Universiteit Leiden
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Bachelor Computer Science & Economics

Bridging GenAI and Academic Integrity:

Developing Guidelines for Responsible GenAI Use

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BACHELOR THESIS

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Abstract

Introduction
Generative Artificial Intelligence (GenAI) is becoming a part of many industries and has made its entrance in academic education. Literature shows that the introduction of GenAI brings both benefits and challenges in education. Benefits include supporting students in creating ideas and improving their writing skills, while the challenge is that it is difficult to distinguish what is written by a student and what is written by AI. In addition, GenAI can also be seen as a threat to students' learning processes and the course objectives if students submit work that is not their own, something that can also be considered fraud. This violates academic integrity, a set of rules that ensures research is conducted in a responsible way. When students use AI-generated content without crediting it, the principles of honesty, responsibility, and transparency are violated. Therefore, universities are trying to create policies on GenAI use, but they are struggling to do so effectively. The set of rules are vague and inconsistent, and therefore this research aims to create guidelines for the responsible use of GenAI in education. Resulting in the following research question: "How can guidelines for the responsible use of GenAI in academic education at Leiden University be designed, ensuring alignment with the five principles of academic integrity?"

Methodology
This research used a Design Science Research Methodology to design guidelines for the responsible GenAI use in education. This research conducted 17 interviews with computer science students to create the first and second designs of guidelines. To assess the effectiveness of the guidelines, two separate evaluations were conducted to gather feedback: one with students to understand their perception of the guidelines and another with lecturers. The evaluation workshop of lecturers consisted of two sessions with two different groups to evaluate their perspectives and the applicability of the guidelines in teaching practice.

Results and discussion
This research designed four version iterations of guidelines. The first version includes all options from the conducted interviews. This version consisted of some redundant or contradictory information, this is filtered for the second version. The second version was used during the evaluation workshop with students. Based on the evaluation workshop with students, the third version of the guidelines was designed, which was evaluated with lecturers during a workshop. The study reveals that opinions about how to set rules differ per perspective. However, the results show that the guidelines should cover several aspects, such as setting a clear set of rules, when GenAI use is allowed and when this is not allowed, how to reference GenAI use, and raising awareness about it. The study also gives recommendations on alternative assessment methods and communication.

The study had some limitations, one of which is that it focused on computer science students, and the GenAI use behaviour of students in other fields may differ. The study also gives several recommendations for future research, for example, to test the guidelines with students from other studies or to conduct research to evaluate the effectiveness of the guidelines in practice.

Conclusion
This research has developed clear and useful guidelines for the responsible use of GenAI in academic education. These guidelines should include a clear set of rules, an explanation of why the guidelines exist, specifications on when the use of GenAI is allowed and when it is not, as well as rules regarding how to reference an LLM. In addition, the guidelines should raise awareness about the necessity of always checking and verifying GenAI output, emphasise that students are here to learn, and address ethical considerations. Together, these guidelines provide a clear framework that helps universities to use GenAI responsibly as a teaching tool, without compromising academic integrity. They are therefore an important step for educational institutions to adapt their policies to the rapid developments surrounding GenAI.

Keywords: Generative Artificial Intelligence, Academic Education, Academic Integrity, Guidelines, Students

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Contents

Chapter 1

Introduction

In recent years, Generative Artificial Intelligence has made huge developments. Its accessibility is growing and transforming various businesses, including education. "Generative AI (GenAI) refers to computational techniques that are capable of generating seemingly new, meaningful content such as text, images, or audio from training data" [Feuerriegel et al., 2024]. GenAI tools like ChatGPT and GitHub Copilot have the potential to transform the way we work and learn, especially in the field of academic writing. These technologies can help students generate ideas, text, code, or images or even improve writing [Tsekouras et al., 2024]. However, the use of GenAI in academic education brings challenges, for example, in assessment. It might be difficult to distinguish what is written by the students themselves and what is generated by GenAI [Chan and Hu, 2023]. Too much reliance on GenAI might disrupt students' learning and increase the risk of academic dishonesty. In addition, GenAI can also be seen as a threat to students' learning processes and the course objectives if students submit work that is not their own, something that can also be considered fraud. This research focuses on direct fraud by using GenAI rather than the more indirect fraud that occurs when learning objectives are not met. Furthermore, it is important to think about the role of GenAI in academic education and how this technology can be used in alignment with the core principles of academic integrity. Universities need to revise their policies to effectively address the challenges GenAI poses to academic integrity [Eke, 2023]. In The Netherlands a set of rules is set up to ensure that research is conducted in a responsible way. The code is drawn up by the NWO ("Nederlandse Organisatie voor Wetenschappelijk Onderzoek") and consists of five principles: honesty, scrupulousness, transparency, independence and responsibility [KNAW et al., 2018]. This research aims to investigate how guidelines, aligned with the five principles of academic integrity, can be developed to support students in using GenAI. By gathering the perspectives of both students and teachers, this study will create guidelines that will help students use the technology in a way that is consistent with academic principles.

1.1 Problem statement and motivation

Literature shows that GenAI brings several benefits, such as supporting students in creating ideas and improve their writing skills. However, the use of GenAI also poses challenges, for example the risk that students become overreliant on GenAI which can influence their critical thinking and the originality of their work. Moreover, it is difficult to distinguish what is written by a student and what is written by GenAI especially if the students fails to credit the AI-generated content. This violates the academic integrity principles. To go with this revolution and make sure GenAI is used responsibly, academia need to develop clear policies. One of the elements of policy is about academic dishonesty. If AI-generated texts are used and no credit is given, this falls under academic dishonesty. Therefore, it is important to communicate this towards students and staff.

Leiden University tries to revise it policies and states that *"Students can use ChatGPT as a sparring partner"* [Leiden University, 2025]. Moreover, they say *"If a student uses an AI tool like ChatGPT and fails to mention this, the student is committing fraud"* [Leiden University, 2023]. However, the univeristy does not indicate how students should report the use of GenAI, which leads to confusion and inconsistency. This makes it difficult for students to know how to use GenAI responsibly without violating academic integrity.

1.1.1 Motivation

The motivation for this research comes from the lack of clarity that students experience around the responsible use of GenAI in academia. Whereas the university states that students are allowed to use GenAI as a sparring partner, provided that they mention its use, the Leiden Institute of Advanced Computer Science (LIACS) indicates that its use is only permitted if explicitly acknowledged [Board of Examiners, LIACS, 2024]. Additionally, at LIACS, policies may vary per course, and in such cases, the instructor is responsible for providing further clarification. While the core of the guidelines is similar,

there are nuances in the wording that can be confusing for students. Moreover, rules set by the university are often spread across different web pages. Furthermore, the LIACS policy is aimed at lecturers and is included in the lecturer handbook, which means that it is not directly accessible or understandable to students. This makes it difficult for them to interpret which guidelines apply to them. In addition, it remains unclear how students should report this. This causes confusion among students.

Given this lack of clarity, it is essential that clear guidelines are developed so that students know what to expect and can adhere to academic integrity. Therefore, the following research question is formulated:

> *"How can guidelines for the responsible use of GenAI in academic education for computer science students at Leiden University be designed, ensuring alignment with the five principles of academic integrity?"*

In order to give an answer to this question, the subquestions can be formulated as follows:

- How are computer science students at Leiden University currently using GenAI in academic education and what institutional methods or guidelines are in place to manage this use?
- What requirements do computer science students think should be included in the guidelines for the use of GenAI in academic education?
- To what extent are guidelines for the responsible use of GenAI perceived as useful and applicable by computer science students and lecturers at Leiden University?

1.2 Thesis outline

This research is structured into several chapters. The first chapter is the introduction. The second chapter [2] continues with background on (Generative) Artificial Intelligence in education, academic integrity and the bridge between those two subjects. Chapter three [3] continues with a description of the methodology conducted for this study. Chapter four [4.1] starts with an overview of the results of the conducted interviews, followed by the first [4.1.5] and second design [4.1.6] of guidelines. Moreover, this chapter continues with results of the evaluation [4.2] of the guidelines with students and the improved version of the guidelines [4.2.6]. Chapter four ends with the results of the evaluation [4.3] and the final design of the guidelines [4.3.1]. Chapter five [5] describes and interprets the main findings of the study including limitations and suggestions for future research. The final chapter (chapter six [6]) presents the conclusions of this study.

Chapter 2

Literature Review

This chapter presents the literature review, providing an overview of existing research relevant to this study. Subsection 2.1 defines GenAI and its applications. Subsection 2.2 discusses the use of GenAI in education, including its benefits and challenges. Subsection 2.3 focuses on academic integrity and its key components. Subsection 2.4 connects the concepts of academic integrity and GenAI. Finally, subsection 2.5 provides a conclusion on the reviewed literature.

2.1 GenAI

Artificial Intelligence (AI) is a technique in which programs are able to improve themselves by learning from their own experiences [Schank, 1987]. Recent advances in AI have made it possible to generate new content, a field known as Generative Artificial Intelligence (GenAI). GenAI refers to a technique in computer science that generates new and meaningful content from training data [Feuerriegel et al., 2024]. This generated content can include text, images, or audio [Feuerriegel et al., 2024]. In addition to creating new content, these systems can also answer smart questions and provide useful answers. A specific form of GenAI are Large Language Models (LLMs). LLMs can be used to answer questions, write texts, translate texts or make summaries. They are trained, using machine learning techniques, on huge amounts of text data [Kasneci et al., 2023]. In the past years, several LLMs were developed, such as Bard, ChatGPT, Gemini and LLaMA [Naveed et al., 2024]. The content and answers created by this form of AI are hard to distinguish from human work [Feuerriegel et al., 2024].

2.1.1 Applications of GenAI

According to Schuckart [2024], GenAI should be accessible and applicable to individuals from various academic backgrounds, not just those in specific technical fields. This is because it has relevance and potential benefits in many disciplines. Moreover, Şahin and Karayel [2024] states that GenAI has a big impact in various industries, for example, in healthcare, education, creative industries, or finance. Research of Schuckart [2024] shows several practical applications and capabilities of GenAI technologies such as GPT-3, ChatGPT and DALL-E. These technologies can, for example, be valuable in text generation, as they can generate high-quality text. This makes them useful for various applications, such as content creation, chatbots, and automated writing. Text generation can automate tasks and provide new insights, making it very useful in fields such as marketing, journalism, and education. Moreover, Schuckart [2024] emphasises that GenAI can also be used to create images from short text input. This might be very useful for people in fields such as advertising, media, education, and the arts. Lastly, GenAI can provide responses that mimic human conversations, which is useful for things such as chatbots, virtual assistants, and customer service [Schuckart, 2024]. In addition, GenAI can help in various industries by decision-making and automating routine and creative tasks [Şahin and Karayel, 2024].

2.2 GenAI in Education

In the past years, GenAI has been used more and more in education. GenAI can be used by both students, educators, and educational institutions [Şahin and Karayel, 2024]. For example, educators can use AI to get insights in student learning and make predictions on future student performance or predict which students might need some extra help [Wang et al., 2023]. Moreover, GenAI can help educators automate some tasks. For example, GenAI can help with grading exams or assignments, making lesson plans, or even helping generate exam questions [Şahin and Karayel, 2024]. According to Hwang et al. [2020] GenAI can also be used in universities as an advisor for policy or decision-making. Students can use chatbots as their personal assistants, as these chatbots can answer their questions [Wang et al., 2023]. To further collaborate on this, a study of Şahin and Karayel [2024] shows that GenAI can answer students' questions, ensuring they can receive answers and support outside of regular class hours and without waiting for a response from their educator. Moreover, Şahin and Karayel [2024] argues that GenAI can create personalised study plans and provide feedback on their academic assignments. In addition, GenAI can help students with writing, summarising, or structuring essays [Şahin and Karayel, 2024]. All these applications of GenAI in education bring some opportunities and challenges [Ouyang and Jiao, 2021].

2.2.1 Benefits posed by GenAI in education

Using GenAI in education offers several benefits that can improve students' learning experience. According to research by Kovari [2025] GenAI tools can provide personalised learning and immediate feedback. This improves creativity and learning outcomes. This is supported by research of Almassaad et al. [2024] where almost 72% of the respondents indicated that GenAI tools help in providing instant feedback, and 65% argued that these tools enhance academic performance. Besides, GenAI could also be used as a virtual tutor, which can help students by answering their questions. This reduces the pressure on teachers and helps students in getting their answer more quickly [Chan and Hu, 2023]. A study of Kostas et al. [2025] shows that perceived benefits of using GenAI tools in education entail help and feedback and enhance personalised learning, just as the other research shows.

Research by Usdan et al. [2024] shows that using GenAI for academic projects can improve writing quality and productivity of students. They demonstrated this by comparing graduate students' performance on writing assignments completed without GenAI and with GenAI, including a GenAI instruction. The study found that students completed assignments 64.5% quicker and received higher grades when using GenAI [Usdan et al., 2024]. In addition, GenAI also helps with essay writing by providing inspiration and grammatical support. This helps students improve their writing skills [Chan and Hu, 2023]. Another study shows that students perceive GenAI as beneficial, as it is very easy to use and it saves time on tasks [Almassaad et al., 2024]. Moreover, research of Kostas et al. [2025] shows that GenAI can help students improve performance on assignments and tasks.

Furthermore, GenAI helps students feel more confident in completing their tasks, and it improved the quality and originality of their answers [Sun and Zhou, 2024]. Confidence is also mentioned by Almassaad et al. [2024], who found that students percieve GenAI tools as contributing to increased confidence in their academic work.

2.2.2 Challenges posed by GenAI in academic education

The advancement of GenAI not only raises opportunities but also brings significant challenges. The first significant challenge is the concern about students becoming overreliant on GenAI [Jie and Kamrozzaman, 2024, Ifelebuegu and Kulume, 2023]. This could result in limiting their problem-solving or critical thinking skills [Jie and Kamrozzaman, 2024, Ifelebuegu and Kulume, 2023]. If students become too dependent on AI, it can reduce their motivation to think for themselves and evaluate their own work [Melisa et al., 2025]. Jie and Kamrozzaman [2024] continues on this by emphasising that AI can negatively impact student motivation and engagement. Their research shows that AI creates a passive way of learning, where students consume information without actively participating. This could affect deeper comprehension and memory by limiting critical engagement and long-term retention [Jie and Kamrozzaman, 2024].

Another risk is that students use information without verifying its accuracy. This can lead to errors in their work, incorrect conclusions or even academic misconduct such as plagiarism [Melisa et al., 2025, Jie and Kamrozzaman, 2024]. This is supported by findings from Almassaad et al. [2024], where students expressed concerns about the reliability and accuracy of AI-generated content.

Şahin and Karayel [2024] emphasises that the major concern is the impact of GenAI on the originality of academic work. Moreover, the study points out the potential misuse of GenAI tools in producing assignments. This raises concerns about academic integrity [Şahin and Karayel, 2024, Kutty et al., 2024]. Concerns about academic integrity are characterised by concerns about information privacy, copyright, ethical issues and plagiarism [Kutty et al., 2024]. Integrating ChatGPT into education presents a big challenge about plagiarism because students may submit AI-generated work as their own [Kovari, 2025, Jie and Kamrozzaman, 2024]. Besides, it is hard for educators to distinguish what is generated by AI and what is generated by a student [Kovari, 2025].

In addition, the use of GenAI tools may contribute to inequality among students. Those with easy access to GenAI functionalities may complete assignments more quickly and with better results compared to peers. This has the potential to widen the gap in educational achievements [Kovari, 2025]. This aligns with the findings of Almassaad et al. [2024], who highlight that cost barriers and the need for premium subscriptions limit equal access to GenAI tools.

Although prior research shows that the use of GenAI increases writing quality and students gain more confidence, we must be critical. The questions that arise are: their writing quality does improve, but are students really learning from it? Does it actually enhance their academic performance? And do students genuinely have more confidence in themselves, or do they start overrelying on GenAI, which can lead to false self-confidence? [Fui-Hoon Nah et al., 2023]. Teachers appear to also struggle with these types of questions if we look at different personal blog posts [van Loosbroek, 2023, Wassink, 2024].

2.3 Academic integrity

The "Nederlandse gedragscode voor wetenschappelijke integriteit" is a Dutch set of rules that ensures that research is conducted in a responsible way. The code is drawn up by the NWO ("Nederlandse Organisatie voor Wetenschappelijk Onderzoek") and consists of five principles: honesty, scrupulousness, transparency, independence and responsibility [KNAW et al., 2018].

- **Honesty:** be honest about how the data was collected and what has been discovered. Fabrication and falsification of data must be avoided, which means that data should not be invented or modified [KNAW et al., 2018].
- **Scrupulousness:** researchers should think carefully about how they conduct their research, how they collect data, and how they will record everything [KNAW et al., 2018].
- **Transparency:** it should be clearly explained how the researchers conducted their research and where their information came from. Other people must be able to understand or review the research [KNAW et al., 2018].
- **Independence:** researchers must ensure that their research choices are not influenced by external factors, such as money or political interests [KNAW et al., 2018].
- **Responsibility:** researchers must take into account the people and things that can influence their research and ensure that their research does not cause any harm [KNAW et al., 2018].

Besides these five principles, the code also contains 61 standards for conducting good research. These are rules that determine how a researcher should behave during the different phases of the research process. In addition, there are duties of care for the institutions that train researchers, such as universities and colleges. The code also explains how institutions should deal with major errors, questionable behaviour, and minor mistakes [KNAW et al., 2018].

2.3.1 Plagiarism

Plagiarism can be defined in several ways. It refers to taking the work, ideas, or findings of others and passing it off as your own [Helgesson and Eriksson, 2015]. Others argue that plagiarism is using the ideas of others without referring to them [Singh and Remenyi, 2016]. Ober et al. [2013] combines these two definitions by stating that plagiarism is when someone uses someone else's work and passes it off as their own, without properly attributing it to the original source. This can involve ideas or texts that are not cited correctly.

