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A Case Study in Mindfully Integrating AI Tools into Writing Classes

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Abstract

The proliferation of AI tools for text editing and generation has raised challenging but also interesting questions for writing classes. In this paper, we report on our experiences with an exercise exploring the use of AI in an academic writing class. We first outline our conceptualization of the writing process, breaking down the skills that students need to master the complex task of writing, visualized as a 'writing pie'. This breakdown allows us to critically assess the capabilities of AI tools against our understanding of writing as a human process. We then share our experiences with an exercise with ChatGPT in an academic writing class, where students evaluate a text with respect to its academic style and suggest improvements. Students then compare their own suggestions to those made by ChatGPT and critically evaluate the output. We include both instructors' and students' evaluations to reflect on whether the inclusion of such exercises can aid in achieving the course's learning outcomes. We share three key takeaways: (1) there is value to having students work with AI; (2) critical evaluation of AI output is key; (3) activities with AI should be evaluated against learning goals.

Introduction

After the public launch of ChatGPT 3.5 in November 2022, it soon became clear that generative Artificial Intelligence (AI) has the potential to greatly change the teaching of academic writing and how we all – not only students – relate to the process and purpose of writing. With its strong focus on written assessment, higher education has come to rely on student writing for a variety of purposes: assessing, reflecting, recording findings, communicating knowledge, and learning to communicate. At the same time, writing also presents some very real challenges (see e.g. Lea & Street 2006), which is why many universities have a dedicated programme for teaching students academic writing. Developments in generative AI present a clear challenge to us as teachers of academic writing: how do we adapt our writing courses to respond to the availability of these tools? In formulating this response, we felt that forbidding AI tools was not the right approach, but also that we wanted to be mindful about how we would include AI tools in our courses.

In this paper, we report on a series of exercises that we tried out in one of our writing courses, representing one attempt to envisage the role of these AI tools in traditional university writing courses. This teaching practice is based on work at a Dutch university, where we – as language and communication specialists based in a humanities faculty – provide training in academic

communicative skills for students and staff of all faculties of our research university. Our core activity is teaching academic writing, which is why exploring the role of AI tools has been particularly relevant to us. An additional challenge for our particular type of course is that we are always outsiders to the field, i.e. we focus on writing and not content, and we only focus on writing and not on more general academic skills, such as finding literature, argumentation skills, and academic integrity. This means that for us some of the early responses to the challenges for writing assignments posed by the availability of AI tools – turning to oral or pen-and-paper exams – are not an obvious solution.

In what follows, we first present our conceptualization of the writing process, breaking down the skills students need and evaluating ChatGPT's abilities with regard to each of these skills. We then report on our experiences with a teaching activity in one of our writing classes. We end with some key takeaways about what this process has taught us about the role of AI in academic writing courses. We aim to provide teachers and programme coordinators with a framework for (re)considering the purpose and setup of writing assignments now that students have access to AI tools.

Conceptualization of Human and AI Writing Skills: The Writing Pie

In order to consider the role AI tools might play in a writing classroom, we found it necessary to articulate the skills involved in writing in more detail and to evaluate how AI tools perform with respect to these skills. Our aim was to conceptualize writing skills and provide a starting point for setting up classroom interventions. Drawing on our own experiences, along with the work of various scholars, we developed the 'writing pie', a simple, concrete tool to help us clarify the various aims of student academic writing.

As many scholars have explored, writing is a complex task, involving many different skills which widely vary in the type of thinking or knowledge they require. Writing has been examined through the lens of executive function, e.g. working memory, mental flexibility (Graham, Harring & Olinghouse, 2007; Olive, 2021); process (Badley, 2009; Flower & Hayes, 1981); genre conventions and 'academic socialisation' (Lea & Street, 2006); and language (e.g. Silva, 2022). Of course, these studies only scratch the tip of the iceberg. We were also influenced by the broader discussion of 'writing to learn' (Murray, 2004) versus 'learning to write'. In our practical visualization of student writing, we wanted to represent both approaches.

The final pie, shown in figure 1, contains a mix of academic skills (critical thinking, source use), language skills (grammar, register), writing process/study skills (time management, revision), and the written product (genre conventions, punctuation). Because we wanted a simple, easily applicable tool, we have tried to reduce the discussion around academic writing into discrete 'slices', though we certainly recognize the overlapping nature of many of these skills.

