HOW TO DEAL WITH AI-POWERED WRITING TOOLS IN ACADEMIC WRITING: A STAKEHOLDER ANALYSIS

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ABSTRACT

Due to the advances of artificial intelligence (AI) and natural language processing, new AI-powered writing tools have emerged. They can be used by students among other things for text translation, to improve spelling or to generate new texts. In academic writing, AI-powered writing tools are posing challenges but also opportunities for teaching and learning. It is an open question in which way to sensibly deal with these tools. To address the issue, this paper investigates, what interests different stakeholders (students, lecturers, university administration) pursue in relation to AI-powered writing tools. Building on this, tensions between different stakeholders are identified and (teaching) strategies proposed to deal with these tensions. To discuss the findings in light of recent developments around ChatGPT, semi-structured expert interviews were conducted in April 2023 with five academic writing lecturers at the University of St.Gallen. The results suggest that as writing tools become more and more powerful, the need for strategies to ensure their reasonable and transparent use also increases.

KEYWORDS

Higher Education, Academic Writing, AI-Powered Writing Tools, ChatGPT, Stakeholder Analysis

1. INTRODUCTION

With the release of ChatGPT in November 2022, AI-powered writing tools gained broad attention in society (see, e.g., Dwivedi et al., 2023). However, in the context of academic writing, AI-powered writing tools are not a new phenomenon (Dergaa et al., 2023, pp. 616-617). In recent years, technological advances in the field of artificial intelligence (AI) and natural language processing (NLP) have led to increasingly better tools in this rapidly changing, dynamic environment (Dergaa et al., 2023; Brown et al., 2020; Heaven, 2020). Among other things, AI-powered writing tools can be used to translate, to paraphrase and summarize content, to get instant feedback or automatically generate new texts.

In academic writing, AI-powered writing tools create new opportunities, but also new challenges (Dwivedi et al., 2023; Dergaa et al., 2023; Marche, 2022; Sharples, 2022). One the one hand, such tools could be used as an additional feedback channel to provide individualized feedback on student writing (Dwivedi et al., 2023; p. 25). Since it can be very time-consuming for lecturers to provide individualized text feedback to each student, AI-powered writing tools could relieve lecturers from some of their workload. On the other hand, AI-powered writing tools may also produce misleading or wrong content, that may not be obvious to all students (Rogerson & McCarthy, 2017). Used in the wrong way, their use can lead to plagiarism issues (Rogerson & McCarthy, 2017; Prentice & Kinden, 2018). The ability to support students writing with powerful tools also raises discussions about the extent to which essays and papers are still a valid form of assessment (Marche, 2022; Sharples, 2022). Lack of transparency in using these tools can make it difficult to evaluate a student's performance.

Furthermore, various stakeholders, such as students, lecturers, and the university administration, do not necessarily share the same interests with respect to AI-powered writing tools. This leads to tensions between different stakeholders, which manifest, for example, in discussions about the extent to which the use of such tools should be considered a plagiarism offence. There is a need for developing sustainable strategies in dealing with AI-powered writing tools (Dwivedi et al., 2023, p. 26; Dergaa et al., 2023, p. 617).

An important precondition for creating meaningful strategies and solutions would be to better understand what interests different stakeholders have in relation to AI-powered writing tools. If we better understand the various interests of the stakeholders, we will be able to establish sustainable solutions in this dynamically evolving field. In light of the identified research desideratum, the following research question is addressed:

Considering different stakeholder interests, what are meaningful strategies to deal with AI-powered writing tools in academic writing?

The objectives of the paper at hand are therefore twofold:

- Providing an overview about different stakeholder interests (students, lecturers, university administration) with regard to AI-powered writing tools in academic writing, to obtain a nuanced picture and better understand the underlying dynamics and conflicting interests between different stakeholders;
- Analyzing and evaluating tensions between different stakeholders in the context of the rapid developments of new AI-powered writing tools such as ChatGPT, in order to derive meaningful (teaching) strategies to deal with AI-powered writing tools in academic writing.

As a methodical foundation, the concept of *tensions* is used, which organizational actors experience, when they are confronted with incompatibilities and dilemmas (Putnam et al., 2016, p. 4). For example, regarding the usage of AI-powered writing tools in academic writing, students and lecturers might have different interests, which can lead to tensions (e.g., using vs. not using AI-powered writing tools). The choices that individuals make regarding a certain tension can lead to different emotions such as stress or anxiety (Mini & Widjaja, 2019; Putnam et al., 2016).

The aim is to reveal existing, partially conflicting interests of the different stakeholders as well as to document the usage behavior of AI-powered writing tools at the University of St.Gallen and the University of Mannheim in fall term 2022 (prior to the release of ChatGPT). Based on this status quo analysis, semi-structured expert interviews with lecturers in the field of academic writing were conducted in April 2023, to better understand how new emerging tools like ChatGPT influence and change the already existing landscape of AI-powered writing tools in academic writing.

From a theoretical point of view, the paper at hand can serve as a starting point for future research as it analyzes and conceptualizes the problem space (emerging tensions) and solution space (possible strategies) for dealing with AI-supported writing tools in a dynamically changing environment. It further identifies diverging viewpoints on the benefits and risks of AI-powered writing tools of different stakeholders currently found in the literature that could guide future research.

From a practical standpoint, the paper at hand might be valuable for people who work in the field of academic writing, as the paper highlights different strategies on how to cope with AI-powered writing tools in academic writing. The derived strategies as well as its implications might serve as a starting point for further discussion to introduce meaningful regulations in one's own context.

To this end, section 2 provides an overview about AI-powered writing tools in academic writing as well as different perspectives on the topic from three key stakeholders (1) university administration, (2) lecturers, and (3) students. Section 3 elaborates on the identified tensions between different stakeholders and derives possible strategies for coping and responding to them. In section 4, based on semi-structured expert interviews, the results are discussed in the light of the latest developments around newly emerging writing tools like ChatGPT. Section 5 concludes with some final remarks.