Plagiarism knows many different forms. Naik et al. [2015] defined nine different forms of plagiarism. For example, (1) *copying and pasting*, which is the most recognisable one, where the plagiariser directly copies and pastes the text without any reference. (2) *Disguised plagiarism* occurs when text is modified by changing words or changing the order of sentences, but the original source is not mentioned. (3) *Plagiarism by translation* is when someone literally translates a text into another language without any referencing. (4) *Shake and paste* occurs when multiple fragments of text from different sources are combined together without forming a coherent whole. (5) *Structural plagiarism* is when the order of arguments, quotations, or even footnotes are copied from another work without citing the source. (6) *Mosaic plagiarism* combining and switching words and arguments of several sources in one without citing the original sources. (7) *Metaphoric plagiarism* occurs when someone uses someone else's metaphors without permission or citing the source. (8) *Idea plagiarism* is the act of taking another author's innovative idea without crediting. And last but not least: (9) *self-plagiarism* is when you reuse your own previously published work without crediting it.

Besides the different forms of plagiarism, it is also important to consider how plagiarism can be detected. The internet makes it easier to commit plagiarism because information is more easily accessible. At the same time, the internet also makes it easier to detect plagiarism quickly, for example by means of

plagiarism detectors [Comas-Forgas and Sureda-Negre, 2010]. Anti-plagiarism software is an important tool in the fight against plagiarism. This software is used by universities to detect plagiarism in academic work [Singh and Remenyi, 2016]. Naik et al. [2015] defines two ways in which plagiarism can be detected: external detection or intrinsic detection. External detection compares submitted text with text in a database of existing publications. This method finds if text is copied or slightly modified. Intrinsic detection, on the other hand, analyses the text itself and does not compare it to external sources. The focus here is to find changes in writing style, structure, or word usage. Currently, universities and academic institutions mainly use, external plagiarism detectors, Turnitin and Viper to detect plagiarism [Naik et al., 2015].

While detection tools are useful, preventing plagiarism through clear guidelines is even more effective. Ober et al. [2013] defined five simple rules to avoid plagiarism.

- Avoid copying text: it is important not to copy text, even if it is from your own previous work. The source should always be mentioned.
- Write everything yourself: it is essential to write in your own words and not rephrase ideas. If rephrasing is necessary, the source should always be mentioned.
- Use a quotation: if there is uncertainty about citing something, it is better to use a quotation.
- Avoid self-plagiarism: it is not allowed to reuse own previously published written material. Always use a source.
- Ask permission: when using materials form others, permission must be asked and source should always be mentioned.

Looking critically, avoiding plagiarism is mostly about doing your own work. However, when you use information from others, it is important to clearly say where it comes from. Doing so ensures honesty and compliance with academic integrity.

2.3.2 Referencing

To clearly show where information comes from, a reference is needed. Referencing is indicating, in an academic text, which ideas or information come from others. Referencing consists of two parts: mentioning the source in text (citation) and adding a full list of sources at the end of the academic work [Neville, 2012].

There are several reasons why it is important to reference. First of all, it allows readers to see where the information comes from and helps to make it clear which thoughts are the writer's own and which are from others [Neville, 2012]. In addition, Neville [2012] states that referencing is important because it shows that a writer is thinking carefully about the information he is using. It shows that the writer has looked at several sources, evaluated the information, and incorporated it honestly into their own work. This helps build a strong, reliable argument. Moreover, following a fixed referencing style makes communication between writers and readers easier. By citing sources correctly, the writer becomes more credible. Other researchers can then find the origin of the information and easily see which source, author, publisher and publication date it concerns. Lastly, plagiarism is a serious problem in academic writing, and referencing is essential to prevent this [Neville, 2012, Srivastava, 2024]. By correctly citing the used sources, the writer can show which information comes from others. This reduces the chance of plagiarism because it clearly acknowledges the original authors and allows others to trace where the information originated from [Neville, 2012, Srivastava, 2024].

There are various referencing styles. It is important to understand this because students need clear guidance on how to indicate their use of GenAI. A consistent way of citing can help them to honestly and clearly show when and how they are using GenAI in their work. The choice of referencing style depends on the subject or academic discipline. Moreover, some educators might prefer a specific referencing style that they believe should be used [Srivastava, 2024]. According to Srivastava [2024] there are three standard systems for referencing. The first one is the author-date system. In this system, the author's name and year of publication are given in parentheses in the text. For example: (Smith, 2020). This system is often used in styles such as Harvard or American Psychological Association (APA). Secondly, there is a numeric system. This system uses numbers in the text to refer to a specific source. Each number corresponds to a source from the reference list at the end of a document. The number is used each time the source is cited again. An example of a numeric referencing system is Vancouver, and it

is often used in disciplines such as science and medicine. The third referencing standard is the Notes and Bibliography system, which uses footnotes or endnotes to cite a source. A superscript number is placed in the text, which refers to the details at the bottom of the page or at the end of the document. An example is the Modern Humanities Research Association (MHRA-style) [Srivastava, 2024].

According to McAdoo [2023] citing AI, such as ChatGPT, is important to be transparent to readers about the information used. Because AI responses are unique and cannot be looked up by others, the creator (such as OpenAI) should be credited. McAdoo [2023] emphasises that the prompt, as well as the generated response, should be included so that others can understand how the AI-tool was used. It is important to include both in-text citation and a full citation, along with the used prompt and generated response. According to McAdoo [2023] the APA style can be used to cite AI correctly. Using APA, the citation should look like this: name of the creator (OpenAI), the year of the version that was used (e.g., 2023), and the specific tool (e.g. ChatGPT). An example would be:

> OpenAI. (2023). *ChatGPT* (Mar 14 version) [Large language model]. https://chat.openai.com/chat.

It is also important to record the exact text generated by the AI, as it can vary from time to time. McAdoo [2023] recommends to use the appendix if generated answers are very long.

2.4 Academic integrity and GenAI

Research of Kofinas et al. [2025] shows that using GenAI in academia is a threat to academic integrity. Using GenAI to write text and deliver it as your own violates principles of honesty, responsibility and transparency. Interpreting this study, it is seen as a threat to students' learning processes and is a risk that the course objectives are not met. Due to students submitting work that is not their own, something that can also be considered direct fraud. One could also consider indirect fraud that occurs when learning objectives are not met. This is especially a risk within traditional forms of written assessments. The use of GenAI in academic work makes it more difficult to assess written work honestly, as lecturers should indicate the extent to which students have used GenAI. This calls for a rethinking of assessment design. That is why Kofinas et al. [2025] proposes a shift towards a more interactive and performative form of assessment, in which knowledge is assessed in a more social and experiential way.

Academia needs to revise its policies to effectively address the challenges GenAI poses to academic integrity. Eke [2023] indicate that GenAI is revolutionary and should not simply be banned or dismissed. Instead, academia needs to change its attitude and actively participate in this revolution. To go with this revolution and make sure GenAI is used responsibly, academia needs to develop clear policies. One of the elements of policy is about academic dishonesty. If AI-generated texts are used and no credit is given, this falls under academic dishonesty. Therefore, it is important to communicate this towards students and staff [Eke, 2023]. Besides, it is necessary to train lecturers and students in the use of GenAI tools so that they understand both their possibilities and limitations and can thus prevent misuse. Furthermore, it is essential to consider new methods of assessment. This could be done by shifting the focus from the end product to the process, and making greater use of oral examinations to gain insight into students' actual knowledge. Lastly, it is important to develop reliable AI detection tools. Developing these AI-plagiarism tools is something that is in-line with research of Kovari [2025] who argues that these detection tools are useful strategies to counter unethical GenAI use. Using these elements, GenAI can be seen as a potential learning tool, instead of only a threat.

2.4.1 Current GenAI policies

There is little literature available on how universities currently formulate their GenAI policies. Only Moorhouse et al. [2023] has conducted research on the GenAI policies of the 50 highest-ranked universities in the world. Their results show that there are three main areas covered in the guidelines: "academic integrity", "advise on assessment methods" and "communication with students".

Academic integrity

The results of Moorhouse et al. [2023] show that most universities consider AI-generated texts without crediting them as plagiarism. These universities emphasise that not correctly citing AI content is also seen as plagiarism. Students should be made aware of these rules, and the recommendations are to

include explicit information about academic integrity and AI use in the syllabus of the courses. It is suggested that in the case of suspected plagiarism, the rules should be the same as for existing integrity rules. Moreover, in some cases oral exams can be implemented to check whether a student wrote the text themselves. In addition to dealing with plagiarism, it is important that students clearly indicate when and how they used AI tools. More than half of the universities emphasise that students should clearly indicate when and how they used AI tools. Some universities limit it to only mentioning it, while others have a specific format, for example, documenting prompts and adding an appendix about the use of AI. This is in line with research of Kovari [2025] which argues that academia are revising its policies where they explain when to use and how to proper citate generated AI content.

Advise on assessment methods

Research on the policies shows that there should be a shift in assessment methods. The results of Moorhouse et al. [2023] show that many universities advise their lecturers to redesign assignments so that students have to do something that is difficult for AI to generate. For example, assignments that require students to be creative, think critically for themselves, take into account a personal context, or solve real, practical problems. A similar recommendation has been made by Kovari [2025], who recommends promoting unique and creative assignments for which AI tools are less effective. Besides, it is recommended that when designing assignments to focus on the process and not on the product [Moorhouse et al., 2023]. This can stimulate learning and fairness. Another method mentioned is to create more awareness by implementing AI in the assignments [Moorhouse et al., 2023]. For example, students are shown an AI-generated answer and have to reflect on it, analyse it or evaluate it. This helps students to learn better how to use AI tools wisely and critically, which improves their digital skills. The last method mentioned by Moorhouse et al. [2023] is the use of in-class assessments as a measure against AI use. Kovari [2025] also mentions incorporating oral exams and presentations, as it will almost be impossible for students to use AI tools, as they must be able to answer questions themselves.

Communication with students

The study of Moorhouse et al. [2023] shows that communication consists of two elements: channels and content. In terms of channels their results show that there are three options in channels of communication: a statement in the syllabus or course description, open discussions with students, and collaboration with librarians. Moreover, the content of the communication should include clear expectations and develop rules together with students about what is acceptable GenAI use. Besides, it is important to inform students about the ethics and limitations GenAI has. It is also important to create awareness about the learning process. According to Moorhouse et al. [2023] this is important to help students understand the importance of studying themselves and motivates them to avoid inappropriate use.

Literature shows that three main elements are important when drawing up good guidelines. However, it is questionable whether adjusting assessment methods is sufficient or whether the educational model also needs to be revised. In addition, it is questionable whether the forms of communication as described by Moorhouse et al. [2023] are sufficient to really make students aware of responsible GenAI use.

2.5 Research gap

GenAI in academic education brings both benefits and challenges. On the one hand, GenAI can support students in creating ideas, improving their writing skills and improving productivity. On the other hand, there is a risk that students become overreliant on GenAI, which can influence their critical thinking and the originality of their work. Moreover, it is difficult for teachers to determine what is written by AI and what is created by a student. This makes it difficult to say whether a student might have committed plagiarism or not. When a student uses AI-generated content without crediting this, it makes it seem as if the student created the idea or the work themself. This violates principles of honesty, responsibility, and transparency. Academia needs to revise their policies to address these challenges. Although several studies underline the importance of refining policies around the use of GenAI in academic education, the literature shows that there is a concrete lack of how such guidelines should be designed. Furthermore, the current literature on how to set up GenAI guidelines is focused on the use of GenAI and guidelines from a university's perspective, rather than the students' perspective.

Chapter 3

Methodology

This chapter begins by outlining the research design in Section 3.1, which introduces the Design Science Methodology used in this study. Section 3.2 then provides a more detailed explanation of the methods applied, including data collection methods and data analysis.

3.1 Research Design

This study uses the Design Science Research approach to develop guidelines for the responsible use of GenAI in academic education. Design Science was chosen as it supports the development of artefacts to solve problems [Peffers et al., 2006]. This research follows the six-step Design Science Research Process (DSRP) by Peffers et al. [2006], shown in Figure 3.1.

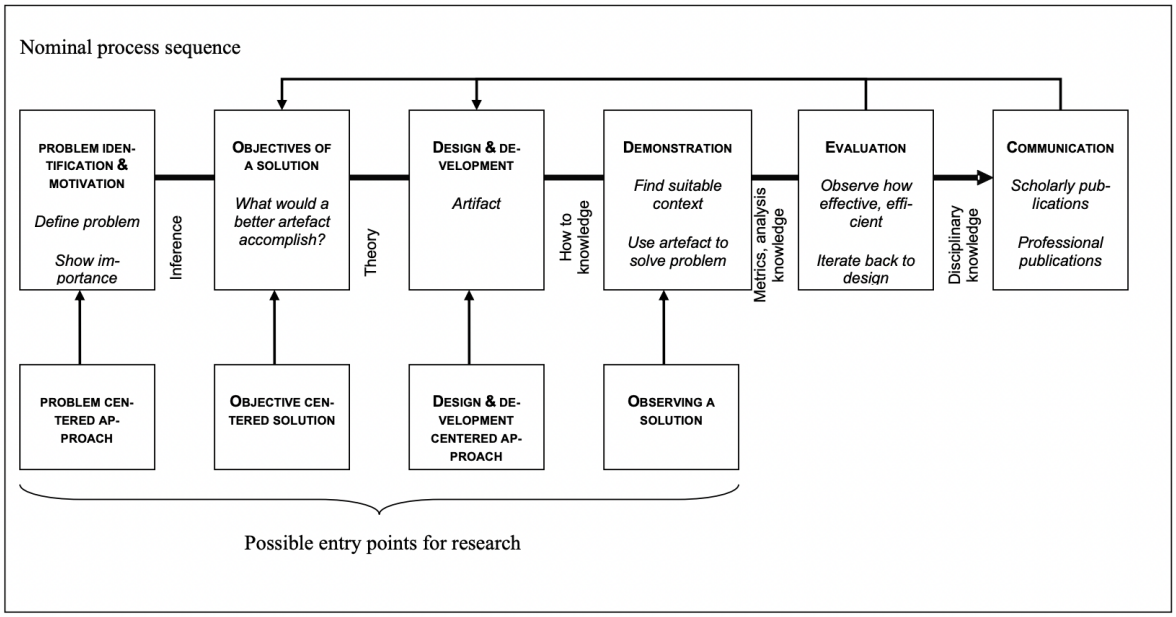

Figure 3.1: Design Science Research Process by Peffers et al. [2006]

Problem identification and motivation
The first step of the DSRP is problem identification and motivation [Peffers et al., 2006]. Literature shows growing concerns about the ethical issues that arise from using GenAI in academic work, such as plagiarism. Leiden University has a few rules for the use of GenAI, but these lack alignment as they do not clearly state how GenAI should be used and cited. This creates uncertainty among students. Therefore, there is a clear need for improved guidelines aligned with the principles of academic integrity.

Objectives of a solution
This stage describes objectives of the solution [Peffers et al., 2006]. The objective of this solution was to create clear guidelines for the responsible use of GenAI in academic work. These guidelines should describe when to use GenAI and how to use GenAI in a responsible manner, maintaining academic integrity.

Design and development
During this phase the focus was on designing the guidelines for the responsible use of GenAI in academic work [Peffers et al., 2006]. To develop the first set of guidelines, semi-structured interviews were conducted with 17 computer science students. The interviews gained insights on the current GenAI use of these

students, how they perceive the current regulations and what they need to use GenAI responsibly. Based on these insights, one document with all guidelines and later three different versions of the GenAI guidelines were developed.

Demonstration
The three versions of guidelines were presented to a student focus group (N=10). The participants discussed their perceptions and opinions on the given guidelines in terms of clarity and if they would use them themselves. Their feedback was used to select and refine the best elements from each version and address missing aspects.

Evaluation
After implementing changes based on the student focus group, a second evaluation was conducted with lecturers. This evaluation consisted of two sessions with two different groups (N=2 and N=3). The aspects discussed in this session were used to design the final version of the guidelines.

Communication
Communication is the final stage of the DSRP, and this includes how the results are presented to stakeholders [Peffers et al., 2006]. The final version of the GenAI guidelines is presented in this thesis in Chapter 4.3.1.

3.2 Method

The following subsection describes the data collection methods used and the data analysis process.

3.2.1 Data collection methods

This research used several data collection methods, such as requirement interviews, desk research and evaluation workshops.

Requirement interviews
This research used semi-structured interviews (N=17) with computer science students from Leiden University. The interview questions consisted of open questions to go more in-depth and gain better insights. The interviews were conducted in Dutch, however, the complete interview guide (translated to English) can be found in Appendix A. The participants in the interviews were computer science students from Leiden University who were from different years of the bachelor's and master's programmes. The aim was to have a diverse group of participants so that different perspectives on the use of GenAI could be gathered. In addition, interviews were held both in person and online and lasted in the range of 30-45 minutes per participant. All interviews were recorded (with permission) and transcribed for analysis.

Desk research
Desk research involved gathering existing relevant documents and examples of GenAI guidelines, such as university policies, existing templates and examples from courses in the Computer Science curriculum. Finding the university's policy proved to be difficult, as the information is quite hidden on the website. A targeted search had to be done with specific search terms in Google to find the right pages. From these pages, you could then click through to additional information. In order to retrieve all relevant documents, search terms such as "GenAI Leiden University", "ChatGPT Leiden University" and "AI rules Leiden University" were used. The existing templates were collected by the researcher, who had to use them before. In addition, students were asked during the interviews whether they were familiar with such templates. The only template that was mentioned was the one that was already known to the researcher. This desk research served as input to gain a broad picture of the current state of GenAI guidelines in academic education.

Evaluation workshop with students
An evaluation workgroup with a group of 10 second-year computer science students was conducted to assess the second version of the GenAI guidelines. During this session, students completed surveys that combined open-ended questions and closed-ended Likert scale items to provide both qualitative and quantitative feedback on specific aspects of the guidelines. In addition to the surveys, an in-room group discussion was facilitated, which was recorded (with permission) and later transcribed for detailed analysis. Both the completed surveys and the discussion transcripts were used to gather comprehensive insights. The forms and questions used can be found in Appendix B. Since the questions were originally asked in

Dutch, they have been translated into English.

Evaluation workshop with lecturers
After the evaluation with the student focus group, an evaluation session was conducted with lecturers. This evaluation consisted of two sessions with two different groups of lecturers, including a member of the Board of Examiners and a programme director. The first session included two lecturers, while the second session involved three lecturers. Each session lasted approximately 1 hour and 20 minutes. The questions asked during these sessions can be found in Appendix C. As the original questions were posed in Dutch, they have been translated into English.

3.2.2 Data Analysis

The following subsections describe how the collected data was analysed.