In developing the writing pie, we tried to consider the process of writing a text holistically, thinking both of the process (as a chronological but also a cyclical experience) and of the skills required to achieve the desired outcome. The pie went through several drafts and we benefited from discussions with audiences at various presentations of our project. Breaking down the skills required us to consider and reconsider how to frame and group the process- and skills-related elements – far from a straightforward process.

The slices on the left side of the pie represent skills that mostly have to do with process, content, and thinking. These skills are necessary for writing, but are not unique to the task of writing a text:

- managing the writing process: planning, motivation, time management, revision;
- organizing and understanding content: making sense of the topic, putting parts together;
- explaining ideas, concepts and theories clearly: expressing ideas through language, putting thoughts into words; and
- engaging with sources: finding and assessing sources, paraphrasing content, blending source materials.

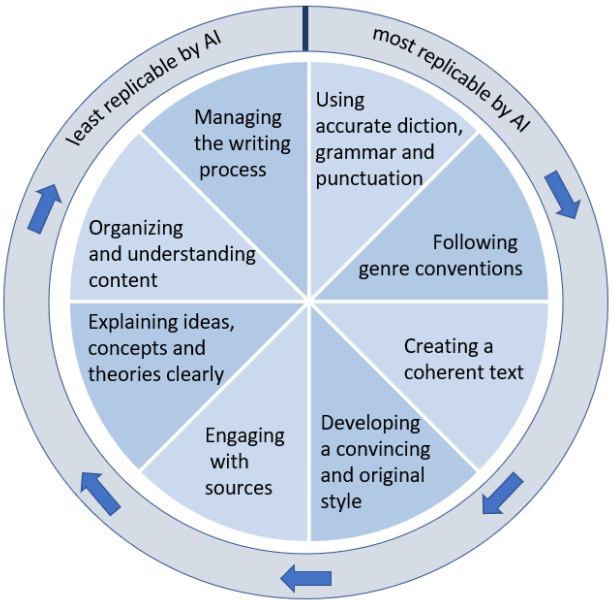

Figure 1. The writing pie: A conceptualization of human and AI writing skills

The slices on the right side of the pie represent skills that are related to communication – interacting with an audience in a specific context – both written and spoken. The nearer to the top, the more the skills are related to the end product of the process of writing a text:

- developing a convincing and original style: creative use of language, personal voice;
- creating a coherent text: structure at the level of the text, section and paragraph;
- following genre conventions: understanding of the type of communication, including register and style; and
- using accurate diction, grammar and punctuation: correctness in the written product.

The final component of the pie is the outer circle, in which we tried to very roughly capture our sense of how easily AI tools could replicate these specific aspects of writing. The two extremes are the most obvious: AI is good at removing surface-level punctuation and grammar issues (Alharbi, 2023), but by nature it cannot manage the writing process. Other aspects of writing are more ambiguous. ChatGPT, for instance, can very convincingly replicate a five-paragraph essay, with a thesis statement, topic sentences and a conclusion that all relate to the same central topic. However, below the surface, the coherent nature of the text is much less convincing, with a lot of repetition and circularity (for an example of a comparison of AI and human texts, see Herbold et al., 2023). Similarly, ChatGPT can generate a text that sounds convincing about a certain theory, but the representation of the theory may be wildly inaccurate. Finally, even in those areas of the pie that AI is fairly 'good' at, students must be able to judge whether revisions actually capture their intended meanings. Thus, they continue to need a broad vocabulary, fluency in the language, and discerning reading skills (cf. Schwenke, Söbke & Kraft, 2023). In addition, it remains to be seen to what extent students learn from and can improve their text by using these tools, even for the straightforward topics of grammar and punctuation (cf. Koltovskaia, 2020). Thus, we argue that it is certainly not useless to teach writing elements that fall on the right side of the writing pie.

Additionally, we realized that we did not want our classes to turn into a course on 'how to write well with AI', but rather we wanted to explore how AI tools can be part of the activities that lead to our learning goals, following principles of constructive alignment (Biggs & Tang, 2011). In essence, the purpose of the writing pie is a tool to help teachers (and by extension students)

think more carefully about what they aim to achieve in any writing assignment. By breaking writing down into discrete elements, one can then try to isolate the way any given assignment might facilitate (or not) the development of a certain skill or the acquisition of certain knowledge. For instance, if a teacher really only wants to know if a student understands a single theory – particularly something very widely known – a written essay on that topic might not be a good assignment. Rather, the teacher might use an exam or some other form of assessment that isolates the straightforward transfer of knowledge. On the other hand, if the teacher wants to assess students' ability to organize several theories into one original combination, the teacher might assign a written paper, perhaps including outlining and drafting stages to show the progression of ideas.

