

The use of AI-based tools in creating final

Work – Potentials, Risks and Assessment- Relevant Aspects

Information for supervisors of final
Work at AHS and BMHS

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1 Introduction

This manual provides basic orientation for dealing with AI-based applications in the context of final theses at AHS and BMHS.

2 Artificial Intelligence (AI) as a topic for final theses

AI is playing an increasingly important role in many areas of everyday life. For this reason, a general ban on using AI-based tools at AHS and BMHS is not effective. However, it must be precisely defined when and under what conditions AI-based tools can be used sensibly in the final work and students can be prepared to deal with AI in the tertiary education sector.

2.1 Under what conditions is it possible to use AI-based tools in final work?

Even when using AI-based tools, such as ChatGPT, the principles of scientific work. The performance must therefore continue to be individually attributable. Therefore, AI-based tools should only be used in a supporting capacity.

- The author of the final paper is responsible for the content, regardless of whether AI tools are used. All information must be independently verified using trustworthy sources.
- Resources and sources must be indicated and cited correctly. If an AI application is used, this must also be identified (see Chapter 3.1.3 *Citation rules*).
- When using AI tools, the source material (i.e. which AI tool was used) and the prompts (i.e. which inputs were made) must be clearly identifiable. Details on the use of AI tools must be provided in the bibliography and list of sources (see Appendix 1 or see Chapter 3.1.3 *Citation rules*).
- Works without complete and comprehensible identification of sources and resources are to be considered plagiarism and therefore an attempt at deception.

2.2 What are the advantages of using AI-based tools when creating a final Work?

AI can ...

- support finding new approaches to a topic or different perspectives and thus facilitate the generation of ideas.
- supporting interaction partner in the context of concept development and discussion of questions.
- Provide support with research work and faster access to information make possible.
- Provide assistance in structuring the work.
- help to compile drafts or ideas for texts to facilitate the writing process support and solve writer's block.
- be used to translate and include foreign language sources.
- help to clarify wording and reduce errors.

2.3 What are the risks associated with using AI-based tools when preparing a final paper?

- AI can provide incorrect and distorted answers.
- AI cannot adequately take current and scientific sources into account.

- AI can lead to data protection violations.
- AI cannot clarify authorship.
- By entering personal information and prompts, user data is collected.

3 AI in the process of creating the final work

In the following chapter, the process of creating the final work is examined from the perspective of AI.

3.1 Topic selection and approval

3.1.1 Finding a topic

In the topic-finding phase, students should be introduced to approaches to research-based learning and corresponding methods (experiments, observations, interviews, etc.). This arouses interest in topics with a practical element. The individual approach to and completion of the task is the focus of the work. AI-based tools can be used to support the literature search.

3.1.2 Approval of the topic

Essential for the approval of the topic is the formulation of the expectations, i.e. in addition to

- a brief description of the personal impulse, • a rough outline of the work, • the formulation of suitable guidelines and
- an initial investigation into reliable sources (basic literature)

With regard to the potential use of AI-based tools, initial information is also provided on the tools and methods that should be used to obtain data.

3.1.3 Citation rules

AI-generated texts are texts of third-party authorship and must be clearly marked in the text, even if the text is subsequently changed by the student (direct/indirect quotation).

Please specify:

- Source material (= which AI system was used) and
- Prompts (= which data entries were made)

An example of a short quotation in the body text and a long quotation for the bibliography/source list can be found in Appendix 1.

3.2 Care

Supervision is also particularly important with regard to recognizing fake achievements, especially with the help of AI-based tools. To raise awareness among students, concrete examples of misuse or abuse should be discussed as part of the supervision work. Furthermore, the dangers of unauthorized use of AI-based tools and possible consequences (= feigning independent achievement) should be specifically pointed out.

The **accompanying protocol** for documenting the work process – which must be kept by the student – is becoming more of a focus. Students should be aware of the importance of the documentation in connection with the assessment of the final work. They should be instructed to

- the work process and all tools used continuously, conscientiously and to document completely,
- indicate in which phases of the creation process and in which chapters in the AI-based tools were used in the final work.

The task of the supervisor is to record the use of AI-generated products in the **supervision protocol**, if this was discussed, and to critically and reflectively evaluate the student's increase in knowledge on the topic of the work.

Declaration of independence of the student ("sworn declaration")

In the declaration of originality, students undertake to disclose all resources and sources used, including AI-based tools. They thereby express that they are familiar with the standards of good scientific practice, adhere to them and will face consequences in the event of non-compliance. An example of a declaration of originality can be found in Appendix 2.

3.3 Assessment

The **assessment concerns the entire development process** of the final work and is based as before on the principles of the LBVO. If an AI application is used, it must be identified in order to make the individual performance clear.