2. AI-POWERED WRITING TOOLS IN ACADEMIC WRITING

2.1 A Dynamically Changing Environment

Writing skills are considered important, because they enable us to construct and express one's own identity (e.g., Ivanic, 1998). They further support us in developing meaningful arguments and points of view (e.g., Van Eemeren & Grootendorst, 2016). Students' *academic writing skills* may include different aspects,

such as the ability to construct strong arguments, consider several viewpoints, cite correctly, or use a tone and style appropriate for the target audience (Purcell et al., 2013, p. 4).

Over the past decades, students' writing habits have changed with the rise of new technologies and the Internet (Moore et al., 2016; Peters & Cadieux, 2019). Advances in machine learning (ML) and natural language processing (NLP) have led to the emergence of new, more powerful writing tools (Geitgey, 2018; Brown et al., 2020; Heaven, 2020). Table 1 gives an overview over several types of AI-powered writing tools, that can directly support the process of writing.

Table 1. Several types of AI-powered writing tools, that directly support the writing process

Tool type	Description	Examples
Online translation tools	Online translation tools are software tools that can automatically translate a text into different languages.	DeepL, Google Translate
Paraphraser and summarizer tools	Online paraphraser and summarizer tools are software tools that can paraphrase, shorten, or summarize a given text into a new text of the same language. When using them, a given text (e.g., from Wikipedia) is used as an input and then further modified by using the tool.	QuillBot, Smodin
Online writing assistants	Online writing assistants are software tools that help to improve the quality of a text. During the writing process, the writer typically gets recommendations from such tools with regard to spelling, grammar, redundancy, vocabulary usage, clarity and style.	Grammarly, Wordtune
AI-based content generators	AI-based content generators are software tools designed to create new texts (based on some input parameters specified by the user such as the topic to write about). After entering the inputs, such tools for example provide suggestions for the outline of the full text.	Writesonic, Copy.ai, GPT-3, ChatGPT

Even though the current discussions about large language models (LLM) like ChatGPT illustrate the relevance of this topic, the opportunities and risks of using AI-powered writing tools in academic writing have been debated for quite some time. For example, there is an ongoing discussion on the extent to which translation and paraphrasing tools should be considered legitimate support tools for writing or whether they rather constitute a mode of bad practice that encourages plagiarism (see e.g., Rogerson & McCarthy, 2017; Prentice & Kinden, 2018).

In the meantime, the first publications have appeared that list AI-powered writing tools as co-authors (see e.g., Carr, 2023). However, this approach is not widely accepted. Major publishers and conference organizers have updated their policy regarding AI-powered writing tools (Dwivedi et al., 2023, p. 34). For example, the publisher Taylor & Francis (2023) states, that "authorship requires taking accountability for content, consenting to publication via an author publishing agreement [as well as] giving contractual assurances about the integrity of the work" (Taylor & Francis, 2023). In their view, those uniquely human responsibilities cannot be undertaken by AI tools. Rather than treating AI-powered writing tools as co-authors, they should be treated as tools whose use must be appropriately acknowledged and documented (Taylor & Francis, 2023). The publisher Springer Nature (2023) adopts the same position and recommends documenting the use of AI powered writing tools in the methods or acknowledgments sections. In this vein, some scholars also argue that using AI-powered writing tools without explicit acknowledgement is a form of deception rather than plagiarism (Weßels, 2023; Schwarz, 2023). With regard to teaching in higher education, there is currently no consensus on how to best deal with AI-supported writing tools. While education providers in some countries currently explicitly prohibit AI-powered writing tools (Ropek, 2023; McCallum, 2023), other universities have already issued some form of recommendations for integrating such tools (see, e.g., University of Washington, 2023; Gimpel et al., 2023). Overall, it is still an open question for many universities to what extent they should adapt or resist these developments (see, e.g., Cano et al., 2023).

2.2 Lecturer Perspective on AI-Powered Writing Tools

In the context of higher education, academic writing lecturers face several issues related to AI-powered writing tools. They have to reconcile 1) administrative requirements of the university, 2) pedagogical goals (e.g., learning objectives, appropriate evaluation method) (Gimpel et al., 2023, p. 28), along with 3) personal goals (e.g., reasonable workload). In doing so, they need to develop an attitude regarding the use of AI-powered writing tools (Dergaa et al., 2023, p. 617). Questions arise as to what extent and under what

conditions the use of these tools should or should not be allowed and how these tools should be addressed in the classroom. New competencies may have to be learned in order to teach the reasonable use of these tools (see e.g., concepts about AI literacy as mentioned in the DigComp 2.2 Framework (Vuorikari et al., 2022)).

Lack of transparency in the use of writing tools is a further problem, as it makes it difficult to evaluate and assess a student's individual contribution relative to the tools the student used. How should the use of such tools be made transparent without creating too much workload for me as a lecturer? In which way should I as lecturer evaluate and assess texts submitted by students?

It is further likely that certain students will also use AI-powered writing tools without the consent of the lecturer. How can I ensure as lecturer that students engage with the content in depth and still develop writing competencies?

2.3 University Administration Perspective on AI-Powered Writing Tools

In terms of AI-based writing tools, university administrators face similar issues as lecturers. However, more focus is placed on higher level procedural issues such as treating all students equally. For example, from the point of view of the university administration, it is important that examination formats fulfill the three criteria of 1) validity, 2) reliability and 3) fairness (see e.g., American Educational Research Association, 2014). Currently, voices are being raised calling for the "death of the essay" (Marche, 2022) or at least a radical revision of the current approach to written work (Sharples, 2022). The unauthorized, unnoticed use of AI-powered writing tools to write term papers could lead to a "measurement bias" (American Educational Research Association, 2014, p. 49) that calls into question the fairness of the testing procedure, because student performance may be relatively overestimated (if they use these tools). Are written assignments and term papers still a good examination format or do they need to be revised? How can we establish a fair procedure for all students as well as prevent fraud during examination?

