

Challenges Related to Using Artificial Intelligence Tools in Tertiary Academic Writing

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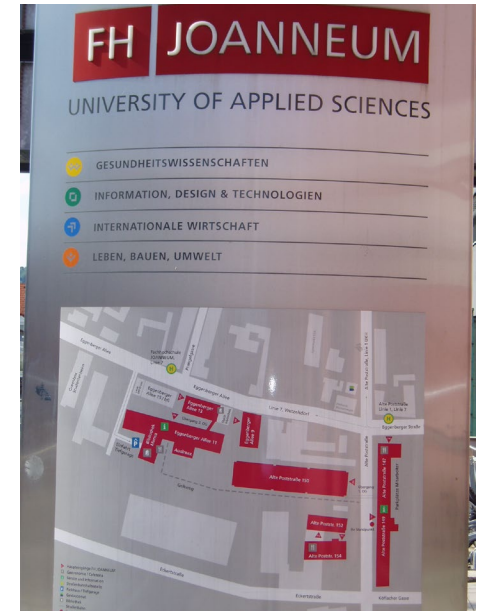
Overview

- Introduction
- Survey on GAI tools
- Selected survey findings
- Discussion of findings
- Open issues
- Concerns that remain
- Conclusions

INTRODUCTION TO THE INSTITUTION

FH JOANNEUM

- One of the largest universities of applied sciences in Austria
- Teaching university with research
- 3 sites with main campus in Graz
- 5 100 students
- 20 100 graduates
- 800 employees
- Programs
 - Bachelor's degree
 - Master's degree
- Variety of areas
 - Information technology
 - Building, environment & society
 - Engineering
 - Health sciences
 - Business & management
 - Media & design



SURVEY ON GAI-TOOLS

- Academic writing classes: 178 students, bachelor's (103) + master's degree (75) level
- 2 different study areas
- October–November 2023

The questions

1. Which of these AI-based tools are you familiar with?
2. Which of these AI-based tools have you already used?
3. Which version of ChatGPT (probably the best-known tool) - if you work with it - do you use?
4. Have you used plug-ins like Wolfram with ChatGPT - again, if you work with it? If yes, which ones?
5. Have you used AI-based tools for literature review?
6. If you use artificial intelligence for literature research, how would you validate the findings?
7. There are numerous AI-based text processing tools. For which application would you use them?
8. Google Translate is one of the most popular tools. Which tool do you use for translations?
9. How does writing shape the critical thinking process according to your opinion?

SELECTED SURVEY FINDINGS

- Writing assistant | content creator
- ChatGPT, DALL-E, DeepL Write, Grammarly
- Content generation, text assessment / correction
- To show what I know > Collaborate with GAI > Compare and validate.

