



Generative AI in research & education

Erasmus MC Graduate School

v.June 2025

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GRADUATE SCHOOL**

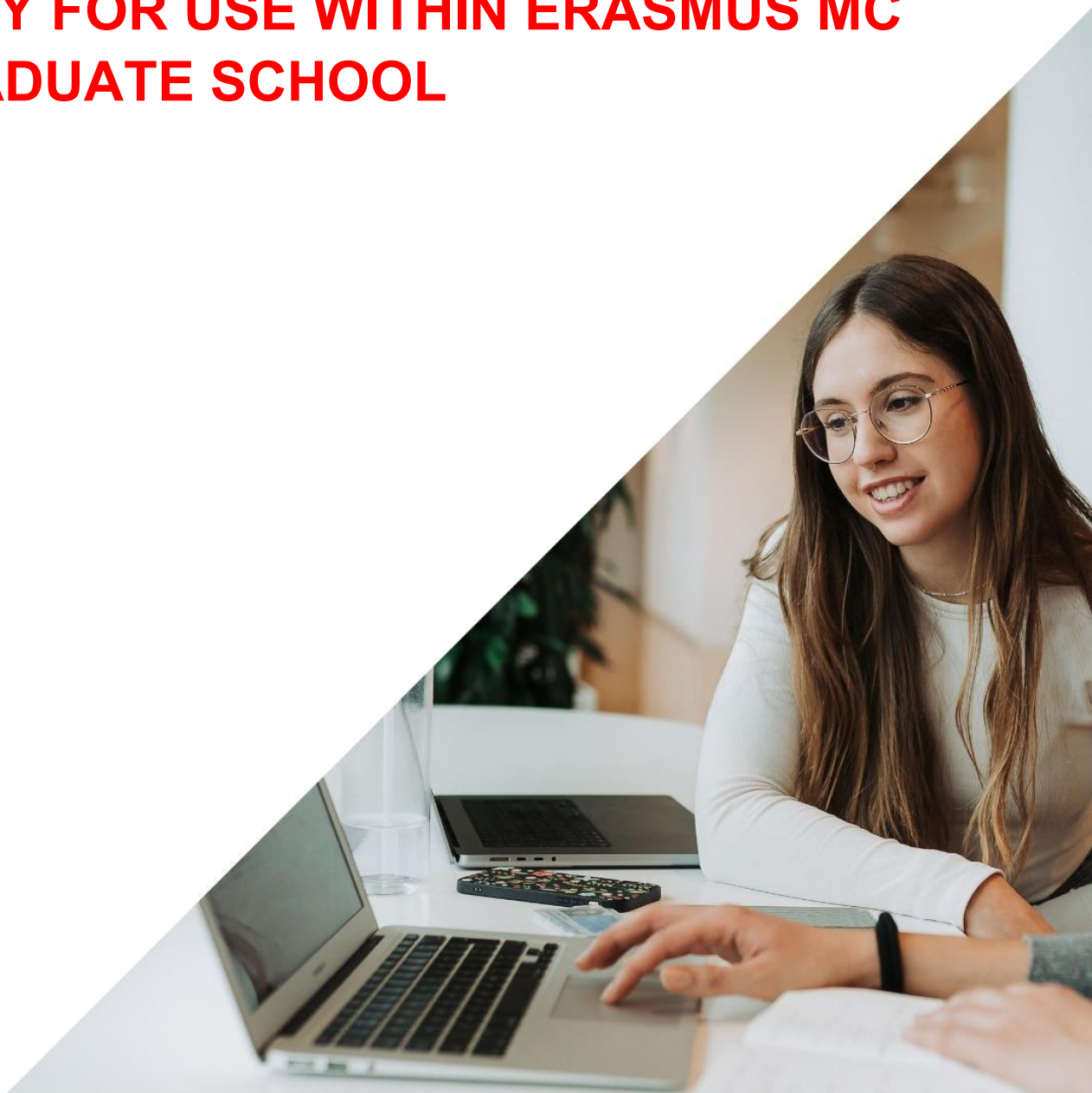


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Introduction

This document contains proposed guidelines for the use of generative AI in research and education for the Erasmus MC Graduate School and aims to support all actors involved in research and education within the context of the Graduate School.