Requirements interviews
The analysis of the requirements interviews, qualitative data, was performed using Atlas.ti. The transcripts were analysed using both open coding and thematic analysis. This method was chosen because this identifies recurring patterns and themes in the opinions of students. Open coding was executed in a data-driven manner, meaning that the codes were derived from the participants' own responses, without predetermined categories. During coding, general, descriptive codes were first assigned to the responses. Where possible, overarching codes (thematic analysis) were directly linked to these so that themes became visible in the data at an early stage. An example of this is the code copy/paste, which was placed under the group inappropriate GenAI use. In the next step, these groups were combined into themes. For example, appropriate GenAI use and inappropriate GenAI use fell under the theme Guidelines. This resulted in four main themes: Demographics, Current use, Requirements for guidelines and Guidelines.

Desk research
The literature collected and examples from the desk research were analysed to identify relevant guidelines and best practices. The guidelines listed on the website of Leiden University were formulated quite broadly, which is why they were mainly used in this study as background knowledge. In addition, a concrete format of a course that currently uses an AI appendix was also found in the desk research. This format served as inspiration for one of the three versions of the AI appendix of design 2 of the guidelines.

Evaluation workgroup with students
For the focus group with students, both qualitative and quantitative data were collected. The quantitative data consisted of completed forms with Likert scale questions, while the qualitative data consisted of open questions and the recordings of the group discussions. The forms with Likert scale questions were analysed using descriptive statistics. The mean, median and mode were calculated to obtain a general picture of the attitudes and opinions of the students. In addition, the standard deviation was included in the analysis to gain insight into the degree of differences in the answers and thus to signal any division or consensus within the group. The qualitative data were processed by analysis of the open answers on the forms and by means of transcribing the recorded group discussion. The answers to the open questions were analysed and summarised in the findings. The analysis of the transcription involved selecting relevant quotes to illustrate or substantiate certain findings.

Evaluation workgroup with lecturers
During the evaluation with the lecturers, qualitative data was collected based on recorded group discussions. These discussions took place in the form of a semi-structured conversation, in which the second draft of the guidelines was reflected on using pre-defined questions. The audio recordings were fully transcribed to allow for detailed analysis. The pre-defined questions were seperated into themes, for example, *why*, *do's and don'ts*, and *awareness*. Within each theme, recurring observations, opinions and suggestions from the teachers were categorised. In order to reflect the teachers' opinions as accurately as possible, the results include several quotes to illustrate and substantiate the findings.

Chapter 4

Results & Design

This chapter outlines the results of this research. Section 4.1 discusses the results of the interviews conducted, followed by the first version of the guidelines (section 4.1.5). As this version contains some redundancies and contradictions, the chapter continues with a second version of the guidelines (section 4.1.6). This version of guidelines is evaluated during an evaluation workshop with students, the results of this workshop can be found in section 4.2 and the evaluated version of the guidelines in section 4.2.6. Lastly, the results of the evaluation workshop with lecturers (section 4.3), a description of what choices are made for the design (section 4.3.1) and the guidelines for the responsible use of GenAI in academic education (section 4.4).

4.1 Results requirement interviews

The results of the requirement interviews are divided into four subsections: demographics, current GenAI use in academic education, requirements for guidelines and guidelines specification.

4.1.1 Demographics

Table 4.1 shows the demographic characteristics of the participants. Students from all study years participated, with five students from the second and third years each. All studies were represented, with most participants from the Data Science & AI (N=5) track. The results show that almost all students use GenAI outside of their studies, but not everyone (15 yes, 2 no). During their studies, however, all students use GenAI (17 yes).

Characteristic	Count	Percentage
Study year		
1st year	2	11.8%
2nd year	5	29.4%
3rd year	5	29.4%
4th year	2	11.8%
Master's	3	17.6%
Total	**17**	**100%**
Study programme		
Bachelor's in Data Science and AI	5	29.4%
Bachelor's in Computer Science & Economics	4	23.5%
Bachelor's in Computer Science	4	23.5%
Master's in ICT in Business	2	11.8%
Bachelor's in Computer Science & Biology	1	5.9%
Master's in Computer Science	1	5.9%
Total	**17**	**100%**
General use of GenAI		
Yes, often	3	17.6%
Yes, sometimes	12	70.6%
No	2	11.8%
Total	**17**	**100%**
Use of GenAI in academic education		
Yes, often	10	58.8%
Yes, sometimes	7	41.2%
No	0	0%
Total	**17**	**100%**

Table 4.1: Demographics of participants

4.1.2 Current GenAI use in academic education

Figure 4.1 shows the distribution of GenAI tools used during studies. The results show that ChatGPT is the most used (57%), followed by GitHub Copilot, Gemini and DeepSeek (11%).

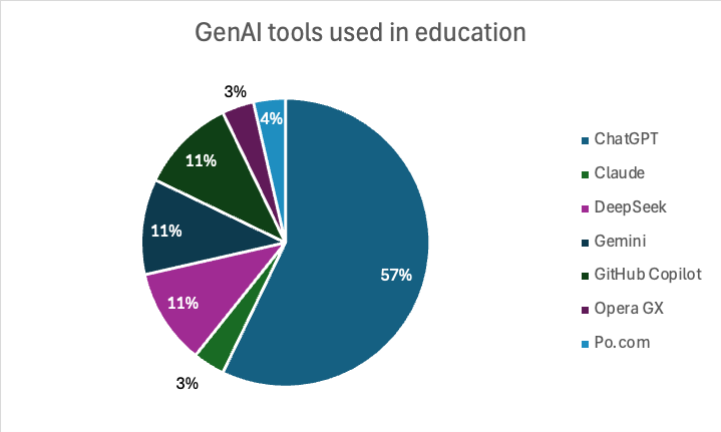

Figure 4.1: GenAI tools used in academic education

Table 4.2 shows the current GenAI use of students in academic education divided into three sections: tasks with GenAI, reasons for using GenAI and reasons for not using GenAI. The results within the section tasks with GenAI show that the majority of the students use GenAI to gain knowledge (N=14). For example, to ask for explanations of difficult terms, or "if Google does not give a preferable answer, GenAI could be of great help," as it gives answers to specific questions. Secondly, students use GenAI for writing support. Participants responded, "Sometimes I ask it to express my ideas. Especially when I have to write a report, and then especially in English. Because I often have the feeling that I express my ideas too literally from Dutch to English. So then I check if you can say this in English." Another respondent answered, "I use it to write emails. So then I simply copy the email that was sent to me, and then I say, 'Write my answer'." Another reason for using GenAI is for gaining answers to specific questions. "For example when you have a really specific problem with code, then you don't often come across someone on the internet with exactly the same problem. Whereas ChatGPT, can organise that for you."

In addition, Table 4.2 shows reasons for using or not using GenAI. The results show that the main reason for students to use GenAI is efficiency (N=17). They state that without GenAI, their tasks are taking way longer, as just asking Google does not give a direct answer to a question, for example, to find a bug in code. Besides, students also use GenAI for tasks that are not part of the learning goal. For instance, when filling in a database for a project after already completing a course on databases. They understand the material but would need to refresh their knowledge. Instead of spending time reviewing, they let GenAI assist. Another common example is creating LaTeX tables. Since formatting tables is not part of the learning objective, students consider it more efficient to let GenAI handle this.

However, students also have reasons not to use GenAI as shown in Table 4.2. These include plagiarism and learning. Many respondents emphasised the importance of still learning from the tasks they complete. If they feel that using GenAI would hinder their learning, they consciously choose not to use it. Additionally, fear of plagiarism plays a significant role. Students are concerned about the risk of being caught and potentially having to defend themselves in front of the board of examiners.

Characteristic	Count	Comments/Examples
Tasks with GenAI		
Gain knowledge	14	"If I don't know something, I look it up there and they also explain it right away."
Writing support	12	"Sometimes I also use it when I'm writing text or something. And I'm not completely happy with the structure of a sentence or I can't think of a word, then I can help with that too."
Programming	10	"Yeah, sometimes when I want code, like if I really can't figure it out with my code, I ask him why this error is coming or something. Or when I'm kind of done coding and then I paste my code in and then I ask if he thinks this is good enough or if there are things I need to improve."
Brainstorming/ideas	4	"I also use it a lot to get ideas. So if I have to write an essay, I ask for either give ideas for an essay on this topic or give possible arguments for and against."
Exam preparation	4	"What I also do occasionally is that I ask for exam question, then I have a piece of text, I then take that in. And then I ask hey, can you make a few questions for me? And then also the answer with it."
Feedback	3	"A third thing is I can send him a piece of text that I wrote myself and ask for feedback."
Other	3	"I think ChatGPT is a pretty nice reading voice and I'm a bit dyslexic and I sometimes really have problems with just drilling through pieces of text. Because that can be so incredibly scientific. And then I just let it be read to me and then I can read along."
Automating tasks	2	"Especially for LaTeX writing"
Reasons for using GenAI		
Efficiency	17	"Mainly because of the productivity, because I've noticed that if I don't use it, I'm really working on things for a lot longer. While in the end I actually end up with the same thing."
Answers to specific questions	10	"I think more that sometimes it is quite difficult to find on the websites, also for example when you really have a specific problem with code then you don't often come across that someone on the internet has exactly the same problem. Whereas ChatGPT, they can organize that for you. And make it super, let's say, personal for you."
Better understanding	2	"And ChatGPT is sometimes more for when I use a new module in Python. Or for example I'm learning a new language. Then I use ChatGPT more to really request new things. And to understand what is all possible."
Important for future job	2	"I think if you look at the job market in a moment, that there are many companies that would prefer it if you could do that too and work well with that."
Reasons for not using GenAI		
Learning	8	"Because ultimately I do think that you should do a course where you learn analytical thinking and then I think it's a bit stupid if you leave that thinking, or at least the elaboration of a thought, to a tool."
Other	4	"I've become a little more aware of how polluting it is. It feels a little bit like... It's kind of the most polluting option of all things."
Plagiarism	3	"On the one hand it's really the whole fraud story. I don't feel like fraud or any hassle with the examination board."

Table 4.2: Participant's current use of GenAI in academic education

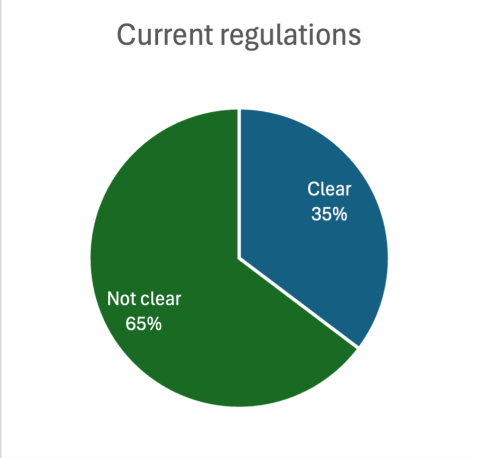

Figure 4.2: GenAI regulations

Another result of the interviews is depicted in Figure 4.2 and shows how students perceive the clarity of current GenAI regulations, whether they find them clear or not. The results show that 65% of the respondents find the current GenAI regulations not clear, stating, "It is not emphasised very much in general for students. It is only in certain courses that it is emphasised very much, also in the lecture. But in certain courses it is simply ignored." Other students are really short in their answer to the question of to which extent they find the regulations clear: "No, actually no idea".

Table 4.3 shows the results of students' perspectives on how GenAI is encouraged and discouraged during their studies. Participants responded that in some courses there is a huge emphasis on the fact that it is allowed to use GenAI in their studies, as long as the student writes down which pieces were written by the LLM. Moreover, GenAI use is encouraged by lecturers, who tell students they may use it to receive additional explanations or clarifications. However, majority of the group respond that there is no encouragement of GenAI use in their study. On the other hand, the majority of students report that there is a strong emphasis on the fact that GenAI use is not allowed. They respond, "Certain teachers are really against it, they say you can't use it. They try to discourage you with that." There is also a big emphasis on plagiarism, as "lecturers create fear that if GenAI is used, this is seen as plagiarism, and if detected, students would have to report to the board of examiners." This aligns with the discouragement created by the use of AI detection tools, which lecturers emphasise are in place. The presence of such tools also discourages students from using GenAI.

Characteristic	**Count**	**Comments/Examples**
Encouragement of GenAI usage		
Other	6	"One lecturer really encourages DeepSeek. During the lecture he also says you should just make a DeepSeek account. So then he really encourages you to make an account there and just test it out."
There is no encouragement	6	"Yeah, I don't really know if I would say that it's encouraged."
Emphasis on allowed to use	5	"At the bottom of the assignment, it said that you could use it but that you had to write down which pieces you had used it for."
Get more knowledge	4	"use it especially for additional explanation. We encourage that too."
Assignments designed to encourage use of	2	"We had to complete an assignment, and one of the things we were going to do was use AI during the assignment."
Ask feedback	2	"For example, if you were to send your report to ChatGPT and you specifically asked him, 'This is a report. The course covers these elements, and it is assessed on these points. Please assess my report.' A teacher has sometimes encouraged that as a way you can use it."
Generate ideas	2	"Yes, I have had it before in courses that they indeed encourage you to use it for ideas or something. Yes, especially for generating ideas, I think."
Discouragement of GenAI usage		
Emphasis on plagiarism	12	"Well, they scare you completely, but they scare you with everything, with fraud."
Emphasis on not allowed to use	10	"For most courses it is indeed the case that you are simply not allowed to use it."
AI detection tools	8	"Mainly due to the fact that they often indicate that they use AI checkers."
Emphasis on consequences	4	"And we're going to check it and if we think there's ChatGPT use or LLM use then you've got a problem or something, then there's going to be some kind of penalty."
Difficult assignments	3	"So we try to make the assignments, and then we run them through GPT first, and then we see if it can solve it so that we can reverse engineer the assignments in such a way that it doesn't work when you let AIs do it."
Emphasis on learning	3	"Yes, only discourage, they still do that by, for example, really explicitly explaining in the lecture why they don't want it, namely that you learn less."
Orals/interviews	2	"Halfway through the last assignment, they started having oral interviews, where they actually asked questions about your code, to see if you knew what had been written."
No discouragement	1	"But to say that it is really clearly stated that this is not allowed, I would also say no."

Table 4.3: Encouragement and discouragement of GenAI usage in academic education

4.1.3 Requirements for guidelines

Figure 4.3 presents a pie chart illustrating the requirements for guidelines. The results show that the guidelines should include lectures on the responsible use of GenAI. Respondents mention that these lectures should include rules and regulations, prompt engineering and should create awareness about the limits and use of GenAI. Furthermore, creating awareness also includes attention to climate impact, as training AI models requires large amounts of water to cool data centers; privacy concerns, since data shared with AI can be used to train models; the learning process, because relying too much on AI can negatively affect students' development; and the fact that GenAI is a chatbot and thus not everything GenAI outputs is correct. Another point that respondents make is about the ways of testing.

As shown in Figure 4.3 students believe that other ways of testing, like oral exams, should be implemented to make sure students meet the learning goals. Students also mention aspects related to

rules and regulations regarding the use of GenAI. Several respondents suggest that the university should provide its own regulated GenAI tool, with the relevant rules already embedded within it. In addition, students propose different ways to create guidelines. For instance, some argue that “rules should be the same for every course”, while others suggest a system where “rules are set on a 1–5 scale, allowing lecturers to choose the category that best fits their course".

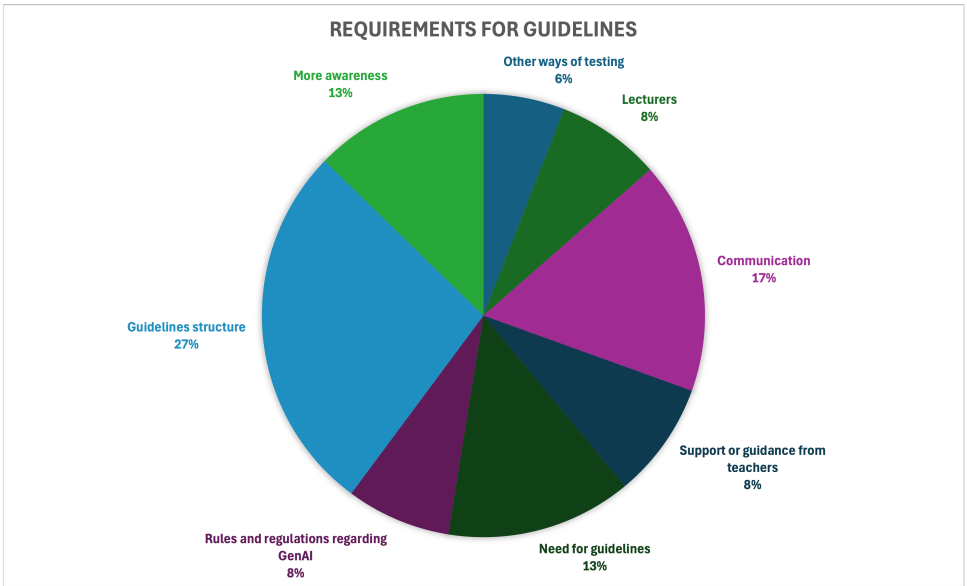

Figure 4.3: Requirements for guidelines

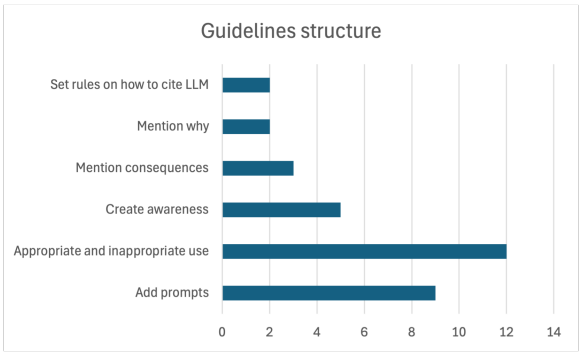

Figure 4.4: Guidelines structure

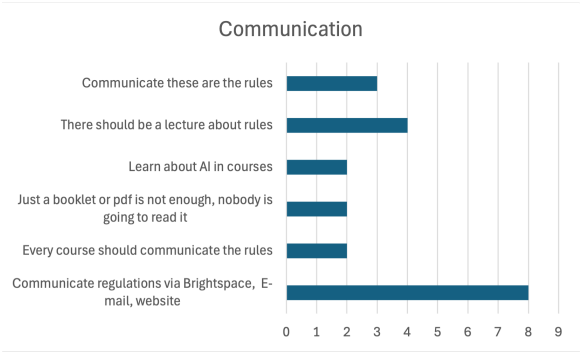

Figure 4.5: Communication

The two largest parts of the response pie chart are related to the structure of the guidelines (Figure 4.4) and communication (Figure 4.5). The respondents highlight several elements that should be in the structure of these guidelines. Examples include appropriate and inappropriate use, providing example prompts, explaining why the guidelines exist, outlining the consequences of using GenAI tools, raising awareness and set rules on how to cite an LLM. On the other hand, communication includes how and what should be communicated. Most respondents (N=8) mention rules should be communicated via Brightspace, e-mail or website. Besides, respondents mention that every course should communicate the rules. Moreover, some mention that just a booklet or PDF is not enough, as no student is going to read this.