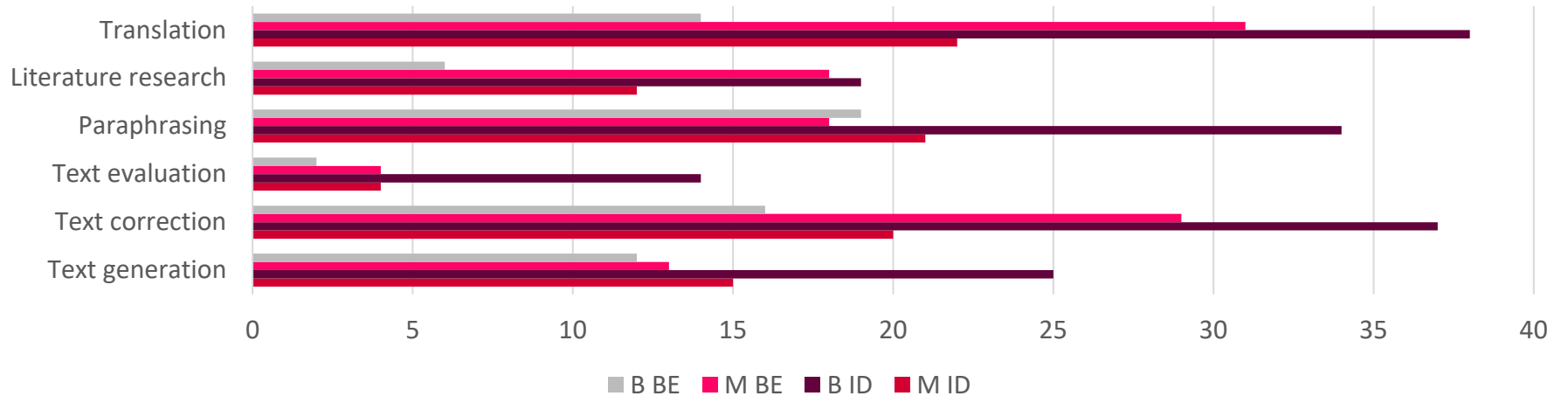
Questions 1 and 2

Q1	B BE (53)	M BE (42)	B ID (50)	M ID (33)
ChatGPT	53	42	50	33
DALL-E	4	18	35	19
DeepL Write	12	25	38	20
Grammarly	15	10	33	33

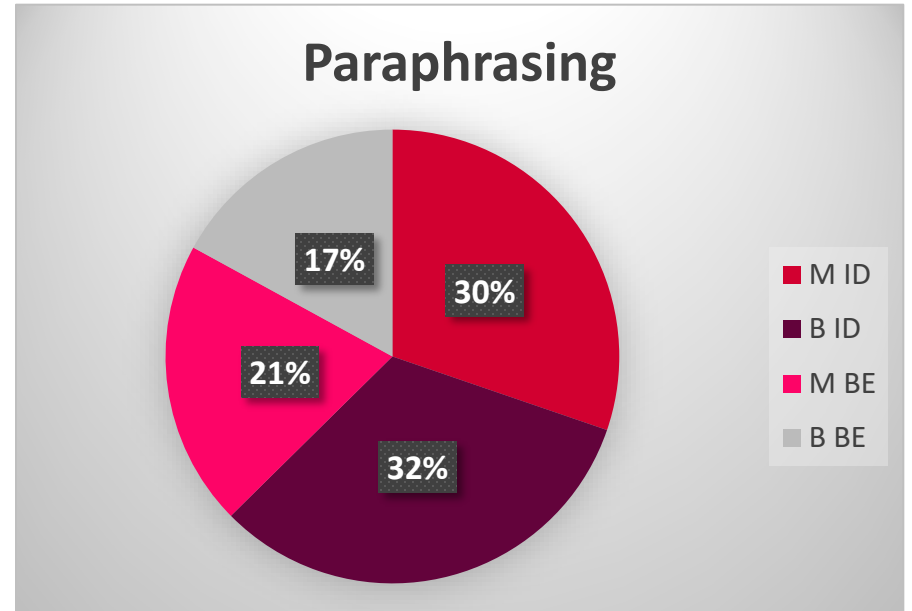
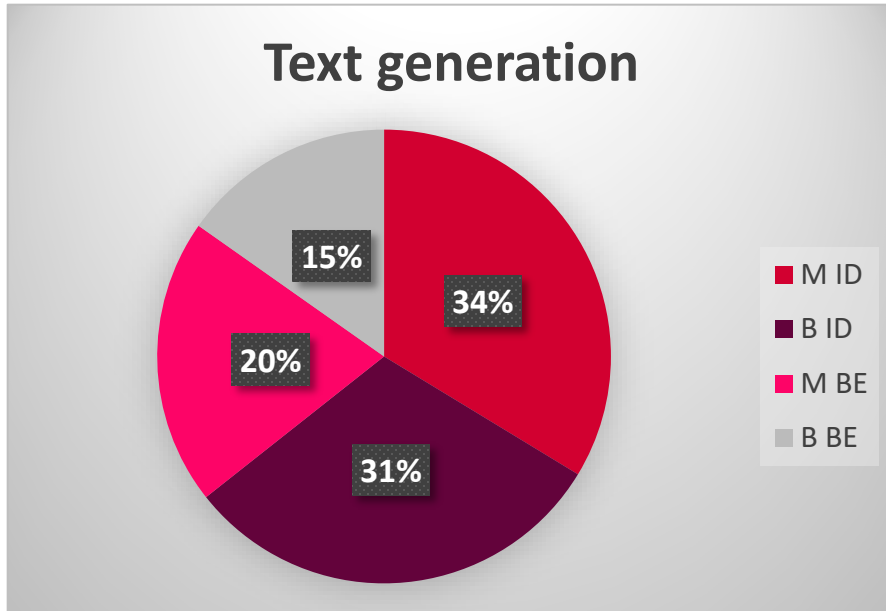
Q2	B BE (53)	M BE (42)	B ID (50)	M ID (33)
ChatGPT	42	40	48	30
DALL-E	2	6	22	10
DeepL Write	9	17	28	9
Grammarly	6	6	17	4