2.4 Student Perspective on AI-Powered Writing Tools

From the students' point of view, AI-powered writing tools offer many advantages, such as correcting grammatical and formal errors, quickly translating and rewriting content, or even creating entirely new text passages. It can be assumed that many students will use any available writing tool that they believe can increase the quality of their final text. However, students may also have certain concerns about using AI-powered writing tools. On the one hand, the recommendations made by these tools are not always reliable (Rogerson & McCarthy, 2017). On the other hand, it is not always clear to what extent the use of such tools is permitted or not.

To better understand the usage behavior of students regarding AI-powered writing tools, a survey was conducted at the University of St. Gallen and the University of Mannheim in September and October 2022 (prior to the release of ChatGPT in November 2022). In total, 643 students participated in the survey. During the survey, students were presented with four different types of AI-powered writing tools (see again Table 1). To provide a common standard and anchor for responding to questions, the different AI-powered writing tools were presented in the form of vignettes, which has become a viable approach in educational research (see e.g., Sailer et al., 2021; Guggemos et al., 2022). A vignette is a stimulus that presents a realistic scenario to the study participants (Skilling & Stylianides, 2020). Each vignette included an image, a description, and specific examples for the type of writing tools (see again Table 1). After viewing a certain vignette, students were asked to what extent they used that type of writing tool themselves. The survey results are presented in Table 2.

Table 2. AI-powered writing tool usage in the fall term 2022

	Always	Often	Sometimes	Occasionally	Rarely	Never
Online translation tools - foreign language texts	19.6%	40.3%	22.9%	8.6%	7.6%	1.1%
Online translation tools - back-and-forth-translation (mother tongue)	12.0%	21.6%	18.4%	10.6%	15.7%	21.8%
Paraphraser and summarizer tools	2.5%	7.6%	14.5%	6.1%	14.6%	54.7%
Online writing assistants	9.0%	14.8%	18.0%	9.8%	14.8%	33.6%

Note: Number of participants = 643. The numbers do not always add up exactly to 100 percent due to rounding. Data gathered in September and October 2022 at the University of St.Gallen and the University of Mannheim.

As we can see in Table 2, even before the release of ChatGPT in November 2022, AI-powered writing tools were widely used by students. Especially online translation tools were widely used for writing both foreign-language and native-language texts (see Table 2).

In the survey, we also showed students a vignette of AI-based content generators such as Writesonic or GPT-3. However, in the fall term 2022 – prior to the release of ChatGPT in November 2022 – student usage of AI-based content generators was still very limited. Most of the students (82.0%) never had tried out AI based content generators. 18% of the students had already tried out at least once such tools. While 6.2% of the students thought that such tools were not useful, another 9.5% of the students thought they were good but too expensive due to the paid subscription plans. 2.3% of the students stated, that they use AI-based content generators and had a paid subscription plan.

While these numbers are likely to have changed in magnitude since the introduction of ChatGPT, they can still provide a general overview of student behaviors in this dynamic field. AI-based writing tools play an important role in student writing. With new, more powerful tools like ChatGPT, this existing dynamic is likely to further accelerate.

2.5 Tensions in the Use of AI-Powered Writing Tools

In the previous sections, it was argued that different stakeholders have (at least partially) different interests in dealing with AI-powered writing tools. Because of their different interests, *tensions* can arise between the stakeholder groups. In the context of this paper, *tensions* are understood as elements that entail both potential advantages and disadvantages (Mini & Widjaja, 2019, p. 4; Smith & Lewis, 2011). In the sense of a trade-off, the advantages and disadvantages of a certain tension must therefore be carefully weighed against each other (Mini & Widjaja, 2019, p. 4; Smith, 2014). The choices that individuals make between the elements of a tension (e.g., using vs. not using AI-powered writing tools) can lead to different emotions such as stress or anxiety (Mini & Widjaja, 2019; Putnam et al., 2016).

In the past, different strategies have been proposed to cope with tensions (Mini & Widjaja, 2019, p. 4; Putnam et al., 2016). For example, in *either-or* strategies (A or B), one element is strictly preferred at the expense of the other. In other strategies (A and B; more A than B, more B than A), a trade-off is made between two elements, with the goal of finding a reasonable compromise (Mini & Widjaja, 2019).

Based on the three different stakeholder perspectives, Figure 1 shows an overview over tensions identified in the previous sections regarding the use of AI-powered writing tools in the context of academic writing. The identified tensions were grouped into three main categories: *First*, tensions emerge regarding the extent to which all individuals should have free access to these tools (see Section 3.1). *Second*, tensions arise about whether AI-assisted writing tools should be used in the context of academic writing in (see Section 3.2). *Third*, it is unclear to what extent the (possible) use of such tools should or should not be made transparent (see Section 3.3).

In the next chapter, the tensions related to AI-powered writing tools are further elaborated and contextualized in relation to existing literature. On that basis, possible *strategies* for overcoming and resolving the existing tensions will be proposed.