Integrating ChatGPT into a Writing Class: A Case Study

The course is a first-year standalone course on academic writing, worth 3 ECTS credits. There were around 250 students and six teachers. The course covers foundational skills in academic writing, such as academic style, linguistic accuracy, text structure and clarity and cohesion. The course follows principles of constructive alignment (Biggs & Tang, 2011), meaning that there is a logical match between the goals of the course (what students should learn), the activities of the course (how students learn) and the assessment methods (how students are tested). The course also draws on elements of significant learning (Fink, 2003), by considering what students need to be able to do after completing the course.

For this teaching practice, we decided to focus on one aspect of the writing pie. After discussing various possibilities, we chose an aspect we had evaluated as possibly replicable by AI: genre conventions. Choosing a 'more' replicable skill was intentional, as one of the purposes of the writing pie is to provide a framework for reevaluating skills taught in writing classes. This exercise therefore allowed us to evaluate to what extent teaching materials on this topic are still relevant, considering not only the learning outcomes of the course (Biggs & Tang, 2011), but also what is practically useful for students (Fink, 2003).

Creating this activity was a cyclical process in which we experimented with different prompts and exercise ideas, using ChatGPT 3.5. Although we considered using ChatGPT live in class, or experimenting with different prompts, we decided that such approaches raised ethical concerns (asking students to create an account) or practical problems (ChatGPT not working during a class). In addition, focusing on prompting specifically would move away from the learning outcomes of the course. To ensure constructive alignment (Biggs & Tang, 2011), we decided on an activity that met the following learning goals: (1) students have knowledge of formal/informal features; (2) students are able to recognize and improve issues with formality in their text; (3) students are able to critically evaluate AI output, recognizing strengths and limitations.

To create the activity, we used a modified student text from a previous year (with the consent of the student). We selected a text with many features of informal writing and slightly adapted it by removing citations, shortening it to a single paragraph and adding some informal features that were discussed in the teaching materials, such as sentence fragments. This was done to avoid distractions and to optimize the text in relation to the teaching materials. We then provided the paragraph to ChatGPT 3.5 with a simple prompt: "Could you please increase the formality of this text so that it is more academic in style?" This output was then used in the classroom activity. Table 1 presents some example sentences from the exercise.

The teaching procedure was as follows. First, the students watched an online recorded video on basic characteristics of formal written English. The lecture focused on what is typically avoided in academic writing (such as vague words, informal phrases and sentence fragments) and what is typical for the genre (such as using standard academic phrases and precise language). Second, the students attended an in-person seminar, which covered the topic of academic style. In the seminar, the students worked on the classroom activity based on academic style and formality that implemented ChatGPT.

Table 1. Examples from the student text and suggestions by ChatGPT3.5

Student text	Text output by ChatGPT 3.5
On the other hand, the Internet of Everything (IoE) creates lots of opportunities.	On the contrary, the Internet of Everything (IoE) engenders a plethora of opportunities.
Not the advertisement that you see in a newspaper, but the one that you will see on smart screens.	However, this advertising does not manifest itself through traditional print media, but rather through the medium of intelligent screens.
Have they never thought of tourists who have never been in a major city like New York and would like to drink a coffee at a Starbucks store? No.	Nevertheless, they tend to overlook the needs of unacquainted tourists who find themselves in unfamiliar urban locales, such as New York, and yearn for the prospect of patronizing a Starbucks establishment, for instance.

The classroom activity began with an analysis of the informal student text, in which students identified informal features and suggested more formal alternatives. They were then presented with the text edited by ChatGPT and evaluated the suggestions, identifying changes they considered effective or ineffective in terms of level of formality. Some of these changes, which used complex language such as “engenders a plethora of” or “yearn for the prospect of patronizing a Starbucks establishment” (see Table 1), raised interesting questions about what level of formality fits the communicative purposes of the genre. Other changes, such as “smart screens” to “intelligent screens”, revealed a potential limitation of using ChatGPT to increase formality in this way, since students argued that ‘smart screen’ is the name of an actual technology, rather than an informal description.