Question 7

AI-based text processing tools

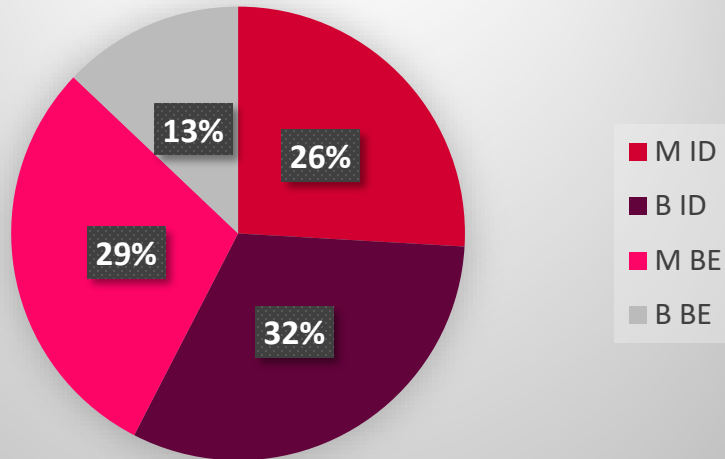


Question 7

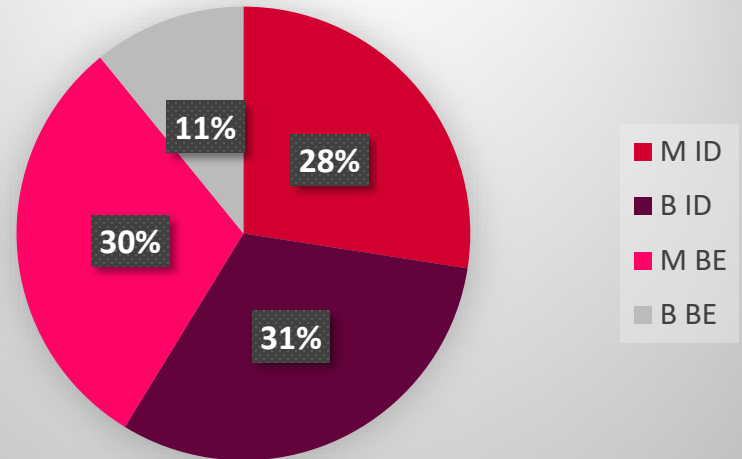


Question 7 continued

Text correction



Translation



Range of GAI-use and documentation

Frequent GAI users >

Declaration of originality

Moderate GAI users >

Adapted citation rules

Rare GAI users >

AI directory

No GAI users >

Affidavit

DISCUSSION OF FINDINGS

- The aim of writing pedagogy is to foster creativity, to develop critical thinking, and to enhance the ability to articulate ideas with clarity and precision in the individual writing and editing phases.

Response 1 to Question 9

When writing your own texts, you have to go back to each passage and read it over and over again until you are satisfied with the outcome. This way you are training yourself to be more critical of what you want to say and, more importantly, how. Then, when you read other written texts, you start to question the reliability of the sources.