ISBN: 978-989-8704-52-8 © 2023

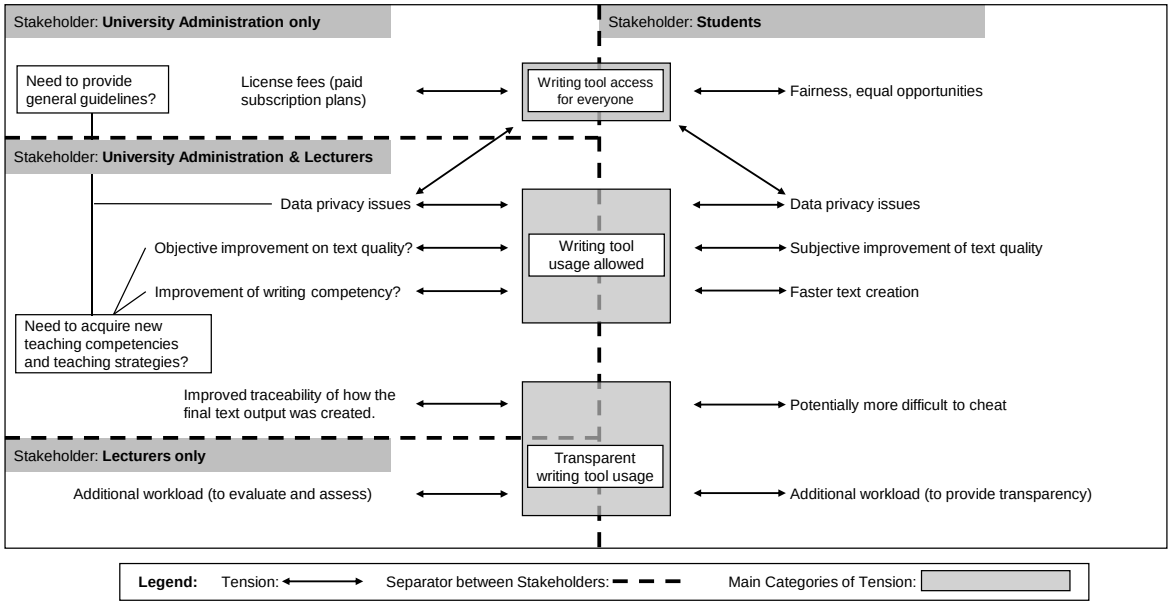

Figure 1. Identified tensions with regard to AI-powered writing tools
Note: Visual representation based on Mini and Widjaja (2019)

3. STRATEGIES FOR AN EFFECTIVE INTEGRATION OF AI-POWERED WRITING TOOLS IN ACADEMIC WRITING

3.1 Tensions Arising due to Writing Tools Access

Table 3 presents areas of tension arising due to writing tools access. As not every student may be able to afford a paid subscription plan to unlock advanced features of AI-powered writing tools, it might be inequitable from a fairness point of view if certain students benefit by using more powerful tools. As a possible strategy to address this issue, the university administration could provide free licenses to all students. However, providing such licenses is costly.

Table 3. Tensions arising due to writing tools access

Tension	Explanation of Elements (A and B)	Strategies (A or B, A and B)
(A) tool access for everyone (fairness) vs. (B) license fees	*(A) Providing writing tool access to all students (B) is costly for the university.* Better, more advanced features of AI-powered writing tools can usually only be unlocked with paid subscription plans. Not every student might be able to afford to pay for such tools, which might raise fairness concerns. The university could provide free licences to all students.	**A:** Provide free writing tool licences to all students. Focus on AI-powered writing tool licences, that can have a large impact on the overall text quality (e.g., tools that integrate a lot of different use cases and features). **A&B:** Provide shared licenses (e.g., on publicly accessible university devices) **B:** Do not provide free writing tool licences to all students.

3.2 Tensions Arising from the Use of Writing Tools

Table 4 presents areas of tension arising from the use of writing tools in academic writing. As can be observed in Table 4, from the students' point of view, the use of AI-powered writing tools enables them to write texts faster. However, there is no consensus on the extent to which the use of these tools improves text

quality and promotes writing competencies. In addition, it is often unclear, how the inserted data is further processed and used, which raises data privacy issues.

Table 4 further presents strategies for dealing with each of these tensions. For example, in an on-site classroom setting, one strategy might be to simply ban the use of such tools. However, since in many cases it will not be possible to enforce a ban, it may be more reasonable to adopt strategies that teach students to use these tools in a sensible manner (see Table 4).

Table 4. Tensions arising from the use of writing tools

Tension	Explanation of Elements (A and B)	Strategies (A or B, A and B)
(A) tool usage vs. (B) quality of text output	*(A) The usage of AI-powered writing tools affects (increases/decreases) (B) the quality of the students' text output.* AI-powered writing tools may *increase* the quality of the text, as they support the students in creating a better structured text with less formal and grammatical mistakes (see e.g., Dwivedi et al., 2023, p. 20; Dowling & Lucey, 2023). AI-powered writing tools may *decrease* the quality of the text, if they produce biased, wrong, or too generic content (see e.g., Dwivedi et al., 2023, p. 26; Cano et al., 2023).	**A:** Allow students to use AI-powered writing tools without further guidelines or introduction. **A&B:** Teach students, how to use AI-powered writing tools to better structure their text and increase the formal quality of their texts. **A&B:** Teach students about the limitations of AI-powered writing tools to make them aware and responsible about certain problems, while using such tools (e.g., wrong content due to data hallucination, wrong or missing references) (Gimpel et al., 2023, p. 36). **B:** Prohibit students from using AI-powered writing tools (e.g., in an on-site classroom setting).
(A) tool usage vs. (B) writing competency	*(A) The usage of AI-powered writing tools affects (increases/decreases) (B) the writing competency of students.* AI-powered writing tools may *increase* the writing competency of students *(in a broader sense)*, if they learn how to use them appropriately as part of a larger toolbox to create meaningful texts (see e.g., Mollick & Mollick, 2022). AI-powered writing tools may *decrease* the writing competency of students *(in a narrower sense)*, if students just outsource the whole writing process to the writing tool. In this case, they deal with their texts only superficially, which decreases their writing competency and makes them dependent in the long run (see e.g., Dwivedi et al., 2023, p. 36; Marshall, 2023).	**A:** Allow students to use AI-powered writing tools without further guidelines or introduction. **A&B:** Teach students, how to use AI-powered writing tools as part of a larger writing toolbox (e.g., text editors such as Microsoft Word, reference management systems such as EndNote, academic search engines such as Google Scholar). Explain the advantages and weaknesses of the different tools to foster a well-considered and reflective use. **A&B:** Hinder students, to deal with texts only in a shallow and superficial way. Create assignments and term paper topics, that are not generic and therefore cannot be answered by AI-powered writing tools on their own (Cano et al., 2023, Cotton et al., 2023). Instead, create tasks that require further text adaptation by students (e.g., by incorporating students' own experiences). **B:** Prohibit students from using AI-powered writing tools (e.g., in an on-site classroom setting)
(A) tool usage vs. (B) data privacy	*(A) The usage of AI-powered writing tools can lead to (B) data privacy issues.* Personal information might be inserted when using AI-powered writing tools. It is unclear, how the data is further processed, saved, and used. Therefore, data privacy might be in danger when using such tools (see e.g., Dwivedi et al., 2023, p. 26).	**A:** Allow students to use AI-powered writing tools without further guidelines or introduction. **A&B:** Teach students not to insert any personal data and sensitive information into AI-powered writing tools. **B:** Prohibit students from using AI-powered writing tools (e.g., in an on-site classroom setting)