These discussions took place at each stage of the activity, allowing students to receive feedback from each other and the teacher in relation to the learning goals. In this way, teachers could provide step-by-step feedback using the model of Hattie & Timperley (2007). This model includes the steps of ‘Feed Up’, clarifying the learning goals and outcomes; ‘Feed Back’, evaluating the learners’ current progress towards those goals; and ‘Feed Forward’, determining concrete strategies learners can later apply to their own texts.

Discussion

This teaching practice used an exercise with generative AI, which involved the following implementation:

1. students analyse an informal text and make suggestions to increase formality;
2. teachers show a version of the same text, generated by ChatGPT based on a prompt that asks to make the text more formal and academic in style; and
3. students evaluate the ChatGPT text in comparison to their own suggestions.

In order to assess whether such an implementation could help students improve their writing skills and explore the strengths and limitations of AI as an editing tool, we conducted an evaluation. This evaluation is based on feedback from the six teachers of the course, as well as survey responses from a small subset of students (n = 21), who were asked three questions on a 7-point Likert scale about the ChatGPT formality exercise, and two open questions about AI tools more generally. On this basis, we have determined three key takeaways.

There is value to having students work with AI

All six teachers reported higher levels of student engagement with this activity compared to other writing activities done on the same course, or different formality activities done on other courses. One teacher made the point that including AI provided a unique way of showing an overly formal version of a text, since one created by a teacher may feel contrived. This teacher

pointed out that "if ChatGPT comes up with exaggerated versions or changes formulations that were acceptable in the first place, that makes students think about formality in a different way". Other teachers pointed out that the inclusion of AI itself made the topic more engaging, especially since at the time of the course (May 2023) generative AI was a relatively new concept to many people. Students themselves mostly agreed with the statement that the exercise gave them a better understanding of formality in academic writing (mean = 4.9/7) and made the topic of formality more engaging (mean = 5.1/7). On the open questions about whether AI tools should be used in writing classes, all 21 respondents of the survey agreed, although some emphasized that the limitations of such tools should also be considered.

Critical evaluation of output is key

All teachers reported that students were able to think critically about the output from ChatGPT and evaluate the quality of the response. Teachers pointed out that students were able to bring a sense of humor to their analysis, commenting on changes that seemed exaggerated or ridiculous for the context (as illustrated in table 1). This allowed for a more nuanced discussion of personal preferences and the limited ability of AI to take context, audience and purpose into consideration. Students mostly agreed with the statement that the exercise highlighted the strengths and limitations of AI as an editing tool for formality (mean = 5.6/7). In an open question, several students pointed out that the exercise had raised their awareness of various strengths, such as usefulness for providing suggestions or editing, but many students highlighted cautions, such as inaccuracies in output and 'over the top' formality in suggestions. Students pointed out that these tools should be used carefully.

Activities with AI should be evaluated against learning goals

It is clear that AI tools will change the nature of academic writing classes. This development not only highlights the importance of defining learning goals that accurately reflect what will be valuable for students in the future, but also the importance of continually reassessing what we want students to learn (Fink, 2003). We have come to the conclusion that AI tools work best as a complement to the writing process, rather than a replacement, and that it is vital to clearly define which skills students need to learn in a given course. An interesting further exploration relates to the place of AI tools in theories of the writing process (Flower & Hayes, 1981) and academic literacies (Lea & Street, 2006). Our experiences have shown us that students have a range of approaches when it comes to using AI tools, and different ideas about what determines acceptable use. Integrating AI into writing courses provides an opportunity to discuss the topic openly and set clear expectations, both from the perspective of effective learning and academic integrity. Openly discussing AI tools in this way allows for constructive alignment between course goals, class activities and assessment methods (Biggs & Tang, 2011). One limitation of this specific project is that it focused on only one exercise, prompt, AI tool (ChatGPT 3.5) and aspect of writing. However, a strength of our approach in this exercise, and the writing pie more broadly, is that the same procedure can be revisited with different AI tools and aspects of writing in order to continually reevaluate the aims of a writing assignment and the capabilities of AI tools, as way to mindfully approach integrating AI tools in writing classes: critically and with a careful consideration both of AI's benefits and challenges and of a course's learning outcomes.

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