4.1.4 Guidelines specification

Another result focuses on how guidelines should be specified. Table 4.4 shows which elements students consider important in the guidelines on the use of GenAI, which are appropriate use, inappropriate use, justification, referencing and format for referencing.

The first element is about appropriate GenAI use. The results show that students find the use of GenAI especially appropriate if it helps them to come up with ideas (N=10), to work more productively

(N=10), or to ask for advice (N=13). For productivity, respondents say, "Just say the tasks that can be automated. For example, summarising or something, or really things that you do manually and that are not really very educational." About ideas, respondents argue, "I think it's especially appropriate when you really want to use it as a tool and when you're kind of really asking for help to explain something or just to brainstorm." Using GenAI to find errors in code, look up sources or improve texts is also seen as appropriate GenAI use. In addition, some indicate that the use of GenAI is okay if it does not affect the learning objectives of the course itself, such as creating a LaTeX table or filling in a database after taking the course.

The second element is about inappropriate GenAI use. Students indicate GenAI use as inappropriate when making assignments (N=8), writing texts (N=8), or just copying and pasting something (N=6).

Element	Code	Count
Appropriate use	Ask for advice	13
	Creating ideas	10
	Productivity	10
	Ask for knowledge or sources	7
	Ask for errors in code	6
	Improve writing	5
	Other	5
	Not part of learning goal	4
	Still able to explain the work	3
	Check work	3
Inappropriate use	Write/finish assignments	8
	Write text	8
	Copy/paste	6
	Not learning from it	6
	Making exams	3
	Violates learning goal	3
	Other	3
Justification	Small piece of text at beginning or end of report	7
	Document with AI justification	5
	Not needed	3
	Checkbox on Brightspace	2
	Sign document of no GenAI use	1
Referencing	No reference if used for structure, brainstorming or assistance	8
	Reference if copy text or code	6
	How to: reference to direct source	4
	How to: GenAI justification model	4
	How to (in-text): explain that GenAI is used	3
	Reference if ideas or examples are used	2
	How to: ask several LLM's, compare and use as expert	2
	How to (in-text): to AI appendix	2
	No reference if it gives direct source	1
	How to: add chat conversation link	1
	How to (in-text): same as article	1
Format for referencing	Prompt, output	3
	Output, model used, why that model is used	1
	Prompt	1
	Prompt, output, model	1
	Why GenAI is used	1

Table 4.4: Input for guidelines

The third element is justification. Students indicate that they prefer this in several ways. The most mentioned form is a short explanation at the beginning or end of the report (N=7), followed by a document with AI justification (N=5) or a checkbox on Brightspace (N=2). There are also some students who do not find it necessary to justify the use of GenAI (N=3).

The fourth element is referencing. Referencing can be divided into two aspects: when to reference and how to do so. Regarding when to reference, students indicate that this is necessary if you literally copy text or code, or if you use ideas or examples generated by GenAI. In addition, referencing is not needed when you only use GenAI for rewriting, brainstorming or structuring text or if GenAI has directly given you an existing source to which you then refer. In addition, opinions differ on how to reference. Three forms are mentioned for in-text references: (1) in the same way as for an article, (2) a short explanation in the text about how GenAI has been used, or (3) a reference to a separate AI appendix. In addition, the

GenAI justification model is mentioned (N=4) as a way to account for this. Students also indicate that you can refer to the original source, or that you add a link to the conversation with the chatbot. Finally, one student suggests testing the reliability of GenAI responses by giving the model the same prompt multiple times and seeing how consistent the responses are. If a certain percentage (say, 15 out of 20 times) of the same response comes back, you could think of that as a kind of expert consensus and use it in the report.

The last element is about the format for referencing. The results show that the most important elements that should be included in such a format are prompt and output.

4.1.5 First design of the guidelines: including all options from the interviews

To design the first version of the guidelines, the results of the interviews were used. The first step taken was to look at the requirements for the guidelines. These requirements form the basic structure and can be found as subheadings within the guidelines. An example of those subheadings can be found in Figure 4.6 where the subheadings: *Rules & Regulations*, *Why do we have these guidelines?* and *Appropriate & Inappropriate use* are shown.

E.1 Rules & Regulations

- Regulated AI model
- Regulations should be the same for every course
- Regulations should be set on a 1-5 scale, lecturers can choose in which scale their course falls

E.2 Why do we have these guidelines?

E.3 Appropriate & Inappropriate use

Figure 4.6: Example of subheadings in guidelines design 1

After adding structure with the subheadings, interpretations were added. These interpretations are based on the results of the guidelines specifications. The content of the guidelines specifications was divided into the three subheadings: appropriate use, inappropriate use, and how to reference an LLM. According to the guideline specifications, referencing an LLM now includes two subheadings: *justification* and *referencing*. *Justification* includes different ways of how GenAI use can be justified, as seen in Figure 4.7.

D.5 How to reference a LLM?

E.5.1 Justification

- Checkbox on Brightspace
- Document with AI justification
- Sign document of no GenAI use
- Small piece of text at beginning
- Not needed

Figure 4.7: Example of interpretations in guidelines design 1

Moreover, *referencing* includes additional subheadings, like *when to reference*, *when not to reference*, and *how to reference* (including options for formats for referencing).

The complete first design of the guidelines can be found in Appendix D and includes all subheadings and interpretations.

4.1.6 Second design of the guidelines: filtered by feasibility

As shown in the first draft of the guidelines (Appendix D), there are some subheadings that still include various elements, with some containing redundant or contradictory information. In order to ensure that the guidelines can be evaluated properly, the following choices have been made:

To be validated components (excluded from design 2 for now):
To determine which parts should be included in the guidelines, some components will be tested during

the evaluation. For the *rules & regulations* component, three variants are presented to students: (1) the same rules for each subject, (2) a scale from 1 (completely prohibited) to 5 (completely allowed), where lecturers themselves choose the level for their course, and (3) rules drawn up by the lecturer per course, which means that there may be differences between courses.

In addition, Likert scale questions are used to investigate to what extent students find certain components important for the guidelines, such as an explanation of *why* the guidelines are needed, the inclusion of *examples and/or prompts*, the mention of possible *consequences of inappropriate use*, increasing *awareness*, providing explanations during lectures, and clear *communication* about the guidelines.

With regard to *justification*, the evaluation will find which of the three methods students prefer most. The three methods are as follows: (1) a brief explanation, (2) signing or checking something (for example, via a checkbox on Brightspace or signing a statement), and (3) no justification required. The options "checkbox on Brightspace" and "signing a document" have been combined into one category in this evaluation. The justification method: AI document is tested separately in combination with different reference formats.

Moreover, some elements have been temporarily eliminated, such as *alternative methods of testing* and *support from teachers*, because these topics were less concrete or less frequently mentioned in the previous interviews.

Choices regarding the components to be included in Design 2 guidelines:
For the category *appropriate use*, it was decided to include both statements of number 3 because this section is relatively large and both statements are considered relevant. Categories 4 and 5 were skipped because they were each mentioned only three times, which is relatively little compared to the other categories. It was also decided to exclude the 'Other' category, as the elements listed there were either mentioned only once or lacked clarity. For the category *inappropriate use*, all points were included in the second design, with the exception of the category 'Other'. This decision was made because the comments mentioned there only occurred once. This resulted in the following set of appropriate and inappropriate uses, shown in Figure 4.8.

E.1 When to use GenAI?

F.1.1 Appropriate GenAI use

1. GenAI can be used to assist with code-related tasks such as explaining errors, breaking down code into smaller pieces, writing comments, or generating small code snippets. It can help you structure your code but should not replace the learning process of writing and understanding code yourself.
2. GenAI can be used as a tool for idea generation and brainstorming.
3. GenAI can be used to clarify concepts you do not fully understand and ask questions when you need further explanations.
4. GenAI can be used to provide clear, step-by-step instructions or to explain the necessary steps for completing a task. However, it is essential that you understand the steps and can apply them independently.
5. GenAI can be used to increase productivity and efficiency by handling repetitive tasks or speeding up certain processes, but it should not replace the actual learning process.
6. GenAI may be used to rewrite or restructure sentences, improving clarity, grammar or writing style.
7. GenAI may be used in tasks that you have already learnt before and that are outside of the learning goals of the course, but it should not be used to bypass the current course objectives.
8. GenAI can be used as a search engine. However, always verify the information you receive.

F.1.2 Inappropriate GenAI use

1. You are not allowed to copy and paste content directly from GenAI into your work.
2. It is not allowed to use GenAI to answer exam questions.
3. GenAI may not be used if you do not learn from it.
4. You are not allowed to use GenAI to generate code if the learning goal is to understand how to develop this independently.
5. It is not allowed to use GenAI to write assignments.
6. GenAI may not write your code or text without you understanding it.

Figure 4.8: Example of *when to use* in the guidelines design 2

The categories of*when to reference* and *when not to reference* have been fully included in design 2. For the categories of *how to reference* and *format for referencing*, three versions have been created. First, it was decided how to reference in-text. Three different options emerged from the interviews. That is why it was decided to include each of these options in a separate version so that all three can be evaluated separately. Three different versions were also developed for the *format for referencing* parts.

The first version was primarily based on the format currently used in the second-year course. However, in this first version it was decided to leave out the components "who" and "evaluation". This is because not everyone works on an assignment together in each course, and the "evaluation" was seen as redundant in relation to the components, specifically "how it was processed" and "why it was used". On the other hand, it was decided to add the component "output", because this was regularly mentioned as an important element during the interviews. Version 1 can be seen in Figure 4.9.

VERSION 1:

E.3 How to reference GenAI?

F.3.1 In-text: reference to AI-bibliography in appendix

example:
This piece of text is written by GenAI [1].

E.4 Template for justification

Reference	Prompt	Output	Date of Retrieval	How is the output processed/used in the report?	Which model was used?	What is the version of the model?	Why did you use GenAI?
1							
2							

Figure 4.9: Example version 1 for *how to reference* in guidelines design 2

The second version is built around the components: "model used", "reason for using GenAI", "why that specific model was chosen" and a "link to the chat conversation".

The third version contains the elements: "prompt", "model used", "date", "method of processing the input", and a "link to the chat conversation".

For versions 2 and 3, it was decided not to include the "output". The author felt that the reference format would become too long and confusing. In version 1, on the other hand, it was decided to include the output because, according to the interviews, this is a frequently mentioned and relevant component.

Taking into account that some components are only assessed through questions during the evaluation workshop with students, the second design of the guidelines can be found in Appendix E.

4.2 Results evaluation workshop with students

This section shows the results of the evaluation workshop with students. The results are divided into several parts. The section starts with an overview of the responses of students on the Likert scale questions. The second part describes the opinions of students about GenAI accountability, followed by the results of the opinions on how to set GenAI rules. Then the results on form 1 are discussed, and lastly the results on form 3.

4.2.1 Likert scale statements

Statement	Mean	Median	Mode	Std. Dev.
It is important that the guidelines explain why rules for GenAI use are needed.	4.0	4	4	0.67
If I understand why the guidelines exist, I'm more likely to stick to them.	3.9	4	4	0.99
Example prompts help me to be clear about what constitutes appropriate and inappropriate GenAI use.	4.2	4	5	0.79
I would find it easier to apply the guidelines if they included prompts or examples.	4.0	4	5	1.05
Guidelines without example prompts would be more confusing to me.	3.5	3.5	4	0.85
Sample prompts make it easier to find loopholes.	3.2	3	3	0.63
The university must actively make students aware of the risks, limitations and responsibilities when using GenAI.	4.0	4	4	0.47
Students are responsible for using GenAI consciously and for exploring its risks and opportunities.	3.5	4	4	0.85
The guidelines should clearly state the consequences of irresponsible use of GenAI.	4.5	4.5	5	0.53
GenAI rules should be available in one central place.	4.0	4	5	0.94
In every course in which GenAI is relevant, it must be clearly communicated what is and is not allowed.	4.9	5	5	0.32
The university must communicate the GenAI guidelines in multiple ways, such as website, Brightspace and email.	3.6	4	4	0.52
The course 'Studying & Presenting' should include a lecture on responsible use of GenAI.	5.0	5	5	0.00
In each course, there must be a lecture that explains whether or not GenAI may be used, and in what way.	3.5	4	4	1.08
Lecturers must clearly explain at the beginning of the course what is and is not allowed in terms of GenAI use.	4.3	4	4	0.48
Lecturers should provide concrete examples of inappropriate and appropriate uses of GenAI within their course.	3.1	3.5	4	0.99
It is important that students understand when GenAI use is considered plagiarism or fraud.	4.3	5	5	0.95

Table 4.5: Descriptive statistics on evaluation statements

Table 4.5 presents the results of the Likert scale questions asked during the evaluation workshop with students (form 2 and form 4). First of all, the results show that all respondents strongly agree with the statement "The course 'Studying & Presenting' should include a lecture on responsible use of GenAI" (Mean = 5.00, StDev = 0.00). This is the only statement with complete agreement.

In addition, the statement "In every course in which GenAI is relevant, it must be clearly communicated what is and is not allowed" also stands out, with a high mean (Mean = 4.90) and a relatively low standard deviation (StDev = 0.32), indicating that most respondents agree or strongly agree with this.

A third observation is that the results show that the majority of the respondents agree to the fact that it is important to explain *why* rules for GenAI use are needed (Mode = 4.0, Mean = 4.0) and they also think that if they had this understanding, they would be more likely to stick to the rules (Mean = 3.9, Median = 4.0).

A last observation in the results is that respondents believe that *examples and prompts* are helpful in understanding what is appropriate and inappropriate GenAI use. For example, the statement "Example prompts help me to be clear about what constitutes appropriate and inappropriate GenAI use" has a high mean (Mean = 4.2, StDev = 0.79). However, the statement "Lecturers should provide concrete examples of inappropriate and appropriate uses of GenAI within their course" has a lower mean (Mean = 3.1, StDev = 0.99), showing that respondents are more neutral when it comes to whether lecturers should be the ones to provide these examples.

4.2.2 GenAI accountability

Should there be accountability for GenAI use and if so, how?	Advantages	Disadvantages	Preference
Option 1: Yes, you must provide a brief explanation at the beginning or end of your report.	People will follow the rules better. Fewer conflicts.	More work. Sense of obligation. Potential barrier.	6
Option 2: Yes, you must sign or check something that you have followed the rules (this can vary per subject, for example, you may not use it at all, to you may use everything).	Easy and fast. Provides teachers with a point of reference.	People might click through without reading. Harder to verify.	4
Option 3: No, you do not have to make a statement of GenAI use.	Full freedom. Not checkable.	Difficult to verify.	0

Table 4.6: Opinions on GenAI accountability

Table 4.6 shows the results of the discussion on the statement "Should there be accountability for GenAI use, and if so, how?" held during the evaluation workgroup. The respondents were given three options, and the question was what they thought would be the advantages and disadvantages of each option and what their preferred option would be. The results show that the majority of the group prefers the first option: accountability must be provided at the beginning or end of a report. In addition, the results show that none of the respondents preferred option 3. Participants felt that this option provided too much freedom and feared the lack of accountability could lead to students being penalised if their use of GenAI were later questioned. As a result, respondents leaned more towards option 1 or 2. The results show that respondents slightly preferred option 1 above option 2 (6 votes against 4). One participant explained, “Everyone then sits behind their computer 1 minute before 12 and quickly clicks on that. They don’t read that per course. That is simply too much effort. Number 3 is too vague, in my opinion, because you do have guidelines, but you don’t have to explain it. So then I come to number 1.” Others also favoured option 1 because they believed it increases the likelihood of students adhering to the rules and reduces the risk of conflicts, as teachers can clearly see how GenAI was used in the assignment.

4.2.3 How to set GenAI regulations

Rules regarding GenAI use must...	Advantages	Disadvantages	Preference
Option 1: be set by the board and must be the same for each course.	Clear.	Courses differ too much.	1.5
Option 2: be set by the board on a scale from 1 (fully allowed) to 5 (fully prohibited), communicated to students. Teachers choose a level for their course.	Allows variation per course. More uniform and clear.	Can be confusing.	6.5
Option 3: set by teachers themselves, meaning rules can differ for each course.	More tailored to specific courses.	Teachers may lack expertise. More work. Too much variation.	2.0

Table 4.7: Opinions on GenAI regulations

Table 4.7 show the results of the discussion on who should be responsible for setting the rules regarding GenAI use. Respondents were presented with three options: (1) rules are set by the board and are the same for each course; (2) rules are set by the board using a scale from 1 (fully allowed) to 5 (fully prohibited), which is communicated to students. Teachers then select a level for their course, and (3) rules are set by individual teachers, meaning that the rules can differ for each course.

The results show different advantages and disadvantages per option. For option 1, respondents said that this is just a really clear option. However, respondents also say that courses differ too much. On the other hand, people are quite clear about option 2, a respondent said, "I think it is clear if you just have five things because, in the end, you study at the university for three years, and it is set to scale

2. Then you automatically know what scale it is. And it can still differ per course. That you do have that differentiation, but it is clear." For option 3, participants argued that it has the great advantage that lecturers can choose the rules themselves, as it can be tailored to the specific course. However, respondents argued, "I don't think every teacher knows enough about GenAI to be able to judge that. So I think you can get a better judgement from the board, because, hopefully, they do know a lot about it. Another disadvantage is that there is probably too much difference between all the subjects. Then you have to get used to it every time and see what is allowed and what is not allowed."