This document has been drafted upon request from Graduate School management by the Graduate School working group on generative AI, consisting of the following people:

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Declaration of generative AI use in this document

In the creation of this policy document, generative AI was used as a tool for brainstorming and editing. The definition of AI abuse as listed in chapter 3.4 was created using a generative AI chatbot ([source](#)).

1. Vision on generative AI in research and education

The Erasmus MC Graduate School aims to train future-proof, world-class scientists to create societal impact. In order to achieve this, we need to ensure that our education is also future-proof, and our students are trained to tackle challenges in a constantly changing world. This means we need to train our students to become critical thinkers and ensure they are AI literate. AI literacy entails knowing how to deal with generative AI responsibly; both by utilizing the opportunities this new technology offers, as well as by being aware of its risks for scientific integrity.

2. Principles of responsible use of generative AI

In this chapter, we define the following principles of responsible use of generative AI.

2.1. AI literacy

In order to ensure all staff and students are capable of using generative AI in a responsible manner, it is vital that they are trained in AI literacy. We define AI literacy in the following terms:

- Having practical competence in selecting and using generative AI tools fit for the intended purpose, while being aware of associated risks and opportunities.
- Knowing when (not) to use AI tools, which includes knowledge of legal requirements, data security, scientific integrity and sustainability, but also knowing not to default to using generative AI over one's own professional competencies, creativity and critical thinking skills.
- Knowing how to critically evaluate and curate AI output.
- Using AI tools proportionally, which includes having a good understanding of the consequences of AI use, e.g. in terms of environmental impact, and being able to adequately weigh cost versus yield.
- Critically evaluating and understanding one's own use of generative AI in a scientific and/or educational context by knowing how to document choices made while using generative AI, in order to be able to properly declare and justify the use of genAI tools.

2.2. Scientific integrity

Adhere to the Research Code for academic integrity when using generative AI in education and research. The five principles of research integrity defined in the Code of Conduct for Research Integrity are honesty, scrupulousness, transparency, independence, and responsibility.

2.3. Awareness of bias

Be aware of and pay attention to potential biases in generative AI output. As generative AI models are trained on existing data, their output emulates the biases present in their training data. Studies have shown that generative AI may therefore reinforce gender, ethnic and cultural biases and stereotypes. In addition, tools used to detect generative AI have shown to be biased against non-native English writers.

2.4. Sustainability

Limit the use of generative AI to only necessary purposes to minimize your environmental impact. The environmental impact of generative AI cannot be underestimated, as the technology uses massive amounts of energy. It is estimated that a generative AI query consumes about five times as much electricity as a simple web search. We therefore stress the importance of critically considering whether it is necessary to use generative AI for each query.

2.5. Data security

Never share sensitive information with AI tools. When using generative AI, it is important to keep in mind that all input is shared with the software company behind the tool. This has consequences for data security, as sensitive data used as input can lead to data leaks. All information shared with chatbots is automatically stored on the servers of their respective companies, outside of the control of Erasmus MC, Erasmus University or the user. Specifying that the data may not be used for training these models is not guaranteed to prevent this. Therefore, students and staff are **not allowed** to share data from patients, research participants, students, or employees with a chatbot. Sharing sensitive and/or confidential data with a generative AI model could result in a data leak under the General Data Protection Regulation (GDPR, or AVG in Dutch), breach of patient-doctor confidentiality, loss of opportunities to publish your work or potentially prohibit the protection of your research.

PhD candidates and research master students should consult with their supervisor and/or other superiors in their department before using generative AI as a tool in their research, to safeguard the data security of Erasmus MC, their department and their research. We urge users to remove all sensitive information, including unpublished research data and other Erasmus MC-specific information, from their texts before using it as input for generative AI.

Note that currently, CoPilot is the online generative AI tool deemed safe for usage by Erasmus MC employees, including PhD candidates and teachers.

2.6. Open access

It is the responsibility of Erasmus MC to ensure that all academics have equal access to responsible AI tools. The Graduate School should advocate for this and work on facilitating equal access.

2.7. Validity of assessment

In order to maintain the quality of our education, we need to ensure that we assess our intended learning outcomes in a valid manner. The use of generative AI can have a negative impact on the validity of assessment. It is therefore important that the technology is used responsibly, both by PhD candidates and students, as well as by teachers and all other actors involved in our programmes.