3.3 Tensions Arising from a Lack of Transparency about Writing Tool Usage

Table 5 presents areas of tension arising from a lack of transparency about writing tool usage. As can be observed in Table 5, lack of transparency makes it more difficult to understand and assess the text creation process. This raises questions about the extent to which only the text output or also its creation process

should be evaluated. In addition, establishing more transparency leads to additional workload for both students (by documenting) as well as lecturers (by evaluating the student's documentation).

Table 5 shows strategies how to tackle tensions regarding transparency issues. In particular, strategies are proposed on how to better ensure a transparent use. Among other things, this could include 1) explicitly listing all writing tools used, 2) writing a short statement about how the tools have influenced the final text product, or 3) submitting an additional file of interactions and prompts with AI-assisted writing tools used during text creation.

Table 5. Tensions arising from a lack of transparency about writing tool usage

Tension	Explanation of Elements (A and B)	Strategies (A or B, A and B)
(A) tool transparency vs. (B) evaluation possibilities	*Without (A) transparency about AI-powered writing tool usage, it is difficult to understand and assess (B) the text creation process.* Without AI-powered writing tool transparency, it is difficult to comprehend the text creation process. Therefore, only the final text output can be easily evaluated. It remains unclear whether and to what degree AI-powered writing tools contributed to the creation of the text (see e.g., Dwivedi et al., 2023, pp. 25, 27, 35; University of Washington, 2023).	**A:** Require transparency about AI-powered writing tool usage to better understand and assess the text creation process (Halaweh, 2023, p. 5; Gimpel et al., 2023, p. 32). To increase transparency, require from students to: 1. list the writing tools used (e.g., in the appendix of the term paper); 2. write a one-page-summary (e.g., in the appendix of the term paper) that explains in which ways AI-powered writing tools have contributed to the final paper output; 3. submit an additional file, that includes all interactions and prompts with AI-powered writing tools used to create the term paper (Halaweh, 2023, p. 5). **B:** Do not require transparency about AI-powered writing tool usage. If the text creation process remains important to you, think about other options (e.g., training papers with formative feedback) that give you insights into the students thinking at an earlier stage of the text creation (see also Dwivedi et al., 2023, p. 27).
(A) tool transparency vs. (B) workload	*(A) Providing transparency in the use of AI-powered writing tools, creates (B) additional workload for students (by documenting) as well as for lecturers (by evaluating the student's documentation).*	**A:** Require full transparency about AI-powered writing tool usage (all elements of step 1 to 3 above). **A&B:** Require partial transparency about AI-powered writing tool usage to find a good trade-off between additional transparency and additional workload (choose certain elements of step 1 to 3 above). **B:** Do not require transparency about AI-powered writing tool usage.

4. DISCUSSION: HOW NEW WRITING TOOLS LIKE CHATGPT AFFECT EXISTING DYNAMICS

The release of ChatGPT in November 2022 has further reshaped the dynamic field of AI-powered writing tools in academic writing. In this context, the question arises to what extent the latest developments around LLMs such as ChatGPT affect prevailing tensions as well as strategies for resolving them.

For this purpose, semi-structured expert interviews were conducted with academic writing lecturers at the University of St.Gallen. During April 2023, interviews were conducted with five lecturers who teach academic writing in either German (n=2) or English (n=3). To conduct the interviews, a semi-structured guide was used that included the following three questions: *1) With regard to AI-powered writing tools in academic writing, do you generally agree with the areas of tension highlighted in Figure 1?* 2) *How do new AI-powered writing tools such as ChatGPT affect the prevailing tensions between existing stakeholders?*, 3) *What strategies do you consider useful to cope with a) AI-powered writing tools in general and b) ChatGPT in particular?*

With regard to question 1, the academic writing lecturers stated, that they agreed with the tensions highlighted in Figure 1. In particular, the aspects of transparency, fairness, and influence on writing performance were emphasized by several interview partners.

In question 2, the academic writing lecturers were asked how new AI-powered writing tools such as ChatGPT affect the prevailing tensions between existing stakeholders. The academic writing lecturers said that the basic tensions and conflicts of interest remain largely the same. However, in their view, it will become increasingly important to address the issue as more powerful writing tools emerge. Before the emergence of LLM's like ChatGPT, a certain AI-powered writing tool often performed only one very specific task (e.g., paraphrasing). While such writing tools were already a useful writing support, the scope of application was relatively narrow, and a person still had to think carefully about where and under which conditions it was best to use such a tool. Therefore, the overall impact of such tools on the writing process and output was still rather limited.

With ChatGPT, this dynamic changes, as ChatGPT can be used for many different tasks. As a result, by using ChatGPT, difficult cognitive tasks (e.g., generating, and structuring ideas) may be outsourced by the user to ChatGPT. In the worst case, this poses a risk of dealing with content only in a shallow and superficial way. ChatGPT's simple ease of use via a chat interface tends to reinforce this effect, as ChatGPT has few formal requirements for textual input, and also poses follow-up questions to the user if it requires more information to generate meaningful output.