Response 2 to Question 9

Writing shapes the thought process, because you think more carefully about what you write or think more deeply about whether it could be true, and you also think more carefully about the approach.

[Original response in German, DeepL used for the translation]

Response 3 to Question 9

In my opinion, writing is a form of self expression which I haven't really mastered yet.

We learn to formulate ideas and opinions in a different (in my opinion quite enriching) way which we have to learn just as any other skill.

While writing, I have to think of the structure much more and have more time to think of what I'm gonna write down. While speaking, we're generally much more likely to get lost in our own thought cycle.

Response 4 to Question 9

When I write things down, it makes me organize my thoughts and really dig into the subject. It's like a conversation with myself where I have to make sense of things. Writing forces me to look at different sides of an idea, making my thinking more thoughtful and critical. Sketching also helps.

OPEN ISSUES

- Practical and ethical issues remain, responses by institutions need to take these into account, questions of GAI authorship.

Open practical issues

- Generation of “nonsensical or inaccurate output” (Su et al., 2023, p. 10; cf. Barrot, 2023, p. 4)
- Hallucination of GAI, i.e. fake content looking true
- Ambiguity and lack of objectivity of AI-recommendations (Schön et al., 2023, p. 43)
- ChatGPT’s “frequent use of unnecessary statements” (Barrot, 2023, p. 4)
- Tendency towards specific essay structure (Barrot, 2023, p. 4)
- Detecting AI-generated content seen as essential (Uzun, 2023, p. 52) but probably futile

Open ethical issues

- Plagiarism when “copying chatbot-generated texts without appropriate attribution” (Su et al., 2023, p. 9)
- GAI used for ghostwriting (without attribution to GAI)
- Indicating GAI-use implies co-authoring (What’s the share?)
- GAI-texts cannot be referenced (not published, not permanent, not replicable)
- Unreliable reference lists in texts written by GAI (Barrot, 2023, p. 4; Thorp, 2023, n.pag.)
- Plagiarism software cannot detect original content written by GAI (Barrot, 2023, p. 4)
- Ownership of data (private companies) (Ichaporia, 2024, p. 147) on US-servers (Schreibzentrum, 2023, p. 2)

Response by FH JOANNEUM

- GAI guidelines (FH Joanneum, 2024, May 2) leave teachers with a range from no to full implementation
- Guideline for good scientific practice (FH Joanneum, 2023, Nov. 7)
 - Students sign under oath “that I have declared in the method presentation or an index all aids used (artificial intelligence assistance systems [...] and indicated their usage at the corresponding text passages” (p. 11)
 - This declaration also contains this sentence: “I have been informed that my work may be checked for plagiarism and for third-party authorship of human (ghostwriting) or technical origin (artificial intelligence assistance systems)” (p. 11).
- Open encouragement to use GAI in courses from top management
- Internal training program focused on GAI for teachers

Concerns that remain

- Risk of “learning loss, especially in developing critical and creative thinking” (Barrot, 2023, p. 4)
- De-skilling of students through over-reliance on GAI
- Ghostwriting and lowering of academic standards
- Threat to individual freedom and pluralism, and disenfranchisement of academics (Limburg et al., 2023, p. 19)
- Conventions of GAI use (authorship, copyright, referencing) and question of GAI as a legal entity
- Checking accuracy of content produced by GAI
- Detecting bias in GAI texts

Why ChatGPT 3.5 is no author

- Lacks “emotional depth” and “life experiences” (Barrot, 2023, p. 4; Friedrich et al., 2024, p. 5)
- Lacks “deep understanding of complex concepts” (Barrot, 2023, p. 4)
- GAI is not creative (no intuition and improvisation) (Friedrich et al., 2024, p. 5)
- Produces machine texts
- Clean, sober, lifeless but potentially biased
- Writes in prototypical style (nothing between the lines)

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