The results show a clear preference for option 2. One respondent's answer fell between two options, which explains the half point visible in the results. This person stated, "I think start with one and then slowly see if you can do two. Because I think it is quite unclear to start with scales from one to five for such a relatively complicated method." Overall, respondents preferred option 2 because they felt that GenAI use should differ per course while at the same time having clear and consistent rules across the university. According to the participants, allowing every teacher to develop their own rules (option 3) would create too much variation and confusion between all courses.

4.2.4 Responses on Form 1

During the completion of form 1, participants were asked to sit with the group they worked with for their assignment in their second-year course.

Form 1 aimed to gather results for the guidelines about *appropriate and inappropriate GenAI use* and *when to and when not to reference*. The results show that students would use GenAI more (compared to the current guidelines in their second-year course) "because these guidelines are clearer about what is and is not explicitly allowed, we would use GenAI more often because you know for sure that it is allowed and you do not doubt whether you are in that 'grey area'". All respondents said they would still use GenAI with the new guidelines, for example, to get ideas, generate images, explain things more clearly, or improve their writing. They also mentioned that they would use GenAI less secretly because it is now clear when it is considered plagiarism and when it is not.

The group also answered questions about what is redundant and what is missing. One group mentions, "Nothing is redundant, the more concrete points, the clearer and better." However, the other two groups mention that some points are contradictory and that without specific definitions, this could mean a lot of things. Two of the three groups mention that guidelines about image generation are missing. Furthermore, additional feedback groups mention that the guidelines should include a list of concrete definitions, and the same categories should be placed together, for example, "exam questions and assignments belong together".

4.2.5 Responses on Form 3

Similar to Form 1, participants were asked to sit with the group they worked with for their assignment in their second-year course.

Form 3 aimed to gather results regarding the three different forms of in-text referencing and three different templates for accountability. Each group received a different version. The results of the different versions are as follows:

Version 1: was considered a time-consuming approach. Respondents stated, "It's such a hassle that people don't use AI or use it secretly without accountability." At the same time, they considered the method to be clear and complete. Additional feedback included that the columns "model" and "version" should be merged into one column in the template. Besides, instead of including the full GenAI output, respondents preferred sharing a link to their chat history, as this provides more of an overview. However, this raised a question: "Do you know how that works with privacy? Because in principle it is of course just your own application. So to what extent is that allowed? For example, I haven't always perfectly separated my private life from my university life within ChatGPT". There was quite a discussion within the group and most respondents agreed to the fact that it violates their privacy. Finally, participants found the repeated question "Why did you use GenAI?" after each prompt redundant, stating, "Once is generally enough".

Version 2: was considered as "fine". However, participants noticed that the "model used" and the "version of the model used" should be added within the template. Moreover, they suggested that the last two columns, "Why did you choose this model?" and "Link to conversation with the concerning tool", can be deleted. One of the participants added, "Yeah, I don't think that's necessary. Because I think very few people know why they chose this model." In addition, this group started about privacy as well, as their template also included a chat link. Furthermore, they stated, "And I think that you can also very quickly cheat with that. That you quickly throw your prompt in another chat and then everything that you are not allowed to use, but do use, that is still in your old prompt." Besides, their opinion is that the template misses "prompt" and "output", and for the in-text reference, it misses the type of model used.

Version 3: was considered vague and too complicated by the participants. Moreover, in the template, it is asked for a date and participants ask why this is needed. Moreover, with regard to the column "How is the input processed in the report?" in the template, participants commented, "How the output is processed seems way too much. After all, you already have to refer to it in the report". They felt that indicating where and how GenAI was used in the report itself (through in-text referencing) should already be enough. During the discussion in class they added, "Yes, our thing was quite detailed. And we actually found it quite a lot of work to fill everything in every time. Which I think secretly makes you use things because you don't feel like filling it all in." The respondents did mention that for them a chat link would work.

Comments and remarks: the evaluation session ended with the question of whether someone had some extra comments or remarks. One of the respondents mentioned that it would be nice to have a list of definitions. "I think examples are easier to understand. But a combination of, that would work best I think." Besides the examples and definitions to make it easier to understand, one of the respondents added that just putting the guidelines on Brightspace would not work. It was mentioned that a lecture should be given with maybe an exam to make sure students really study the rules, the respondent added, "maybe something with Studying and Presenting or something. So that we get a kind of exam on how you can use it".

4.2.6 Third design of the guidelines: including evaluation of students

The results of the evaluation workshop with students are used to refine the second design of guidelines. The results of the evaluation showed that the rules for GenAI use would be most effective on a scale of 1-5. It was also indicated that participants would adhere to the rules better if they know why these guidelines are set (Mean=3.9).

Regarding *when to use* and *when to reference* the results show that image generation is important and should be added to the *appropriate use* section. Moreover, the feedback indicated that the list of *appropriate and inappropriate use* should be categorised. Therefore, the *appropriate use* list is divided into three subcategories: "learning support", "creativity and productivity", and "outside of learning objective". Besides, in the list of *inappropriate use* there were three statements: "GenAI may not write your code or text without you understanding it", "It is not allowed to use GenAI to write assignments" and "GenAI may not be used if you do not learn from it". Respondents found these statements contradicting. It was decided to delete the first and last one, as it is most important that a student learns from it. If a student does not learn from using GenAI, then GenAI should not be used anyway. Consequently, the second rule is clearer and enough to indicate what is and is not allowed. The *inappropriate use* is then divided into two subcategories: "exams and assignments" and "learning objectives". Respondents indicated that *example prompts/list of definitions* are essential. Future research or implementation can be useful to put a better definition on those *examples/definitions*.

Consequences should be stated in the guidelines, as the evaluation indicated that it was important to clarify the consequences of incorrect use of GenAI. In addition, in terms of *justification*, the results of the evaluation showed that justification is needed. This showed that an in-text reference to an AI appendix is considered most appropriate because references according to APA style are often incomplete (for example, due to the lack of information about the AI model used). Version 3 of the guidelines was experienced as "vague and too complicated", because of this feedback, the decision was made to create a simpler version of the AI appendix. The *AI appendix* is based on the template of version 2, but contains some adjustments: the question "Why did you choose this model?" has been removed because it was considered redundant. Even though using a chat link raises questions about privacy, it is the preferred option in the AI appendix model. This is because, according to informal discussions with lecturers, they

noted that the output can become too overwhelming. This aligns with the researcher's own observation. To make it more manageable for both lecturers and students, the decision was made to share the chat link rather than the entire output. The parts "How did you use it?" and "Date" have been removed because this information was considered irrelevant.

Awareness was a crucial component that absolutely had to be included in the guidelines, given the high mean score of 4.5. In addition, *communication* about the use of GenAI turned out to be most important at course level. Students indicated that they would prefer to be informed per course about what is and is not allowed, instead of general guidelines at university level. Besides, the results show that the course "Studying and Presenting" should include a mandatory lesson on the responsible use of GenAI. Finally, *other ways of testing* was mentioned but was not evaluated during this evaluation phase.

Figure 4.10 shows the refined guidelines based on the evaluation session with the students. The refined guidelines include several elements:

- **How the rules and regulations should be set up**, followed by an empty space where a reason *why the rules exist* should be implemented.
- **Do's and Don'ts:** these are based upon the *when to use* and *when not to use* and give students an overview of when they are allowed to use GenAI.
- **Be aware when using GenAI:** this includes all elements mentioned by students about topics we need to create *awareness* about like learning, climate impact, privacy, and verification and accuracy. These are supplemented with illustrations to make it nicer to read.
- **Definitions/Examples:** are added in the format, as the topic is considered highly important, however, the actual content has been left out for now, as it is up to each university to determine appropriate definitions and examples based on their institutional context.
- **Consequences:** are already included in the format, as the subject is considered highly important, but the actual content has been left out, since it is up to each university to determine appropriate consequences in accordance with their own policies.
- **When to reference:** is based on the element *when to reference*, as discussed in both the results of the requirements interviews and the evaluation session with students. It covers rules regarding when and how students are expected to acknowledge their use of GenAI.
- **How to reference:** shows the format of the *AI Appendix* that students should use when they need to reference their GenAI use.

GenAI Guidelines

These guidelines serve as a general framework. It is recommended that the board set a standardised scale of rules, ranging from 1 (fully allowed) to 5 (fully prohibited), and ensure that this scale is clearly communicated to their students. Lecturers can then choose the appropriate level for their specific course. This approach ensures clarity and consistency across the institution, while at the same time the rules are better aligned with the learning goals of each course.

"Include why the guidelines exist"

DO's

Learning support

- GenAI can be used to explain errors, break down code, and generate small code snippets, but it should not replace the learning process of writing and understanding code on your own. GenAI should help you understand, not just generate.
- GenAI can be used to clarify concepts you do not fully understand and ask questions when you need further explanations.
- GenAI can be used to provide clear, step-by-step instructions or to explain the necessary steps for completing a task. However, it is essential that you understand the steps and can apply them independently.

Creativity and productivity

- GenAI can be used as a tool for idea generation and brainstorming.
- GenAI may be used to generate visual content such as logos, models and diagrams.
- GenAI can be used to increase productivity and efficiency by handling repetitive tasks or speeding up certain processes, but it should not replace the actual learning process.
- GenAI may be used to rewrite or restructure sentences, improving clarity, grammar or writing style.
- GenAI can be used as a search engine. However, always verify the information you receive.

Outside of learning objectives

- GenAI may be used in tasks that you have already learnt before and that are outside of the learning goals of the course, but it should not be used to bypass the current course objectives.

DON'Ts

Exams and assignments

- *It is not allowed to use GenAI to answer exam questions.*
- *It is not allowed to use GenAI to write assignments.*
- *You may not copy and paste text directly from GenAI into your work.*

Learning objective

- *You are not allowed to use GenAI to generate code if the learning goal is to understand how to develop this independently.*

DEFINITIONS/EXAMPLES

"THIS PART SHOULD BE DETERMINED BY THE UNIVERSITY ITSELF"

BE AWARE WHEN USING GENAI:

You are here to learn: Use GenAI in a way that enhances your learning, not replaces it. Ask yourself: does this contribute to my understanding? If not, reconsider using it.

Climate impact: Training and running AI models requires significant computing power, which consumes energy. Be aware of the environmental footprint of these technologies and use them responsibly.

Privacy: AI models store and process data. Do not use GenAI with sensitive or confidential information (e.g., from a company or university assignment) without permission.

Verification and accuracy: GenAI can be helpful, but it is not always accurate. It may confidently give wrong or misleading information. Always verify the output and do not trust it blindly.

CONSEQUENCES OF INAPPROPRIATE USE

"THIS PART SHOULD BE DETERMINED BY THE UNIVERSITY ITSELF"

WHEN TO REFERENCE

You should reference your use of GenAI in the following situations:

- *You use ideas, examples or explanations from GenAI.*
- *You partially copy text, code or visualisations from a GenAI output.*

It is not needed to reference your use of GenAI in the following situations:

- *If the GenAI output has directed you to a particular source (such as an article, book, or study), you should cite that original source itself and not the GenAI.*
- *You used it for language correction, feedback, or brainstorming, as long as you determined the content yourself.*

HOW TO REFERENCE

AI APPENDIX:

In-text: *reference to AI justification in appendix (AI-Appendix).*
Example: *This piece of text is written by GenAI [1].*

REFERENCE	PROMPT	WHICH MODEL & VERSION IS USED?	WHY DID YOU USE GENAI?	LINK TO CHATCONVERSATION

Figure 4.10: Guidelines design 3

4.3 Results evaluation workshops with lecturers

This chapter presents the results of the workshop with the lecturers to evaluate the third version of the guidelines. For this evaluation, two focus group sessions were conducted following the same structure. The first focus group consisted of two participants, while the second focus group included three participants. This chapter is divided into several subsections (themes) that were discussed during the sessions.

1. First impression of the guidelines

Participants in both groups were asked to provide insights about their first impression of the guidelines.

Group 1: Emphasised the aesthetics of the document. One participant noted, "My first impression is, 'Oh, it's nicely designed, that is nice." Another participant expressed concerns about the clarity of the target audience, as it is not clearly stated who that is for. Additionally, it was noted that the reference to the "board" was not immediately clear, and it is suggested to give a better definition to this.

Group 2: Started with the comment, "It's a one-pager. So that is always nice." The participants appreciated the visual layout with the division into squares and the use of different colours being mentioned as elements that make the document more accessible. In addition, a participant suggested that the university logo should be added.

2. Why

The second theme discussed during the workshop consisted of the empty space in the guidelines: "Include why guidelines exist". Participants were asked why they think these guidelines exist.

Group 1: Emphasised the importance of clarity to prevent confusion, particularly about what is expected from students. It was suggested to make existing rules, which are often unclear or even contradictory, more practical and concrete. It was also indicated that clarity is important not only for students but also for lecturers and the board of examiners. Students must know what is and is not allowed so that they can behave accordingly. At the same time, it is important for lecturers to have a clear framework, for example, in cases of possible fraud. This makes it easier to determine whether there has been a violation and what the consequences of this violation are.

Group 2: Mentioned that in the first paragraph (within the rules section of the guidelines), there is already some communication about why, as it states, "this approach ensures clarity and consistency throughout the institution". According to the group, this is important and should be mentioned in the why statement. In addition, uniformity is really important to have agreement between students and teachers on what is and what is not allowed. There can also be a focus on the fact that these guidelines provide direction to students. One participant added that guidelines also provide protection, "because using AI in certain ways is simply plagiarism, so it is good that students know when they are and are not allowed to use it".

3. Do's and Don'ts

The third theme discussed during the workshop is about the *do's and don'ts*. Participants were asked to provide their reflection and to mention missing or redundant elements.

Presentation

- Similarities: Both groups noted that the wording of the *do's* and *don'ts* could be improved to increase readability. Moreover, both mentioned that repetition and sentence length could be reduced.
- Differences:
  - **Group 1:** Suggested to increase readability by visually highlighting key words. In addition, they suggested grouping changes in the guidelines by scale so it is clear which changes apply to which level. They also suggested using active language instead of "GenAI can be used for this and for that". In addition, they advocated using a heading and listing some examples below. For example, they suggested including a heading, "Use GenAI as learning support", and then the examples underneath, "To explain errors, break down code". Lastly, they suggested that

the sections on creativity and productivity could be shortened, as the third point in this list overlaps with elements already covered under learning support.

- **Group 2:** Suggested to increase readability by changing the formulation of the *do's* and *don'ts*. One participant mentioned, "You start them all with, 'GenAI can be used or may be used' if you take these away everywhere, it's already a lot shorter."

Missing elements

- Similarities: Both groups emphasised the importance of verifying the GenAI output, as there is a shared concern that students blindly copy the generated information.
- Differences:
  - **Group 1:** Explicitly suggested including a *don't* rule that warns students not to use GenAI content without verification. They mentioned, "I would maybe implement a *don't* that states, 'Do not use generated content without independent verification'." The group mentioned the importance of verifying the GenAI output several times during the session.
  - **Group 2:** Suggested "Perhaps one of the key *do's* should be to always check the output first." In addition, they mentioned that even when GenAI is used according to the rules, the student remains responsible for the accuracy of the submitted work. One participant stated, "Saying 'I used AI' cannot be considered a valid excuse to disclaim responsibility, for example, claiming 'This is not my fault, that's AI's fault'. A student is always responsible for the work they submit."

Suggested changes

Similarities: Both groups felt that some of the wording in the *do's* and *don'ts* needed clarification or reformulation.

Differences:

Subject	**Group 1**	**Group 2**
Search engine	Change wording to "use GenAI to find primary sources" because GenAI itself is not a source.	Skip this in both the *do's* and *don'ts*.
Models	Clarify the concept 'models'; proposed to split this into 'models' and 'logos' and clearly define the terms.	Not mentioned.
Rewrite or restructuring	Use for suggestions only; give warnings about hallucinations or incorrect citations.	Not mentioned.
Step-by-step instructions	Not mentioned.	Doubt whether students need this *do*; risk that students will learn less about planning and structuring.
Boundaries/examples	Not mentioned	Define clear boundaries: "for example *do* use GenAI to do this [something], but not for [something], so this is the boundary'."

Table 4.8: Overview of changes mentioned in do's and don'ts

Table 4.8 shows an overview of the suggested changes in the *do's* and *don'ts*. The results show that both groups have their doubts about the *do* of the search engine, but their opinions differ in how to fix this. Group 1 suggested changing the formulation of this *do* to "use GenAI as a search engine to find primary sources" because respondents argue that GenAI does not directly lead you to the primary source and can hallucinate. On the other hand, Group 2 suggested skipping the *do* about the search engine "because then you also know for sure that the sources you receive exist". It was discussed whether this element should be removed or moved to the *don'ts* and the conclusion was to skip it in both. They said, "Look, if the students want to do that, yeah fine, if it works for them. But I just wouldn't have it as an element in *do* list and promote it".

The other suggestions were mentioned by one group but not by the other. For example, about models, Group 1 says that the term models in the *do's* is unclear. It is suggested to split the *do* with one for models and one for logos, and give a definition for the word model. Furthermore, this group says that if you ask GenAI to rewrite or restructure, there is the pitfall that GenAI returns it in a way that it adds non-existing sources. Therefore, the respondent suggested changing it to "it may be used to receive suggestions for rewriting or restructuring sentences". Group 2 mainly continued with step-by-step instructions. One of the respondents mentioned that for the course given by the respondent, it would be likely to skip the *do* about the step-by-step instructions, as "I think it is important that students can structure and plan their own work because their brains are not fully developed yet". The respondents believe that students learn a lot from planning their own studies, so they are unsure about this *do* statement. In addition, this group mentioned that during the course students work in pairs. The respondent mentioned, "It is precisely the coordination within the team of the right approach that is so incredibly educational. If everyone says, 'Well, GenAI generated this; let's do that' then you outsource this. You don't get to the dialogical discussion that you need. So, actually all the *do's* and *don'ts* where students no longer have to consult with each other, I wouldn't want to see that." Finally, Group 2 recommended defining clear boundaries by also combining *do's* and *don'ts*. The participant mentions, "For example, *do* use GenAI to do this [something], but not for [something], so this is the boundary'."

4. Regulations and scales

Both groups were asked to organise the five scales by listing *do's* and *don'ts* for each one.