If AI-powered writing tools can have an increasingly large impact on the entire writing process and output, strategies to cope with them become more important. In question 3, the academic writing lecturers were asked, what strategies they consider useful to cope a) with AI-powered writing tools in general as well as b) ChatGPT in particular. Overall, there was agreement among the interview partners that strategies aimed at either a straight ban or an approval without further guidelines and support will rarely be optimal. In this context, those strategies presented in Tables 3, 4 and 5 were considered as useful, that seek a compromise between the two extremes (A&B).

With regard to ChatGPT, respondents considered strategies that *increase transparency in use* to be particularly important. According to one respondent, ChatGPT increases *student empowerment* but also *uncertainty*. One the one hand, ChatGPT empowers students "because it gives them the belief, that their writing process could be more efficient". On the other hand, students become uncertain about their text output. In this view, ChatGPT raises fundamental questions of authorship and has set in motion a negotiation process with human authors and their own thinking. What are *my* ideas and *my* contribution when working with AI-powered writing tools? How can I avoid copyright issues and give sufficient credit to other human authors? In the best case, this inner thought discourse might lead to students that have more self-awareness and a more sensible approach when using AI-powered writing tools. In the worst case, students might just use these tools in an unreflective way, which may lead to plagiarism issues. Figure 2 summarizes this idea by illustrating a cascade of possible consequences when using AI-assisted writing tools.

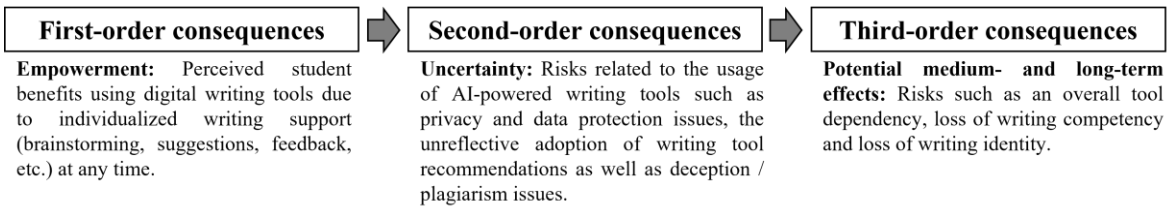

Figure 2. Potential student consequences of using of AI-powered writing tools in academic writing
Note: Own illustration

To prevent or at least counteract the negative effects that second-order and third-order consequences may have on students, lecturers should proactively educate students about these potential effects. According to the interview respondents, ChatGPT provides the opportunity to discuss with students, in the context of academic writing, fundamental questions such as the concept of authorship, the documentation of results in a scientifically rigorous manner, as well as the (fact checked) evidence-based generation of knowledge. The ability to critically question the identified results and to take responsibility for one's own work are tasks that only humans can take on. For this reason, it is important to educate students in the use of such tools with various strategies and to sensitize them to both the opportunities as well as the limitations. Ideally, in this way, the benefits of these tools can be maximized, while the shortcomings may be largely avoided.

5. CONCLUSION & OUTLOOK

This paper demonstrated, in the context of academic writing, that different stakeholders (students, lecturers, university administration) have different interests with respect to AI-powered writing tools. On this basis, tensions between different stakeholders were identified and strategies were proposed to deal with these tensions. Based on semi-structured expert interviews, the results were discussed in light of the recent developments around ChatGPT, with the goal of developing sustainable strategies for successfully dealing with AI-powered writing tools in academic writing.

With regard to the introduction of new technologies, there can be a danger "to rush to conclusions before clearly understanding the problem" (Markovitz, 2020). Due to that different aspects quickly can become mixed up. For example, the overall *text quality* may be equalized with *the learning gain in writing competence*. However, depending on what the goal is (good text quality and/or gains in writing competence), different (teaching) strategies might be useful in achieving those goals. The aim of this paper was to identify and analyze in which ways AI-powered writing tools affect the context of academic writing. In this way, fields of action in the form of strategies have been proposed on how different tensions related to AI-powered writing tools could be addressed in a meaningful way.

This study is subject to different limitations. *First*, the survey data on student usage patterns of AI-powered writing tools (see section 2.4) represent only a snapshot taken in September/October 2022. It is likely, particularly due to the release of ChatGPT in November 2022, that these numbers have changed since then. However, since the goal was to provide insight into this dynamically changing and evolving field, this limitation was deliberately accepted. *Second*, due to the approach of a stakeholder analysis, it is assumed that all persons within a stakeholder group share the same interests. In reality, of course, this is not always the case. For example, not all lecturers have the same attitude towards AI-powered writing tools, which may create additional tensions within the *lecturer* stakeholder group.

From a theoretical point of view, the paper at hand can serve as a starting point for future research as it highlights important concepts and variables related to AI-powered writing tools in academic writing. From a practical standpoint, the paper at hand might be valuable for people who work in the field of academic writing, as the paper highlights different strategies (see Table 3, 4 and 5) how to cope with AI-powered writing tools in academic writing. The derived strategies as well as its implications might serve as a starting point for further discussion to introduce meaningful, sustainable regulations in one's own context.

It remains an open question what specific learning scenarios are best suited to foster students' writing competencies in the context of AI-powered writing tools. The work of Mollick and Mollick (2023) already indicates a possible direction, how learning scenarios with AI-powered writing tools could look like. Nevertheless, further research is needed in this area to contribute to a more meaningful use of AI-powered writing tools. While the DigComp 2.2 framework (see Vuorikari et al., 2022) integrated an update on the competence area of *AI literacy* (knowledge, skills and attitudes for the competent use of AI systems), this approach might have to be extended. The ability *to reflect* on one's own behavior is an essential element in a student's ability to learn through experience (Coulson & Harvey, 2013). As the discussion on the potential consequences of using AI-powered writing tools highlighted (see Figure 2), students may increasingly need *metacognitive reflection abilities* (see e.g., Coulson & Harvey, 2013; Gibson et al., 2017) when working with AI-powered writing tools to counteract the potential negative effects such tools can have. Therefore, further research is needed on how to best foster students' reflection abilities when working with AI-assisted writing tools.