3. Guidelines for teachers

When considering the impact of generative AI on education, whether PhD or Research Master, educators should take into account the following aspects:

3.1. Guidelines for courses

What is expected of students should always be made explicit and be clearly communicated to those involved. **Course manuals should include a clear statement on the extent to which the use of generative AI is allowed and how its use should be disclosed.** This statement can also include recommendations, for example that generative AI can support parts of the assignment, such as brainstorming. A similar statement should be added to all relevant assignment descriptions, and it should be clear to students how they should disclose their use of generative AI. Guidelines for disclosing (generative) AI usage for students can be found in the next chapter of this document.

It is important to clearly and effectively communicate the class policy on generative AI use to students. In this communication it may be useful to explain the reasoning behind the decision on the use of generative AI, to help students better understand the goal behind the policy. **We also recommend that teachers engage in discussions with their students around responsible use of generative AI**, coming to a collective understanding on what the technology can and cannot be used for within the course.

In order to provide students with a more detailed understanding of what responsible use of generative AI means within the context of a specific course, teachers should use examples and pilots on course level of how generative AI could be used within the course.

3.2. Guidelines for assessment

The use of generative AI can impact the validity of assessment. When students use generative AI unauthorized and/or unacknowledged, the extent to which it is possible to determine whether they have met the learning objectives is limited. When considering the impact of generative AI on assessment, the main consideration is the constructive alignment between the learning objectives and the assessment. Considering the generative AI, does the assessment remain an accurate measurement of the learning objectives?

3.2.1. Step-by-step evaluation of assessment

The following guidelines offer a step-by-step approach for assessing and reducing the risks for (course) assessment. The final responsibility for assessment lies with the examiner.

1. *Evaluate your learning objectives.*

What are the knowledge and skills your assessment aims to measure? Does generative AI impact these target skills? For example, if your main purpose is to assess your students' presentation skills the risks are limited, while assessment focused on writing skills is more likely to be affected.

2. *Evaluate your choice of assessment.*

How do you assess these target skills, and how might generative AI impact the validity of this assessment? Assess this by testing the assessment using generative

AI tools. Experiment with a variety of prompts, provide relevant context and offer feedback to come to a suitable outcome.

- How does the output relate to the learning objectives?
- Is generative AI able to meet the level of these learning objectives?
- Would you be able to distinguish between students' own work and generative AI output?

3. *Evaluate the need for changes in assessment.*

If your analysis shows that generative AI is capable of meeting the criteria set for the assessment, it is likely no longer possible to guarantee the validity of your assessment. There are a number of options to move towards more valid assessment:

- Redesigning the assessment and including tasks that generative AI would struggle with, such as oral exams, and presentations that include room for questioning;
- Emphasizing the process of completing the assignment, for example by asking students to submit draft versions of their work;
- Incorporating generative AI in the assignment, which can foster AI literacy skills;
- Changing the assessment to in-class assignments so that generative AI cannot be used.

It is not possible nor always required to completely mitigate the risks of generative AI. In some cases it may be acceptable for students to utilize generative AI. In those cases, students should always be required to declare their use of generative AI.

Note that a complete prohibition of generative AI is unlikely to be effective, especially in assignments that are completed outside of supervision.

3.3. Intellectual property

Text that is the intellectual property of others and that is not publicly available should never be shared with unsafe generative AI tools. This includes text in assignments submitted by students, as well as unpublished thesis drafts and manuscripts.

As it stands, there is no tool available within Erasmus MC which is deemed sufficiently safe for this purpose.

3.4. AI Abuse and Fraud

AI abuse refers to the inappropriate, undisclosed, or deceptive use of artificial intelligence tools – particularly generative AI (e.g., CoPilot) - in the preparation of academic materials such as manuscripts, theses, or peer reviews. This includes generating content without proper attribution, quality control, or human oversight, and presenting AI-generated output as original scholarly work.

3.4.1. Indicators of AI Abuse in Academic Writing

The following list provides a number of indicators of AI abuse in academic writing.