Group 1:

Table 4.9 presents the results of Group 1's classification of the scales. In Group 1, there were various discussions about the inclusion of a scale of 0. One participant stated, "I think they really need a zero line as well. For example, I give an open book exam without GenAI. Maybe you want to call that scale 0." In the end they reached a consensus that the zero line is necessary, but they can simply refer to it as scale 1. Furthermore, they mentioned that there are aspects that should be determined by a lecturer. So the lecturer must clarify what is allowed and what is not allowed for his course, stating, "So those *do's* and *don'ts* can vary a bit between courses."

In addition to these results, there was also discussion about the classification of the scales. This group indicated that scale 2 should really only involve the use of GenAI in the learning process. However, they added the comment that attention should be paid to the wording of the *do's* and *don'ts*. They remarked, "You can use it to learn, but you need to consider what you receive." In scale 3, they have the *do*: 'GenAI may be used to generate visual content such as logos, models, and diagrams.' They commented that models and diagrams are not applicable for this scale yet. A logo is acceptable in this scale, as it is not the focus of the programme, but "Diagrams really contain content. So I would keep both of those out of here, and that is only relevant in scale 4" (with "both" referring to diagrams and models and "here" referring to scale 4). The result indicates that they believe four scales are sufficient. They also discussed how to classify the scales: scale 1: nothing is allowed, scale 2: feedback/rewriting/learning support, scale 3: a little bit of content creation, and scale 4: more freedom in content generation. Scale 5, complete freedom, does not exist because you must always verify your content, and you are here to learn. Each scale should include a clear statement that all content must be verified.

Scale	Description
1	All GenAI use is prohibited.
2	**Do's:** • GenAI can be used to explain errors, break down code, and generate small code snippets, but it should not replace the learning process of writing and understanding code on your own. GenAI should help you understand, not just generate. • GenAI can be used to clarify concepts you do not fully understand and ask questions when you need further explanations. • GenAI can be used to provide clear, step-by-step instructions or to explain the necessary steps for completing a task. However, it is essential that you understand the steps and can apply them independently. • GenAI may be used to rewrite or restructure sentences, improving clarity, grammar or writing style. **Don'ts:** • It is not allowed to use GenAI to answer exam questions. • It is not allowed to use GenAI to write assignments. • You may not copy and paste text directly from GenAI into your work. • You are not allowed to use GenAI to generate code if the learning goal is to understand how to develop this independently.
3	**Scale 2 + Do's:** • GenAI can be used as a tool for idea generation and brainstorming. • GenAI may be used to generate visual content such as logos, ~~models and diagrams~~. • GenAI can be used as a search engine. However, always verify the information you receive. **Don'ts: same as scale 2**
4	**Scale 3 + Do's:** • GenAI may be used to generate visual content such as logos, models and diagrams. • GenAI can be used to increase productivity and efficiency by handling repetitive tasks or speeding up certain processes, but it should not replace the actual learning process. • GenAI may be used in tasks that you have already learnt before and that are outside of the learning goals of the course, but it should not be used to bypass the current course objectives. **Don'ts:** • You're not allowed to use GenAI to generate code if the learning goal is to understand how to develop this independently.
5	Does not exist.

Table 4.9: Scales indicated by Group 1

Group 2:

Table 4.10 shows the result of the division of scales of Group 2. When asked whether they wanted to subdivide the *do's* and *don'ts* into scales, there was a lot of commotion. All respondents agreed that five scales are not the solution. One respondent stated, "I absolutely cannot envision how these five scales will work. For me, it's not allowed for coding and not for writing, but for you, it is allowed for writing and not for coding. Yes, then we could both end up on scale 3 while there are still different things that are allowed and not allowed." This group also briefly discussed the fact that they found scale 1 unrealistic. They said, "GenAI exists. Students can find it, students use it, and I believe the discussion should be about how we handle it as a university and as teachers, not about how we are going to bury our heads in the sand and say no, it's not allowed, while assuming it won't happen. Because that is not the reality." However, they ultimately decided that scale 1 should remain because stating that GenAI use is prohibited raises the threshold. The respondents believe this will have an impact.

The group proposed that a document should be created with three standards: it is not allowed, it is allowed, and scale 2. Scale 2 would then be what is presented during the session. Lecturers would then determine what is allowed and what is not allowed based on the three standards and their learning objectives. This must be communicated during their first lecture, in the study guide, and on Brightspace, with concrete examples provided. One of the respondents said, "But then you at least have a kind of basic agreement that is clear. And from there, you can deviate a little bit to the left or a little bit to the right, depending on the course and the learning objectives."

Scale	Description
1	All GenAI use is prohibited.
2	**Do's:** • GenAI can be used to explain errors, break down code, and generate small code snippets, but it should not replace the learning process of writing and understanding code on your own. GenAI should help you understand, not just generate. • GenAI can be used to clarify concepts you do not fully understand and ask questions when you need further explanations. • GenAI can be used to provide clear, step-by-step instructions or to explain the necessary steps for completing a task. However, it is essential that you understand the steps and can apply them independently. • GenAI can be used as a tool for idea generation and brainstorming. • GenAI may be used to generate visual content such as logos, models and diagrams. • GenAI can be used to increase productivity and efficiency by handling repetitive tasks or speeding up certain processes, but it should not replace the actual learning process. • GenAI may be used to rewrite or restructure sentences, improving clarity, grammar or writing style. • GenAI can be used as a search engine. However, always verify the information you receive. • GenAI may be used in tasks that you have already learnt before and that are outside of the learning goals of the course, but it should not be used to bypass the current course objectives. **Don'ts:** • It is not allowed to use GenAI to answer exam questions. • It is not allowed to use GenAI to write assignments. • You may not copy and paste text directly from GenAI into your work. • You are not allowed to use GenAI to generate code if the learning goal is to understand how to develop this independently.
3	Everything is allowed.
4	Does not exist.
5	Does not exist.

Table 4.10: Scales indicated by Group 2

5. Referencing

Participants in both groups were asked to provide their reflection on how to mention GenAI use and the AI appendix format in the guidelines.

Subject	**Group 1**	**Group 2**
There is a need	Students should be transparent about the use of GenAI.	Yes
How to mention GenAI use	Short paragraph/reflection; sign code of conduct.	Confirmation (written statement) on Brightspace.
AI appendix	Chat link is unnecessary; instead, write reflection (including prompt and where GenAI was used for).	Opinions differ about sharing chat link; reflection is important; the goal for which GenAI was used needs to be included.
Communication	Not mentioned.	Clear communication throughout the entire study programme.

Table 4.11: overview of the workshop results for the theme *referencing*

Table 4.11 gives an overview of the workshop results for the theme referencing. The results show that both groups agree that a way of mentioning GenAI use is needed.

Group 1: The participants agreed that it is important to be transparent about the use of GenAI. One participant mentioned, "I don't think it's right to refer to GenAI as a source. I think that's just nonsense. It's not a person. It's not an author. It's just a machine." The participants did not agree on how to mention AI use. First of all, one of the respondents suggested that students could write a short paragraph explaining their use of GenAI but expressed doubt about the sustainability of this practice throughout the entire study programme. However, the other respondent suggested a checklist format in which the students indicate what they used GenAI for. This respondent also supported the idea of having students sign a code of conduct, although the other respondent did not agree on the necessity of such a formal requirement. Besides their disagreement on how to mention GenAI use, they also evaluated the AI appendix format. They agreed that including a chat link is unnecessary, as one of them mentioned, "Not so much because of privacy. Although, it is a bit invasive, of course. But also just practical, because then I get a link to a tool that I cannot access, for example". Instead, they suggested that students should briefly explain not only why they used GenAI but also how it was used, for example, to brainstorm, generate ideas, create new texts or give feedback on their writing. They said, "Actually, you want to have more of a reflection. Which you summarise very briefly." This reflection should include a brief explanation with one or two sentences that state: this was my prompt, and this is what I used GenAI for. It also should include the model and version of the model, what is done with the output and how this was processed. The other respondent disagrees, as some courses have weekly homework assignments. For these courses this method would not be workable. The respondent says, "My approach is actually that as you move up your scales, you as a student have to provide more information about how you used it." The result of this discussion is that teachers can decide for themselves how much information they want students to include in the AI appendix, but that a format in the guidelines can serve as a guide.

Group 2: The participants suggested having students declare at the beginning of their assignments that they created the work without the use of AI, as this could help reinforce the importance of following the rules. It was also suggested to integrate this into Brightspace so that students can provide confirmation with each submission. The respondents agree that this should be a written statement and not a checkbox. Furthermore, they agreed on the privacy issues regarding sharing a link to the chat. In addition, they agreed on the fact that students, in a way, need to give access to the input and output that they used. One of the respondents said, "I don't think I have a very strong opinion myself whether that should be a link to the conversation or a copy-paste of the input and output". Another participant responded to this and said, "I also think that students have to learn where it comes from again, that you have private use and business use. That's why in business we often walk around with a private phone and a business phone. I think students have to learn that's okay, I have a GenAI for my studies and a GenAI for private situations. Full stop, and then you just have to switch. That requires a certain awareness,

a certain discipline. Get used to it", suggesting that a chat link is fine, as students need to learn to distinguish between study and private life. Another aspect that was discussed during the session was about reflection. The group thinks that reflection is important, as this also creates awareness about verification and accuracy. One of the respondents mentioned that for simple tasks, such as checking grammar, a short reflection may be sufficient. However, for more complex questions, such as giving explanations, more in-depth verification and reflection are needed. Another respondent did not agree with the grammar checking, as the respondent said, "I think it should be stated somewhere in the paper or in the assignment that GenAI was used for formulating or checking grammar". The discussion concluded that the chat link is questionable but should not be excluded because the input and output need to be accessible for a teacher. Moreover, an AI appendix should include more reflection and verification, as well as the goal for which GenAI was used. The respondents also emphasised that this should be clearly communicated to students throughout the entire study programme: from the first lecture until the final bachelor class.

6. Awareness

Participants from both groups were asked to reflect on the list intended to raise *awareness*, and to identify any elements they considered missing.

Subject	**Group 1**	**Group 2**
Presentation	*Awareness* should mentioned above the *do's* and *don'ts*; The order should be adjusted, as validity and accuracy should come first.	Not mentioned.
Responsibility	Students remain responsible.	A student is always responsible for what is handed in.
Validity and accuracy	Output should be "double-checked".	Just saying GenAI said this is not a valid argument.
Ethics	Create one item on ethics that also includes climate, privacy, and working conditions (such as underpayment and content filtering).	Raise awareness about property rights and plagiarism and the socio-political impact of AI use.
Communication	Add: "Consult your teachers if you have any doubts about using GenAI."	Not mentioned.
Impact on learning	Not mentioned.	Mention the possible impact of GenAI on the learning process and the long-term effects.
Recommendations	Add reflection questions for students.	Also offer awareness through lectures (e.g. Studying and Presenting).

Table 4.12: Overview of feedback on the awareness component

Table 4.12 gives an overview of the results on the *awareness* component. The results show that both groups underline the importance of creating awareness about ethical aspects. Group 1 suggested making one item about ethics (which also includes climate and privacy) and adding elements about "the fact that people are underpaid and need to remove or filter pornographic content". On the other hand, Group 2 suggested creating more awareness about property rights and plagiarism, as new creations are often derived from existing works without the permission of the original artist. They also included creating awareness about the social-political impact since every interaction with AI contributes to the formation of a digital reality.

In addition, both groups agree that validity and accuracy, and responsibility are important aspects. Both groups mentioned that students are always responsible for what they deliver and that output generated by GenAI needs to be checked.

Both groups also named some different aspects. Group 1 recommended that *awareness* should be above the *do's* and *don'ts*, as students should first understand the importance of using GenAI responsibly. In addition, this group suggested to changing the order, as "you should start with the validity and accuracy and later the learning process, because if you start with 'you are here to learn', then they think,

'yeah, whatever.'" Lastly, this group emphasised to adding an item about communication, which includes, "Communicate with your instructors if you are unsure about how to use it: talk to your instructors". Group 2 mentioned that if there is any research about the impact GenAI has on students learning in the long term it should be a good idea to implement that in the awareness section as well. Both groups made a recommendation. Group 1 suggested adding some questions that students can ask themselves, while Group 2 suggested not to only communicating *awareness* on this poster but also creates a lecture during the course Studying and Presenting.

7. Consequences

Participants in both groups were asked what consequences they think are appropriate for misusing GenAI.

Similarities: Both groups agree that the consequences of inappropriate GenAI should be the same as for traditional plagiarism or fraud.

Differences:

- **Group 1:** In this group both respondents agreed on the fact that the consequence of GenAI misuse should be the same as for normal plagiarism because if other students hear that the consequence is too soft, other students will hear this and think they can just get away with this. However, one of the respondents continues, "Plagiarism is not punished very severely right now. How often do people get a real sanction". The other respondent argued that detecting and providing evidence on the use of GenAI is more problematic than determining the sanction. Due to the time limit the discussion was not continued.
- **Group 2:** This group felt it was important that students can learn from their mistake instead of just being punished. One of the respondents suggested an approach in which students are given the opportunity to reflect on their mistakes and learn from their experiences. The respondent added, "Maybe such a student should explain to his fellow students in a short presentation: what were the motivations? How did I come to this? And what have I learnt from it to not do it next time?"

8. Other

This section contains elements that were discussed during the workshop but did not belong to a specific question or theme. Table 4.13 gives an overview of the discussed elements mentioned. The results show that both groups agree that communication should take place repeatedly. Group 1 suggested to start during the course Studying and Presenting. This course should implement a lecture about the rules and create awareness. Group 2 also thinks communication should start in this course, but they gave specific recommendations for lectures: during this course students should have a discussion about GenAI. This discussion should be an interesting session to get all students talking and agreeing on the rules together. After this, the rules of the university can be introduced, which should match the outcomes of the discussion. They also said that topics like climate, impact and privacy could be part of this and might need an extra lecture.

As already mentioned before, Group 2 believes teachers need to use the format of guidelines presented in this study to create their own, based on the learning goals of their course.

Both groups also gave some recommendations. First of all, Group 1 emphasised to start with creating awareness, in lectures but also in the guidelines. It is important to address how to use GenAI critically.

Group 2 also emphasised that "every coin has two sides" and "actually, there should be some kind of do's and don'ts for teachers". This group suggested to having someone responsible and someone accountable. "You need to have someone accountable and someone responsible. Accountable is the programme director, and responsible is a person who, on behalf of the programme director, guarantees the effectiveness of the guidelines". They also proposed to critically review the educational model and consider if teaching such large groups in a single classroom is still realistic, as these days it might be important to have more emotional contact with students. Lastly, this group also proposed a recommendation for future research: "I would also be interested to know what students think about Gen AI used by teachers. What does a

student think about a teacher putting together an assignment using Gen AI? What do they actually think about that? I expect a certain amount of respect from students that when they hand in something that they made it themselves. But they may also expect that from me."

Subject	Group 1	Group 2
Communication	- Communication about GenAI should take place repeatedly in the programme (first, second and third years). - A lecture should be added in the course Studying and Presenting, this should include a practical part (reflecting on output). - Lecturers should be unambiguous and aware of guidelines.	- Rules should be communicated repeatedly, with active confirmation by students that they understand the rules. - Lecturers may adapt guidelines to their own courses and should be communicated via Brightspace and the study guide. - In the course Studying and Presenting students should have a discussion about GenAI, followed by the introduction of official rules of the university. - Topics such as climate and privacy can be covered in additional lectures.
Recommendations	- Always start with *awareness*, both in lectures and in written guidelines.	- *Rules* and *do's/don'ts* should evolve with technological developments. - Include *do's* and *don'ts* for teachers. - The programme director should be accountable, someone (besides the programme director) should be responsible for updating and ensuring the effectiveness of the guidelines. - The current educational model (large groups) should be critically reviewed; perhaps more personal contact is needed. - Proposal for future research: how do students view GenAI use by teachers?

Table 4.13: Other points mentioned during the workshop sessions

4.3.1 Design of the guidelines: including evaluation of lecturers

The results of both lecturer workshops were used to further refine the guidelines. Although the two groups agreed on certain aspects, they also expressed differing views. This chapter explains which elements were incorporated into the refinement of the guidelines and how choices were made in cases of disagreement.

First impression

The respondents mentioned three important points regarding the introduction. First, they indicated that the target audience was not sufficiently clear and found the use of the word "board" confusing. In response, the entire introduction was revised and how this is incorporated is further elaborated in the section "Why".

Secondly, the respondents suggested that adding a logo would enhance the visual appeal of the document. Based on this recommendation, the logo has been incorporated into the design.

Why

The introduction lacked clarity regarding the intended audience of the guidelines. To address this, the text now begins with "These guidelines provide guidance for both students and lecturers...". This immediately clarifies whom the guidelines are meant for. In addition, the importance of the guidelines is

emphasised by stating that they aim to offer structure and clarity and to ensure that the consequences of misuse are clearly communicated. In addition, it is important to mention that although all students in this study use GenAI, this should not be seen as a signal that its use is encouraged or expected, especially not from the university's perspective. That is why it is important that the guidelines also clearly communicate that using GenAI is a personal choice, not a requirement, therefore, this is incorporated in the introduction of the guidelines as well.

Do's and Don'ts

Both groups agreed that the *do's* and *don'ts* should be presented in a different way. Group 1 believes it is important to use active language so that it is more convincing to students. Additionally, Group 2 indicated that "GenAI can be used" can be omitted to save space. However, Group 1 suggested that it would be better to have a sort of heading with examples listed underneath. In addition, Group 1 suggested highlighting some words to make it readable. All of these aspects can be addressed and, therefore, have been implemented.

In addition to visualisation, both groups provided further feedback on the *do's* and *don'ts*. They would like to see a mention that output must always be verified. However, they disagreed on whether this should fall under the *do* or *don't* category. The decision was made to place it under the *do* section, as it presents a more positive approach. It was also decided to incorporate the feedback regarding students being responsible for their own work into this *do.*

Furthermore, several adjustments have been made to the *do's* and *don'ts* based on the feedback received:

- Both groups commented on the *do* related to the search engine. One group suggested finding primary sources, while the other felt it should be completely removed. Since this study shows that students consider it important to use GenAI as a search engine, the decision was made to redefine the *do* about the search engine to: "You can use GenAI to enhance your creativity and productivity by finding relevant and primary sources.
- The results show that the rewriting and restructuring of sentences should be more of a suggestion and therefore have been adjusted.
- Group 2 stated that the step-by-step guidance should be removed, but since students have repeatedly mentioned its importance and Group 2 also indicated that lecturers should be able to adjust rules based on their learning goals, this *do* will remain.
- Group 1 suggested that the *do* regarding generating logos and models should be separated into two distinct points, and that the term "model" should be clearly defined. In response, the *do* has been split accordingly. However, the specific definition of "model" has not been included, as this may vary between educational institutions. It is therefore recommended that each university provide its own definition in the *definitions/examples* section of the guidelines.
- Both groups discussed the inclusion of a chat link in the AI appendix, particularly in relation to privacy concerns. In Group 2, it was emphasised that students should learn to clearly distinguish between private and academic use of GenAI chats. Based on these discussions, an additional *do* was added, stating that students must separate their private and academic chats, and they must be able to share either a chat link or the output itself (as not all GenAI tools generate a shareable link). In addition, students are not allowed to share an account for a GenAI tool. This requirement aims to address potential privacy risks while ensuring transparency in how GenAI tools are applied in academic work.