ACKNOWLEDGEMENT

I would like to thank the team of Prof. Dr. Dirk Ifenthaler at the University of Mannheim, with whom the survey mentioned in section 2.4 was conducted. I further thank the five academic writing lecturers at the University of St.Gallen, who shared their views with me during the expert interviews.

This paper was written without ChatGPT. However, the translation tool DeepL (https://deepl.com/translator) was used to improve the style and grammar of sentences.

REFERENCES

American Educational Research Association. (2014). *Standards for educational and psychological testing*. American Educational Research Association. https://www.testingstandards.net/open-access-files.html

Brown, T.B., Mann, B., Ryder, N., Subbiah, M., Kaplan, J., Dhariwal, P., Neelakantan, A., Shyam, P., Sastry, G., Askell, A., Agarwal, S., Herbert-Voss, A., Krueger, G., Henighan, T., Child, R., Ramesh, A., Ziegler, D. M., Wu, J., Winter, C., ... Amodei, D. (2020). *Language models are few-shot learners*. arXiv preprint. https://arxiv.org/abs/2005.14165

Cano, Y. M., Venuti, F., & Martinez, R. H. (2023). *ChatGPT and AI Text Generators: Should Academia Adapt or Resist*. Harvard Business Publishing Education. https://hbsp.harvard.edu/inspiring-minds/chatgpt-and-ai-text-generators-should-academia-adapt-or-resist

Carr, K. [@kareem_carr]. (2023, January 12). *So I guess we're doing this now* [Image attached] [Tweet]. Twitter. https://twitter.com/kareem_carr/status/1613325029848092672

Cotton, D. R. E., Cotton, P. A., & Shipway, J. R. (2023). Chatting and Cheating: Ensuring academic integrity in the era of ChatGPT. *Innovations in Education and Teaching International*. https://doi.org/10.1080/14703297.2023.2190148

Coulson, D., & Harvey, M. (2013). Scaffolding student reflection for experience-based learning: A framework. *Teaching in Higher Education*, *18*(4), 401-413. https://doi.org/10.1080/13562517.2012.752726

Dergaa, I., Chamari, K., Zmijewski, P., & Saad, H. B. (2023). From human writing to artificial intelligence generated text: examining the prospects and potential threats of ChatGPT in academic writing. *Biology of Sport, 40*(2), 615-622. https://doi.org/10.5114/biolsport.2023.125623

Dowling, M., & Lucey, B. (2023). ChatGPT for (finance) research: The Bananarama conjecture. *Finance Research Letters*, 103662. https://doi.org/10.1016/j.frl.2023.103662

Dwivedi, Y. K., Kshetri, N., Hughes, L., Slade, E. L., Jeyaraj, A., Kumar Kar, A., Baabdullah, A. M., Koohang, A., Raghavan, V., Ahuja, M., Albanna, H., Albashrawi, M. A., Al-Busaidi, A. S., Balakrishnan, J., Barlette, Y., Basu, S., Bose, I., Brooks, L., Buhalis, D., Carter, L., ... & Wright, R. (2023). "So what if ChatGPT wrote it?" Multidisciplinary perspectives on opportunities, challenges and implications of generative conversational AI for research, practice and policy. *International Journal of Information Management, 71*, 102642. https://doi.org/10.1016/j.ijinfomgt.2023.102642

Geitgey, A. (2018, July 18). *Natural Language Processing is Fun! How computers understand Human Language*. Medium. https://medium.com/@ageitgey/natural-language-processing-is-fun-9a0bff37854e

Gibson, A., Aitken, A., Sándor, Á., Buckingham Shum, S., Tsingos-Lucas, C., & Knight, S. (2017). Reflective writing analytics for actionable feedback. In *Proceedings of the seventh international learning analytics & knowledge conference* (pp. 153-162). https://doi.org/10.1145/3027385.3027436

Gimpel, H., Hall, K., Decker, S., Eymann, T., Lämmermann, L., Mädche, A., Röglinger, M., Ruiner, C., Schoch, M., Schoop, M., Urbach, N., & Vandrik, S. (2023). *Unlocking the power of generative AI models and systems such asGPT-4 and ChatGPT for higher education*. Kommunikations-, Informations- und Medienzentrum (KIM). http://nbn-resolving.de/urn:nbn:de:bsz:100-opus-21463

Guggemos, J., Sonderegger, S., & Seufert, S. (2022). Student acceptance of social robots in higher education - Evidence from a vignette study. *19th International Conference on Cognition and Exploratory Learning in Digital Age (CELDA 2022)*, 8-10 November, Lisbon Portugal.

Halaweh, M. (2023). ChatGPT in education: Strategies for responsible implementation. *Contemporary Educational Technology*, *15*(2). https://doi.org/10.30935/cedtech/13036

Heaven, W. D. (2020, July 20). *OpenAI's new language generator GPT-3 is shockingly good—and completely mindless*. MIT Technology Review. https://www.technologyreview.com/2020/07/20/1005454/openai-machine-learning-language-generator-gpt-3-nlp/

Ivanic, R. (1998). *Writing and Identity: the discoursal construction of identity in academic texts*. John Benjamins e-Platform. https://doi.org/10.1075/swll.5

Marche, S. (2022, December 6). *The College Essay Is Dead: Nobody is prepared for how AI will transform academia*. The Atlantic. https://www.theatlantic.com/technology/archive/2022/12/chatgpt-ai-writing-college-student-essays/672371/

Markovitz, D. (2020, November 27). How to Avoid Rushing to Solutions When Problem-Solving. *Harvard Business Review*. https://hbr.org/2020/11/how-to-avoid-rushing-to-solutions-when-problem-solving

Marshall, C. (2023, February 10). *Noam Chomsky on ChatGPT: It's "Basically High-Tech Plagiarism" and "a Way of Avoiding Learning"*. Open Culture. https://www.openculture.com/2023/02/noam-chomsky-on-chatgpt.html

McCallum, S. (2023, April 2). *ChatGPT banned in Italy over privacy concerns*. BBC News. https://www.bbc.com/news/technology-65139406

Mini, T., & Widjaja, T. (2019). Tensions in Digital Platform Business Models: A Literature Review. In *ICIS*.