1. Hallucinated or Non-Existent References
 - Citations that do not lead to real publications, or appear fabricated.
2. Incoherent or Stylized Phrasing

- Generic, overly polished language that lacks domain-specific nuance; unusual repetition of phrases like “as mentioned earlier” or “in recent studies” without substance.
- 3. Lack of Conceptual Depth or Mismatched Terminology
 - Surface-level explanations that misuse technical terms or make incorrect associations common in AI-generated text.
- 4. Overly Uniform Sentence Structure
 - Mechanical rhythm or uniformity in sentence length and style, often lacking the natural variability of human writing.
- 5. Redundant or Circular Reasoning
 - Repetitive points or self-referencing loops, e.g., “This study is important because it is important.”
- 6. Absence of Methodological Specificity
 - Vague descriptions of methods, tools, or procedures that should normally be explicit in academic work.

Note that AI detection tools may offer some insight but are flawed, as there are ways to avoid being detected by these tools and the tools tend to carry a bias against non-native English writers. It will not be possible to detect all use of generative AI, and assessors should be mindful not to accuse students of generative AI use without proper further investigation. When in doubt, assessors should engage in an inquiry and discuss their concerns with the student in question.

3.4.2. Fraud

In case generative AI is used in a way that is not permitted in that research master course, this should be considered fraud. If the examiner of a course strongly suspects misuse of generative AI, they must always inform the Examination Board. It is up to the Examination Board to make the final call on potential consequences for the student. The Examination Board is charged by law with any decision on fraud, to ensure due process and equal treatment of students.

4. Guidelines for PhD candidates and students

4.1. Responsibility and authorship

At all times, PhD candidates and students are the author of their educational outputs and are therefore responsible for ensuring the academic integrity of these outputs. They are expected to use generative AI tools in a manner that is deemed responsible and safe by the Graduate School as described in the principles of responsible use of generative AI in the first chapter of this document.

All PhD candidates and (research master) students are expected to disclose and convincingly justify their use of generative AI, as well as to critically evaluate and curate the yield of the generative AI tools they have employed. Transparency about generative AI use is a crucial factor in ensuring the scientific integrity, reproducibility and validity of research and educational output.

4.1.1. PhD candidates

PhD candidates are the authors of their research. Therefore, it is the PhD candidate's responsibility to use AI transparently, which can be directly translated to mean that PhD candidates should disclose their use of Generative AI. Disclosure implies the ability to explicitly and critically explain the how, why and what of their use of Generative AI. PhD supervisors need to ascertain that PhD students use AI responsibly and transparently. In case AI abuse is suspected, supervisors are referred to the research integrity protocol.

In addition, PhD candidates may refer to the EUR document '*Policy on the use of GenAI and the PhD-trajectory*', These guidelines include the recommendation to discuss the use of generative AI in the Data Management Plan, and to make clear agreements about (responsible) use of generative AI with co-researchers.

4.1.2. Research Master students

It is the student's responsibility to use AI transparently, and to disclose their use of Generative AI. Disclosure implies the ability to explicitly and critically explain the how, why and what of their use of Generative AI. If students are not able to do so, this might be an indication of abuse.

4.2. Disclosing the use of generative AI

PhD candidates and students should always disclose their use of generative AI, whether it concerns an assignment within a course or their thesis. Transparency around the use of generative AI helps improve the AI literacy of both students and assessors, as well as increase the validity of assessment and the decisions that follow from that assessment.

In order to be able to adequately disclose their use of generative AI, PhD candidates and students should document their use of generative AI throughout the creation process of their work.

We recommend that the PhD candidates and students disclose, justify and evaluate their use of generative AI by answering the following questions and submitting this disclosure together with the assignment or thesis. For each main question several sub-questions have been formulated to provide some additional direction. The suitability of each sub-question may differ depending on the context of the disclosure. For example, a disclosure that is part of a

one-page assignment can be much more specific (including referring to specific prompts) than a disclosure that is part of a PhD or master thesis, considering the time spent and size of the product.

1. How was generative AI used?

- To what extent did generative AI play a part in the research process or in completing the assignment?
- What tools were used?
- What prompts were used?
- How was the outcome refined?
- How was the outcome incorporated in the research or assignment?

2. What was the value of the output?

- How did the student critically reflect on the output?
- How was the validity of the output checked?

3. Why was generative AI used?

- Why were these tools and these prompts selected?
- With what purpose were these tools used?
- What was the benefit of using generative AI over other tools such as Google or manual brainpower?

A disclosure should be included in all cases, including in cases where generative AI was not used. In those cases, the disclosure should state that no generative AI was used in the creation of that product.