Regulations and scales

The two groups hold differing opinions on how the scales should be set, however, both groups agree that 5 scales are too many. Looking back at the students' results, it appears that the need for scales stems from two main reasons: first, the need for clarity, and second, rules can vary from course to course because no course is the same.

Group 2 correctly points out that even when scales are introduced, teachers still want to deviate from them. For example, if scales were set as Group 1 suggested, then from scale 3 onwards certain things

are allowed to be generated. However, Group 2 states that what is allowed to be generated (code or text) can differ per course. Therefore, the choice was made to follow Group 2's option. This provides a clear direction, while the rules can vary between courses.

Group 1 emphasised that a scale where GenAI is completely unrestricted (scale 5) is unrealistic because GenAI-generated output must always be verified. Therefore, if the 3-scale system is adopted, it must be explicitly stated that verification is a mandatory requirement at all times, regardless of the scale. This rule will be stated in both the *awareness* section, as well as the *do's* and in the section: *but what are the rules?*.

Referencing

Both groups discussed the AI appendix, as they both considered the inclusion of a chat link questionable due to privacy concerns. A respondent from Group 2 emphasised that it is important for students to learn to clearly distinguish between academic and private use of GenAI tools. Another respondent mentioned that it is essential for teachers to be able to review, at least, part of the output if necessary. Therefore, an additional *do* has been added, stating, "You should always separate your academic and private GenAI chats and be prepared to share a chat link or output."

In addition to the discussion on the chat link, the groups raised several other points they wanted to have included in the AI appendix. First, they mentioned the importance of reflection. The purpose of this is to make students more aware that they need to validate the GenAI output. Secondly, both groups expressed the need to understand the purpose for which GenAI was used, for example, for rewriting text or generating ideas. This aligns closely with the question "Why did you use GenAI?" and therefore these two items have been merged into one for simplicity. Both of these elements have been added to the AI appendix format. In addition, the prompt only needs to be provided if students choose to share the output separately, as the prompt is always included when sharing a full chat link. Therefore, in the AI appendix format, this requirement has been combined into a single column where students must provide either a chat link or the prompt plus the corresponding output.

Lastly, Group 1 indicated that they would also like to know how the GenAI output was processed and integrated into the final work. However, students mentioned that such a requirement might be too much effort and could even encourage them to secretly use GenAI tools without reporting it. Therefore, this element has been left out for now.

Awareness

The results show that *awareness* is an important component. Group 1 gave feedback that this aspect should be mentioned above the *do's* and *don'ts*. In addition, this group also thought that the topic 'validation and accuracy' should be mentioned first, with emphasis that output should always be double-checked. The section on *awareness* should also emphasise that students always remain responsible themselves. All these points have been implemented in the refined guidelines.

In addition to validation, ethics was also discussed. This topic has therefore been adjusted. It was decided to create one heading on ethics, with various subheadings below it, such as climate, privacy, working conditions, property rights and plagiarism, and the socio-political impact.

Group 1 also suggested adding "Consult your teachers if you have any doubts using GenAI". This is placed under the heading "when in doubt, ask". In addition, Group 2 suggested adding something about the possible impact of GenAI on learning for the long-term. Since there is no research about this topic yet, this is not incorporated within the guidelines for now.

Consequences

Both groups agreed that the consequences for misusing GenAI should be the same as those for traditional plagiarism. However, Group 2 emphasised that consequences should not be a punishment but should provide an opportunity for students to learn from their mistakes. One suggested approach is to have students give a presentation reflecting on their mistake and the lessons learnt. Whether this method is

effective requires further research. For now, these guidelines will specify that the consequences are the same as those for traditional plagiarism.

4.4 Guidelines for the responsible use of GenAI in academic education

This section presents a possible design for guidelines on the responsible use of GenAI in academic education, based on the results of this study. The design takes into account the requirements and preferences expressed by both students and lecturers. However, accessibility, including colour use and layout, have not been evaluated in this version, even though these are important considerations for universities. The full guidelines are provided in plain text in Appendix F.

Figure 4.11 shows the refined guidelines based on the workshop session with the lecturers. The guidelines contain the following the elements.

- **Introduction:** these give an explanation *why* the guidelines exist.
- **Be aware when using GenAI:** include elements that both students and teachers consider important, such as verification and accuracy, the fact that students are here to learn, and that if students have questions, they should ask their teacher.
- **What are the rules?** this part gives an explanation of the different scales set by the univerisity.
- **Do's and Don'ts:** gives an overview on when to use and when not to use GenAI. Those sentences are written in an active language, and important aspects are highlighted.
- **Definitions/examples:** this part is included but is left empty, as universities need to give examples and definitions themselves for specific terms, for example, for the word 'model'.
- **Consequences:** this explains what the consequence for students is in case of inappropriate GenAI use.
- **When to reference:** includes rules about in which situations students should mention their GenAI use and in which situations they should not.
- **How to reference:** shows the format of the AI appendix that students should use when they need to reference their GenAI use.

GenAI Guidelines

These guidelines provide guidance for both students and lecturers on the use of GenAI within the university. It is important to say that using GenAI is not something you have to do, but a choice you can make yourself. However, if you do use it, it must be done according to the guidelines set out below. The guidelines provide clarity and consistency throughout the institution. It ensures that it is clear what is and what is not allowed and makes the associated consequences of incorrect use clear.

BE AWARE WHEN USING GENAI:

Verification and accuracy: GenAI can be helpful, but it is not always accurate. It may confidently give wrong or misleading information. Always verify the output and do not trust it blindly.

You are here to learn: Use GenAI in a way that enhances your learning, not replaces it. Ask yourself: does this contribute to my understanding? If not, reconsider using it.

When in doubt, ask: Consult your teachers if you have any doubts or questions when using GenAI.

BUT WHAT ARE THE RULES?

The university uses three scales in its guidelines.
Your lecturer decides which scale applies to the course.

1. **Prohibited**: GenAI may not be used.
2. **Allowed under conditions**: Lecturers determine what is and is not allowed based on these guidelines and their learning objectives. This is communicated via Brightspace and the study guide.
3. **Free use**: GenAI is allowed, provided that the student **checks and verifies all generated output**, as further described in these guidelines.

DO's

You should always **verify the output** that GenAI gives you.

You should always **separate your academic and private GenAI chats** and be prepared to **share a chat link or output**.

You can use GenAI to **support your learning** by:

- **Explaining errors, breaking down code, and generating small code snippets**, as long as this does not replace the essential process of writing and understanding code yourself. GenAI is meant to help you learn, not just to produce answers.
- **Clarifying concepts** you do not fully understand and allowing you to ask the questions when further explanation is needed.
- Providing clear, **step-by-step instructions** or explanations for completing tasks.

You can use GenAI to enhance your **creativity and productivity** by:

- Generating ideas and supporting your **brainstorming** process.
- Creating **visual content** such as
  - Logos
  - Models and diagrams.
- **Handling repetitive tasks** or speeding up certain processes while staying actively engaged in your learning.
- Receiving **suggestions for rewriting or restructuring sentences** to improve clarity, grammar, and style.
- Finding relevant and primary **sources.**

You can use GenAI that you have already learnt before and that are **outside of the learning goals** of the course, but it should not be used to bypass the current course objectives.

DON'Ts

- You are not allowed to **copy and paste** text directly from GenAI into your work.
- You are not allowed to use GenAI to **answer exam questions.**
- You are not allowed to use GenAI to **write assignments.**
- You are not allowed to use GenAI to **generate code if the learning goal is to understand** how to develop this independently.

DEFINITIONS/EXAMPLES

"THIS PART SHOULD BE DETERMINED BY THE UNIVERSITY ITSELF."

CONSEQUENCES OF INAPPROPRIATE USE

Are the same as for traditional plagiarism
(vary per university).

ETHICAL CONSIDERARTIONS:

Climate impact: Training and running AI models requires significant computing power, which consumes energy. Be aware of the environmental footprint of these technologies and use them responsibly.

Privacy: AI models store and process data. Do not use GenAI with sensitive or confidential information (e.g., from a company or university assignment) without permission.

Working conditions: People who work for AI companies sometimes work under difficult conditions and are paid little. Keep this in mind when you use GenAI.

Property rights and plagiarism: The content that GenAI creates is not always yours. Use it honestly and always indicate what belongs to others to avoid plagiarism.

Socio-political impact: GenAI can impact work and opportunities for people worldwide. Think about how the use of technology affects society.

WHEN TO REFERENCE

You should reference your use of GenAI in the following situations:

- *You use ideas, examples or explanations from GenAI.*
- *You partially copy text, code or visualisations from a GenAI output.*

It is not needed to reference your use of GenAI in the following situations:

- *If the GenAI output has directed you to a particular source (such as an article, book, or study), you should cite that original source itself and not the GenAI.*
- *You used it for language correction, feedback, or brainstorming, as long as you determined the content yourself.*

HOW TO REFERENCE

AI APPENDIX:

In-text: *reference to AI justification in appendix (AI-Appendix).*
Example: *This piece of text is written by GenAI [1].*

REFERENCE	WHICH MODEL & VERSION WAS USED?	FOR WHAT PURPOSE WAS GENAI USED?	GIVE A REFLECTION ON YOUR GENAI OUPUT	LINK TO CHATCONVERSATION / PROMPT + OUTPUT

Figure 4.11: Guidelines for the responsible use of GenAI in academic education

Chapter 5

Discussion

This chapter discusses and interprets the main findings of this study. First, the results of the interviews are discussed in relation to the research questions about current GenAI use and requirements for guidelines, comparing them with existing literature. Secondly, the different perspectives of students and lecturers on what the guidelines should entail are evaluated, highlighting areas of agreement and disagreement. In addition, the contributions of this study, both academic and practical, are outlined. Finally, the limitations of this study are discussed, and suggestions are given for future research.

5.1 Current GenAI use

The first research question explored how students currently use GenAI in academic education. The results show that nearly 60% of the respondents use GenAI frequently, and over 40% use it sometimes. This means that none of the respondents reported not using GenAI at all during their studies. Although all students in this study reported using GenAI to some extent, this should not be interpreted as a signal that its use should be encouraged or expected, especially not from the university's perspective. That is why it is important that the guidelines explicitly state that using GenAI is a personal choice; as such, this is implemented within the guidelines. This is important because, especially at the beginning of the learning process, it is better not to hand over tasks to GenAI too soon. The knowledge required to properly assess whether the output of GenAI is correct and usable is often not yet sufficiently developed. However, some may argue that it is important for students to learn how to use GenAI responsibly since it will likely become a standard tool in many workplaces. Future research could therefore explore how educational institutions can integrate GenAI in a way that promotes academic integrity while aligning with the expectations and demands of future employers.

The results show that students primarily use GenAI to gain more knowledge on a subject, for programming support, and for writing support. This observation is consistent with the study of Şahin and Karayel [2024] who showed that GenAI supports students by assisting them in the writing process and by providing feedback. The main motivation for using GenAI appears to be efficiency, which is consistent with the findings of Usdan et al. [2024]. In addition, the students mentioned that GenAI helps them obtain answers to specific questions, which supports previous research by Wang et al. [2023] and Şahin and Karayel [2024], who argued that students use GenAI as a personal assistant to get additional explanations about the study material.

The second part of this research question included awareness of students of existing guidelines. The findings show that 65% of respondents indicated they are unaware of current guidelines regarding the use of GenAI in academic education. This might suggest that communication is not in place and makes it even more important that guidelines are designed, as students use GenAI during their studies.

An interesting observation from this study is that universities, such as Leiden University, primarily focus on ChatGPT, as illustrated by the heading on their website: "ChatGPT: What is possible and what is allowed?" [Leiden University Libraries, 2024]. However, in practice, students make use of a broader range of GenAI tools beyond just ChatGPT. This highlights a mismatch between the institutional focus and the actual behaviour of students. Consequently, it is essential that institutional guidelines are not restricted to a single tool but are instead formulated in a way that is robust and flexible enough to address the use of various GenAI applications.

5.2 Requirements and specifications for guidelines

The second research question explored the requirements that students believe guidelines for the use of GenAI in academic education should include. A key finding is that students see a clear need for such guidelines, which is also emphasised by Eke [2023]. Students have specific ideas about what these guidelines should look like. For example, they mentioned that it is essential that the guidelines clearly

state what is and what is not allowed. Also, Moorhouse et al. [2023] states that guidelines are necessary to ensure academic integrity. According to that study students should mention their GenAI use. However, Moorhouse et al. [2023] his study does not focus on what is appropriate and inappropriate GenAI use.

In addition, this study shows that students believe it is important that there are clear rules on referencing LLMs. The importance of correct referencing is also mentioned by Moorhouse et al. [2023]. They indicate that not citing AI correctly can be seen as plagiarism. In addition, the students in this research indicated that the guidelines should also make clear what the consequences of misuse are. Both Moorhouse et al. [2023] and this study emphasise that violations related to GenAI should be treated in the same way as existing plagiarism rules.

Another important element that can be seen from this study concerns communication. The results show that students believe that there should be clear communication about the rules, preferably via Brightspace, e-mail or the university website. However, some respondents mentioned that just providing a booklet or PDF is not effective, as students are unlikely to read it. They emphasised the importance of supporting explanations with examples or having lecturers provide example prompts during classes that students can use. In addition, they indicate that specific courses on GenAI should be offered and that ideally each course explicitly communicates the rules. Moorhouse et al. [2023] also mentioned that there should be clear communication, such as including a statement in the syllabus or course description, having open discussions with students, and collaborating with library staff. However, this study shows that simply providing written materials is not enough and that adding examples or prompts during class is necessary. In addition, students in this study indicate that communication should also include what the rules exactly are, which is in line with Moorhouse et al. [2023] findings, which state that communication should include clear expectations and guidelines about acceptable use.

Another aspect of the study of Moorhouse et al. [2023] is that it is important to inform students about ethics and limitations of GenAI and to create awareness about the learning process. This research verifies this, as students mentioned that they think it is important to create awareness about the limits and use of GenAI. According to them, creating awareness involves awareness about climate, privacy, the learning process, and the fact that GenAI is a chatbot, and thus not everything GenAI outputs is correct.

Another interesting element that can be mentioned here concerns other ways of testing. The results of this study show that students see the importance of alternative forms of assessment to ensure that the learning objectives are actually achieved. For example, they propose using oral exams more frequently to verify if students have completed the work themselves and achieved the learning objectives. Changing forms of assessment is also emphasised in the studies by Kovari [2025] and Moorhouse et al. [2023]. Kovari [2025] proposes the inclusion of oral exams and presentations, while Moorhouse et al. [2023] concludes that lecturers should redesign assignments in a way that makes it more difficult for AI tools to complete them effectively. Even though this study did not primarily focus on the indirect form of fraud, namely, students not achieving learning objectives due to the use of GenAI, adapting or redesigning assessment methods could offer a potential solution to this issue.

In addition to the results that are in line with the existing literature, this research has also provided insights for requirements for guidelines that are not specified in the aforementioned literature. Moorhouse et al. [2023] state that guidelines are necessary to ensure academic integrity, however, they do not elaborate on what is appropriate and what is inappropriate GenAI use. This study shows that these two elements are an important part of the design of the guidelines. Moreover, students indicated that justification and a good referencing model are needed. The interviews showed that this was possible in various ways. Therefore, a number of these were tested during the evaluation.

This study interpreted the experiences of students, which served as a starting point for the first and second design of the guidelines of this study. As there was a call in literature for understanding the students perspectives on GenAI and the guidelines on how to use it, this study focussed on their perspectives. It is acknowledged that student input may not consistently reflect the intended learning objectives of the programme. Examples found in the data include students expressing the belief that using GenAI is acceptable when facing a deadline or that it can be used as a search engine. These interpretations were altered, as they do not align with the principles of academic integrity nor with the programme's objectives and values. The guidelines were evaluated by teachers, some of whom also hold roles such

as programme directors and members of the board of examiners. This created interesting discussions and reflections, but most of the guidelines proposed by students were, a few with some adjustments, acceptable for the teachers. It is proposed that future research on guidelines for GenAI use in education should include both student and teacher perspectives.

5.3 Evaluation

The third research question examined whether the guidelines are considered useful and applicable by both students and lecturers. The results show that both students and lecturers agree on the fact that GenAI will remain present in academic education, and it has to be accepted that it is going to be used. The main concern is what form of GenAI is allowed and how this is managed, rather than trying to resist it. This fits the findings of Eke [2023], which mention that GenAI is revolutionary and should not be simply banned or dismissed. Instead, academia needs to change its attitude and actively participate in this revolution.

Another point where both students and lecturers agree is that the consequences for misuse of GenAI should be the same as for plagiarism. However, in both groups there was some disagreement. Students often find the plagiarism rules unclear and lecturers feel that plagiarism is not punished strictly enough. Some lecturers mentioned that students often get away with it, which sends the wrong message to other students. One lecturer suggested that instead of just punishing students, there should be a consequence that encourages learning. For example, if a student misuses GenAI, they might have to give a presentation to their peers reflecting on their mistake. According to this lecturer, it is important to learn from your mistakes. Future research should explore whether this approach would be effective.

The results from both the interviews and the evaluation workshop with students show that students believe they can use GenAI as a search engine. In contrast, teachers argue that more nuance is needed, as GenAI cannot be used like a traditional search engine because it often produces inaccurate information. They believe that GenAI should only be used to find primary sources and that it is crucial to emphasise that all GenAI-generated outputs must be verified. This is a crucial point in ensuring that the guidelines align with academic integrity. Scrupulousness, which means being very careful about how you do research, collect data, and write down results, could be at risk if students rely on GenAI without checking or thinking critically about the output [KNAW et al., 2018]. Therefore, validation and accuracy, as well as using GenAI to find primary sources, are really important requirements in designing guidelines for responsible GenAI use.