Mollick, E. R., & Mollick, L. (2022). *New Modes of Learning Enabled by AI Chatbots: Three Methods and Assignments*. Social Science Research Network (SSRN). https://dx.doi.org/10.2139/ssrn.4300783

Mollick, E. R., & Mollick, L. (2023). *Using AI to Implement Effective Teaching Strategies in Classrooms: Five Strategies, Including Prompts*. Social Science Research Network (SSRN). https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4391243

Moore, J. L., Rosinski, P., Peeples, T., Pigg, S., Rife, M. C., Brunk-Chavez, B., Lackey, D., Kesler Rumsey, S., Tasaka, R., Curran, P., & Grabill, J. T. (2016). Revisualizing composition: How first-year writers use composing technologies. *Computers and Composition, 39*, 1-13. https://doi.org/10.1016/j.compcom.2015.11.001

Peters, M., & Cadieux, A. (2019). Are Canadian professors teaching the skills and knowledge students need to prevent plagiarism?. *International Journal for Educational Integrity, 15*(1), 1-16. https://doi.org/10.1007/s40979-019-0047-z

Prentice, F. M., & Kinden, C. E. (2018). Paraphrasing tools, language translation tools and plagiarism: an exploratory study. *International Journal for Educational Integrity, 14*(1), 1-16. https://doi.org/10.1007/s40979-018-0036-7

Purcell, K., Buchanan, J., & Friedrich, L. (2013). *The impact of digital tools on student writing and how writing is taught in schools*. National Writing Project, Pew Research Center.

Putnam, L. L., Fairhurst, G. T., & Banghart, S. (2016). Contradictions, dialectics, and paradoxes in organizations: A constitutive approach. *Academy of Management Annals, 10*(1), 65-171. https://doi.org/10.5465/19416520.2016.1162421

Rogerson, A. M., & McCarthy, G. (2017). Using Internet based paraphrasing tools: Original work, patchwriting or facilitated plagiarism?. *International Journal for Educational Integrity, 13*(1), 2. https://doi.org/10.1007/s40979-016-0013-y

Ropek, L. (2023, January, 4). *New York City Schools Ban ChatGPT to Head Off a Cheating Epidemic*. Gizmodo. https://gizmodo.com/new-york-city-schools-chatgpt-ban-cheating-essay-openai-1849949384

Sailer, M., Stadler, M., Schultz-Pernice, F., Franke, U., Schöffmann, C., Paniotova, V., Husagic, L., & Fischer, F. (2021). Technology-related teaching skills and attitudes: Validation of a scenario-based self-assessment instrument for teachers. *Computers in Human Behavior, 115*, 106625. https://doi.org/10.1016/j.chb.2020.106625

Schwarz, S. (2023, February 2). *#ChatGPT und Täuschung in Schule und Hochschule*. Beck-Community. https://community.beck.de/2023/02/02/chatgpt-und-taeuschung-in-schule-und-hochschule

Sharples, M. (2022, May 17). *New AI tools that can write student essays require educators to rethink teaching and assessment*. LSE Impact Blog. https://blogs.lse.ac.uk/impactofsocialsciences/2022/05/17/new-ai-tools-that-can-write-student-essays-require-educators-to-rethink-teaching-and-assessment/

Skilling, K., & Stylianides, G. J. (2020). Using vignettes in educational research: a framework for vignette construction. International *Journal of Research & Method in Education, 43*(5), 541–556. https://doi.org/10.1080/1743727X.2019.1704243

Smith, W. K., & Lewis, M. W. (2011). Toward a theory of paradox: A dynamic equilibrium model of organizing. *Academy of Management Review, 36*(2), 381-403. https://doi.org/10.5465/amr.2009.0223

Smith, W. K. (2014). Dynamic decision making: A model of senior leaders managing strategic paradoxes. *Academy of Management Journal, 57*(6), 1592-1623. https://doi.org/10.5465/amj.2011.0932

Springer Nature. (2023, January 24). *Tools such as ChatGPT threaten transparent science; here are our ground rules for their use*. Springer Nature. https://doi.org/10.1038/d41586-023-00191-1

Taylor & Francis. (2023, February 17). *Taylor & Francis Clarifies the Responsible use of AI Tools in Academic Content Creation*. Taylor & Francis. https://newsroom.taylorandfrancisgroup.com/taylor-francis-clarifies-the-responsible-use-of-ai-tools-in-academic-content-creation/

University of Washington. (2023, March 30). *ChatGPT and other AI-based tools*. Center for Teaching and Learning, University of Washington, Seattle. https://teaching.washington.edu/topics/preparing-to-teach/academic-integrity/chatgpt/

Van Eemeren, F. H., & Grootendorst, R. (2016). *Argumentation, communication, and fallacies: A pragma-dialectical perspective*. Routledge.

Vuorikari, R., Kluzer, S., & Punie, Y. (2022). *DigComp 2.2: The Digital Competence Framework for Citizens - With new examples of knowledge, skills and attitudes*. Office of the European Union. https://publications.jrc.ec.europa.eu/repository/handle/JRC128415

Weßels, D. (2023, January 29). *Was ist ChatGPT und wie funktioniert es? – Und welche ähnlichen Tools gibt es?* [Video]. YouTube. https://www.youtube.com/watch?v=cMuBo_rH15c