3.3.1 Plagiarism check

The plagiarism check for online submission of final papers will be to include AI-based texts. Currently, the software is limited to checking English-language texts.

3.3.2 Assessment of the final work

For a **positive overall assessment**, both the written work and the presentation and discussion must be largely fulfilled in all competency areas. The use of the assessment grids in the AHS or the rubrics in the BMHS is therefore highly recommended.

(see websites www.ahs-vwa.at and www.diplomarbeiten-bbs.at).

The presentation and discussion are particularly important because **targeted questions** can be used to identify any **AI-supported work components**.

Example questions can be found in Appendix 3).

Appendix 1: Citation rules

Examples of the ...

- Marking AI-based texts or other AI-generated content **in the body text**

(short quote)

OpenAI's ChatGPT language model; Prompts: personal communication; October 22, 2023

OpenAI's ChatGPT language model; Prompts: Specify the student's specific question and answer to the question; October 22, 2023

- Marking of AI-based texts or other AI-generated content **in the literature**

/List of sources (long quotation)

OpenAI's ChatGPT Sprachmodell; Prompts: N.N.; 22. Oktober 2023

OpenAI's ChatGPT Sprachmodell; Prompts: N.N.; 22. Oktober 2023.

If a final paper contains several AI-based texts with the same date, they must be marked with the addition a, b, c, etc.: October 22, 2023a, October 22, 2023b, October 22, 2023c, etc.

It is recommended to create a table in the appendix of the final paper in which the prompts for presenting the train of thought are collected.

Here is a concrete example/example dialog from ChatGPT for a "Prompt: NN":

"I describe the use of text-generating AI in theses in a maximum of 150 words

The use of text-generating AI in theses requires caution and ethics. First, researchers should use AI as a tool to generate data analyses, text summaries or ideas, but not to create the entire content. Careful review of texts generated by AI is essential to ensure accuracy and quality standards. The use of AI should be made transparent and any ethical concerns regarding copyright and plagiarism should be taken into account. Finally, AI should be used as

complementary tool that does not replace but supports human intellectual contribution in order to preserve scientific integrity and originality.

Please explain AI as a tool.

AI as a tool in theses refers to the use of artificial intelligence to simplify or automate certain tasks in the research process. This can take different forms, depending on the requirements of the thesis:

1. Data analysis: AI algorithms can be used to analyze large amounts of data and identify patterns or trends. This is particularly useful in fields such as statistics, data science, and data mining.
2. Text generation: AI models can generate texts that can serve as the basis for scientific papers by creating summaries, abstracts or even parts of scientific reports.
3. Idea generation: AI can help in generating ideas or in identifying relevant literature sources and research papers that can be incorporated into the thesis.

However, it is important to emphasize that the use of AI as a tool should always be monitored and controlled by researchers. The results of AI should be critically examined and, if necessary, adapted to ensure that they meet scientific standards and the specific requirements of the work" (OpenAI's ChatGPT language model; *personal communication of the student*; October 22, 2023).

Bibliography/Sources:

OpenAI's ChatGPT language model; Please describe how to use text-generating AI in theses in a maximum of 150 words; Please explain AI as a tool; October 22, 2023.

Appendix 2: Example of a declaration of independence

I hereby declare that I have written this work independently and have not used any other resources than those specified. I have identified the passages that have been taken verbatim or in essence from other works (this also applies to works from electronic databases or the Internet), stating the source and adhering to the rules of scientific citation. This declaration also includes images, tables, sketches and drawings used in the work. I also used the following generative AI tools to create the work

_____ (e.g. ChatGPT, Grammarly Go, Midjourney) for the following purpose: *[Please specify area of application here]*. The resources used were identified completely and truthfully, including the product version and prompt.

[Place, date]

[Signature]

Appendix 3: Example questions for the presentation and discussion

It's about questions ...

- according to the content details of the work
- according to contextual contexts and conclusions
- reasons why certain sources were used
- the way in which (secondary) literature was used
- on the use of technical terms, definitions, etc.
- after targeted use of AI-generated texts based on the accompanying protocol
- after the design of the work process
- according to motivation, interest in the topic, interest in scientific work, interest in further work on sub-areas of the work

Specific questions could be:

- What criteria did you use to select your basic literature? Explain how you went about selecting more in-depth literature. What support did you use?
- When reading your work, you will notice stylistic differences, particularly in terms of sentence length in chapters 3.4 and 3.5. In your answer, refer to how these differences came about.
- In your accompanying protocol, document the use of AI-based tools. Explain how you proceeded and how you verified the texts.
- In which area of your work do you see potential for further development or where would you like to to continue working on this topic?
- Give a classmate some tips that could help them successfully write their final paper. What would you strongly advise them against using AI tools? Where can AI-based tools be helpful?