, the assessment of student work must evolve to focus more on these skills and less on rote memorization or factual recall. Looking ahead, the next steps involve continuous adaptation and innovation in teaching strategies to keep pace with the rapid development of GAI. Educators and policy-makers must work collaboratively to develop frameworks that not only address the challenges posed by GAI but also harness its potential to enhance the educational experience. This includes ongoing professional development for educators, the creation of ethical guidelines for the use of GAI in education, and research into the long-term impacts of these technologies on learning outcomes. The journey into the age of GAI in education and professional research is just beginning. By embracing change and prioritizing ethical, creative, and critical engagement with these technologies, we can ensure that they serve as powerful tools for advancing knowledge and fostering innovation in the Digital Age. As we continue to explore the vast potential of GAI, we must do so with a commitment to maintaining the highest standards of academic integrity and intellectual rigor.

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