An important point of disagreement between students and teachers, and even among teachers themselves, is how the rules should be designed. Most students find the current rules unclear, and they would like to have more clarity. Students propose to communicate the rules on a scale of 1 to 5. In this way, rules can be clear but also differ per course, because no course is the same. The two groups of teachers have different opinions. Group 1 thinks that four scales are needed, where scale 1 means 'forbidden' and scale 4 means 'allowed, as long as verification takes place'. However, this could lead to confusion. If scale 3 means that it is allowed to generate things, teacher 1 can say, "I only allow text generation, no code." Teacher 2 can say, "I only allow code generation, no text." Both teachers are then in scale 3, but with different restrictions. This makes it unclear for students. Therefore, this research choose to use the option of Group 2. Group 2 proposes to use three scales: scale 1 as 'prohibited', scale 3 as 'allowed, as long as verification takes place', and scale 2 as a set of guidelines. Each teacher can then indicate which *do's* and *don'ts* apply for their course, and they should communicate this via Brightspace and the study guide. In this way, the rules are clearly communicated and can differ per course, which suits the wishes of the students. Future research can test this approach by applying the rules in practice in different courses, instead of only through interviews and discussions.

5.4 Contributions

Academic contribution

Literature shows that the use of GenAI creates a passive way of learning, where students consume information without actively participating [Jie and Kamrozzaman, 2024]. This study proposes to force students to write a small reflection on their GenAI use, as presented in the guidelines provided in this study. By making sure that students always include a reflection when they use GenAI tools, they stay actively involved with the output that GenAI produces. In addition, literature shows that GenAI in

academic education can reduce students' critical thinking [Jie and Kamrozzaman, 2024]. By requiring a reflection, students are encouraged to remain critical and carefully evaluate the output that GenAI has given them.

Another risk mentioned in the literature is that students may use information from GenAI without verifying it [Melisa et al., 2025, Jie and Kamrozzaman, 2024]. To address this, guidelines should inform students that they must be aware of this risk, as provided in the guidelines in this study as well. In addition, asking students to complete an AI appendix in which they reflect on their use of GenAI can help increase their awareness and ensure they understand the importance of checking and reflecting on the output.

Another concern mentioned in the literature is about the originality of own work [Şahin and Karayel, 2024], which violates the principles of honesty and transparency [Kofinas et al., 2025]. Guidelines should aim to raise greater awareness about the implications and responsible use of GenAI. This is provided in the set of guidelines of this study. In addition, a format is provided in which they have to describe how they used GenAI. This format ensures that they are honest and transparent about their work.

According to McAdoo [2023] citing AI is important in order to be transparent to the readers. Research of McAdoo [2023] shows that this can be done in APA style, where the citation includes the name of the tool and the version used. However, this research shows that the opinions of students and teachers differ from the perspective of McAdoo [2023]. Participants in this research mention that it is more important to mention GenAI use by providing information about the tool and version of the tool used, the reason for using GenAI, the GenAI output and to give a reflection on the output. Furthermore, the lecturers indicated that referencing GenAI is not sufficient, as the main source and output should always be validated with a primary source.

Research by Usdan et al. [2024] has shown that using GenAI in academic writing improves quality and productivity. This is because GenAI can provide grammar support and inspiration. In addition, research shows that learning outcomes improve because GenAI can help by providing feedback and answering specific questions [Kovari, 2025]. The guidelines set in this study offer students the opportunity to use GenAI in an honest and responsible way so that they can experience its benefits.

Practical contribution

The guidelines designed in this study provide universities with practical guidelines that are not limited to a single tool, like ChatGPT. The guidelines designed are applicable for various tools that students use during their studies. Moreover, the guidelines ensure that universities can adapt to the GenAI revolution, rather than resisting it and falling behind.

In addition, these guidelines contribute to ensuring academic integrity. The provided AI appendix requires students to be honest, transparent and responsible when using GenAI tools. The inclusion of a reflection in the AI appendix ensures that students remain critical about the GenAI-generated content they use, rather than passively accepting it.

For students, the guidelines offer clear instructions on how to use GenAI tools appropriately within their academic work. This meets the students' need for clarity, as they currently feel confused by the many different webpages and resources available on this topic. The guidelines developed in this study are concise, filling onto one single page, making them easier to integrate into existing course materials and accessible for both students and lecturers. This practical format makes it more likely that the guidelines will actually be read, understood and applied. In addition, the guidelines provide students and lecturers with a clear framework on what is and what is not allowed when using GenAI, including consequences of misue. This creates more clarity and makes it easier for lecturers to consistently enforce the policy.

5.5 Limitations

This study focused on computer science students and is a limitation that may affect the external validity of this research. The external validity of a study examines to what extent the findings can be generalised to other contexts [Andrade, 2018]. The findings and corresponding guidelines might not be universally applicable, given that GenAI usage can vary across different studies. To mitigate this limitation, an attempt was made to include a broad range of students by conducting interviews with students from

different computer science programmes, including Computer Science, Computer Science & Biology, Computer Science & Economics and Data Science and AI. For future research, it would be interesting to explore to what extent the use of GenAI and the associated views differ between studies.

In addition, there is another aspect that may influence the external validity of this study. The decision to involve lecturers was made at a later stage in the research process, which meant that this had to be organised on short notice. As a result, only five lecturers were able to participate in this study. Although the group of lecturers was diverse, including a member of the board of examiners, programme manager and several lecturers, results may have been different if a larger group had participated. This raises questions about the generalisability of the findings, as external validity is about the extent to which the results can be generalised to other populations [Andrade, 2018]. In this case, it is important to consider whether the findings from this small group of lecturers are representative of a wider group of lecturers.

Another limitation of this study is that students may have been hesitant to answer. Since the researcher is a student at the same university, this may have affected the results. Some respondents may not have given completely honest or open answers, despite the assurance of confidentiality and anonymity. This hesitance may limit internal validity, which refers to whether the research was designed and carried out in such a way that the results are not affected by errors in the approach, such as bias or interfering factors [Andrade, 2018]. The influence of the relationship between the researcher and the respondents can be an interfering factor, which can question the reliability of the findings.

In addition, there is another aspect that may influence the internal validity of this study. In this study, the interview and survey questions were carefully designed and discussed with the supervisors of this research, which served as an informal expert review to ensure the relevance and clarity of the questions. However, no formal pilot study or other form of structured validation was conducted, which makes it possible that participants interpreted some questions differently. This may introduce errors that affect internal validity. Nevertheless, some form of validity was ensured in developing the guidelines, as they were evaluated using feedback from both students and teachers, which contributed to the reliability of the results.

Finally, a limitation of this study is that the guidelines have not been tested in practice, although various groups have provided input on the design. This affects the ecological validity, which refers to the extent to which the results of a study are applicable in real-world situations [Andrade, 2018]. Because the guidelines have only been developed on paper and based on feedback, it has not yet been proven whether they are also usable in practice.

5.6 Future research

This study suggests several options for future research. First of all, the results indicate that examples and definitions should be added to the guidelines. Future research could focus on evaluating how to define examples/definitions to improve the usability of the guidelines.

Secondly, these guidelines are focused on computer science students. To make them applicable to other faculties, it might be a good idea to test the guidelines with students from other studies. This could provide valuable information on the applicability and usability of the guidelines in a broader educational context. Moreover, when creating these guidelines, the decision was made to use 3 scales. However, the opinions of the participants in this study differed. Therefore, it would be valuable to test the guidelines in practice instead of only evaluating them through discussions.

Another interesting direction for future research could be to investigate whether students who frequently use GenAI have different opinions compared to those who use it less often, as this could influence the requirement for guidelines.

Furthermore, since GenAI will likely become a standard tool in many workplaces, future research could explore how educational institutions can integrate GenAI in a way that promotes academic integrity while aligning with the expectations and demands of future employers.

In addition, it might be interesting to investigate to what extent GenAI use differs between study programmes. Although this may not be directly relevant to the central research question of this study, it can contribute to a better understanding of how students from different studies deal with GenAI.

Finally, a participant in this study suggested that it would be interesting to explore how students feel about teachers using GenAI to design or create assignments, as teachers expect students to submit work they have created themselves, so students might have similar expectations of their teachers.

Chapter 6

Conclusion

This study examined how guidelines for the responsible use of GenAI in academic education could be designed. The motivation for this study was the recognition that the rise of GenAI brings both benefits and challenges. Among the challenges, there is a risk that students may become overreliant on GenAI, which can negatively affect their critical thinking skills. Furthermore, it becomes increasingly difficult to distinguish work produced by students and content generated by GenAI. The use of GenAI can also be seen as a threat to students' learning processes and the university's objectives if students submit work that is not their own, something that can also be considered fraud, and therefore becomes a risk to academic integrity. Although universities are working on policies to address these issues, there is a concrete lack of clarity regarding how such guidelines should be effectively designed. This research used a Design Science Research approach, involving interviews with students and evaluation workshops with both students and lecturers. Based on these insights, a set of responsible guidelines was developed.

In conclusion, this research shows that guidelines should include a clear set of rules, an explanation of why the guidelines exist, specifications on when the use of GenAI is allowed and when it is not, as well as rules regarding how to reference an LLM. In addition, the guidelines should raise awareness about the necessity of always checking and verifying GenAI output, emphasise that students are here to learn, and address ethical considerations such as impact on the climate, privacy, working conditions, intellectual property rights, and socio-political effects. In addition, it is recommended to frequently remind students of the guidelines. The topic of GenAI use should be included in the course Studying and Presenting to explain how to work with GenAI and to present the rules. Furthermore, these rules should be repeated in every course, since each instructor can specify in the guidelines which rules apply to their specific course. In addition, all parties agree that the educational model should be reviewed, considering options such as smaller group sizes or alternative assessment methods, for example, by increasing the use of oral exams.

The guidelines developed in this research contribute both academically and practically. Previous research showed that GenAI can reduce students' critical thinking and undermine the originality of their work. This study proposed that students should always briefly reflect, in the AI appendix, on their GenAI use. Doing so, students remain critical and responsible for what they submit. This study also shows that students and teachers find it important to clearly explain how and why GenAI has been used. In practice, these guidelines help universities to set clear rules on how to responsibly use GenAI in academic education. The guidelines are clear, short, applicable to different tools, and ready to use (except for the definitions/examples part). This gives students more clarity about what is and what is not allowed, and teachers can more easily enforce the policy. In this way, GenAI tools can be used responsibly, without compromising academic integrity.

The main limitations of this research include its focus solely on computer science students, the small sample size of lecturers, the possibility that students may have been hesitant to answer honestly, and the fact that the proposed guidelines have not yet been tested in practice. Future research could examine the practical effectiveness of these guidelines and explore whether they need to be adapted for students in other disciplines.

It can be concluded that this research has developed guidelines that provide a clear framework for the use of GenAI, allowing universities to also use it as a valuable learning tool. These guidelines are an important step towards a responsible integration of GenAI in academic education and help universities to adapt their policies to the rapid developments around GenAI.

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Chapter A

Interview Guide

A.1 Introduction

My name is Romy and I am studying Computer Science & Economics here at Leiden University. For my thesis I am researching how Generative Artificial Intelligence (GenAI) is used by computer science students. By GenAI I mean systems, such as ChatGPT, NotebookLM or DALL-E, that can independently create content, such as texts, code, audio or images.

The goal of my research is to gain insight into how computer science students deal with GenAI during their studies.

Your participation in this interview is voluntary, and you may indicate at any time if you would like to stop or if you would rather not answer a question. In addition, you may indicate up to 1 month after this interview if you would rather not have me use your answers for my research.

This interview will take about 1 hour. In order to be able to analyse everything properly, I would like to ask you if I may record this conversation so that I could relisten to things later if necessary. The recording will only be used by me, and everything we discuss here will be anonymised, which means that nothing can lead back to what you said during this conversation, not even to my thesis supervisors. Do you mind if I record this conversation? Then I will start the recording now.

A.2 Interview Questions

Introduction (demographics)

- Could you introduce yourself?
  - What is your study?
  - What year are you in?
- Do you use GenAI outside of your studies, and what do you use it for?

Current GenAI use in education

- Do you use GenAI during your studies, and how do you use it? Think about which tools, how often and for which tasks.
  - Why do you use it/not use it? (what is your consideration?)
- Do you know when you are allowed to use GenAI and when not? And if so, in what way?
- How is the use of GenAI encouraged in your studies?
  - Did you find this method effective?
  - (optional) Did you find this applicable to the specific situation in which it happened? (e.g. did it fit the tasks of the course?)
- How is the use of GenAI discouraged in your studies?
  - Did you find this method effective?
  - (optional) Did you find this applicable to the specific situation in which it happened? (e.g. did this fit the tasks of the course?)
- Which formats/tools/resources do teachers use to encourage, discourage or regulate GenAI during your studies?
  - Did you find this effective?

  - (optional) Did you find this applicable to the specific situation in which this happened? (e.g., did this fit the tasks of the course?)

Gathering requirements for guidelines

- When do you consider the use of GenAI appropriate and when inappropriate?
- How do you determine whether the use of GenAI is appropriate or inappropriate in a given situation?
- What would help you to use GenAI responsibly in your studies, and what points should be included?
- If an accountability for GenAI use has to be provided, what do you think it should look like?
- How do you think plagiarism can be prevented through the use of GenAI?

Chapter B

Evaluation workgroup with students forms

B.1 Form 1

Analyse the guidelines together with your group and answer the following questions:

- Question 1: What would you do differently in terms of GenAI usage and why?
- Question 2: Would you (still) use GenAI for the assignments with the new guidelines, and why?
- Question 3: What should you do differently based on the "when to use" and "when to reference"?
- Question 4: What is redundant in the "when to use" and "when to reference"?
- Question 5: What is missing from the "when to use" and "when to reference"?
- Question 6: What other feedback is provided on the guidelines?

B.2 Form 2

	Totally disagree	Disagree	Neutral/No opinion	Agree	Totally agree
It is important that the guidelines explain why rules for GenAI use are needed.					
If I understand why the guidelines exist, I'm more likely to stick to them.					
Example prompts help me to get clear on what constitutes appropriate and inappropriate GenAI use.					
I would find it easier to apply the guidelines if they included prompts or examples.					
Guidelines without example prompts would be more confusing to me.					
Sample prompts make it easier to find loopholes.					

Table B.1: Form 2

B.3 Form 3

Complete this form together with your group:

- Question 1: Which version did your group complete?
- Question 2: What do you think of this approach?
- Question 3: What is missing?
- Question 4: What is redundant?
- Question 5: Do you have any comments or remarks?
- Question 6: How do you compare this with what you had to submit for this specific second-year course or other courses?

B.4 Form 4

	Totally disagree	Disagree	Neutral/No opinion	Agree	Totally agree
The university must actively make students aware of the risks, limitations and responsibilities of using GenAI.					
Students are responsible for dealing consciously with GenAI and for exploring the risks and possibilities.					
The guidelines should clearly state the consequences of irresponsible use of GenAI.					
GenAI rules should be available in one central place.					
In every course in which GenAI is relevant, it must be clearly communicated what is and is not allowed. The university must communicate the GenAI guidelines in multiple ways, such as on the website, Brightspace and email.					
The course 'Studying & Presentation' should include a lecture on responsible use of GenAI.					
Each course should include a lecture explaining whether or not GenAI may be used and in what way.					
Lecturers must clearly explain at the beginning of the course what is and is not allowed in terms of GenAI use.					
Lecturers should provide concrete examples of inappropriate and appropriate uses of GenAI within their subject.					
It is important that students understand when GenAI use is considered plagiarism or fraud.					

Table B.2: Form 4

Chapter C

Evaluation workgroup with lecturers questions

- (First impression) What are your thoughts on these guidelines?
- Students have indicated that the "why" behind the guidelines should be clearly stated.
  - Why do you think there should be guidelines?
  - How can we communicate this effectively to students?
- In the guidelines you received, there is a list specifying "do's" and "don'ts" when using GenAI.
  - What do you think of this list?
  - What is missing?
  - What is redundant?
- Students previously suggested a 1–5 scale for setting up guidelines. As a group, put all do's and don'ts in the, according to you, correct scale.
- AI appendix:
  - What element(s) in the AI appendix do you find redundant?
  - What element(s) are missing from the AI appendix?
  - If you feel that this format is not workable, what would a workable format look like for you?
- Should we raise awareness of AI among students? If so, how should we do this?
- (Optional) Students have suggested that potential consequences should be included in the guidelines.
  - What would be appropriate consequences for the inappropriate use of GenAI?

Chapter D

Guidelines Design 1

D.1 Rules & Regulations

- Regulated AI model
- Regulations should be the same for every course
- Regulations should be set on a 1-5 scale, lecturers can choose in which scale their course falls

D.2 Why do we have these guidelines?

D.3 Appropriate & Inappropriate use

E.3.1 Appropriate GenAI use:

1. **Ask for errors in code:** GenAI can be used to assist with code-related tasks such as explaining errors, breaking down code into smaller pieces, writing comments, or generating small code snippets. It can help you structure your code but should not replace the learning process of writing and understanding code yourself.
2. **Ask for knowledge or sources:** GenAI can be used as a search engine. However, always verify the information you receive.
3. **Ask for advice:**
   (a) GenAI can be used to clarify concepts you do not fully understand and ask questions when you need further explanations.
   (b) GenAI can be used to provide clear, step-by-step instructions or to explain the necessary steps for completing a task. However, it is essential that you understand the steps and can apply them independently.
4. **Still able to explain the work:** GenAI may be used if you are still able to explain and justify the work.
5. **Check work:** GenAI may be used to check your work, provide feedback, and suggest improvements.
6. **Creating ideas:** GenAI can be used as a tool for idea generation and brainstorming.
7. **Productivity:** GenAI can be used to increase productivity and efficiency by handling repetitive tasks or speeding up certain processes, but it should not replace the actual learning process.
8. **Improve writing:** GenAI may be used to rewrite or restructure sentences, improving clarity, grammar or writing style.
9. **Not part of the learning goal:** GenAI may be used in tasks that you have already learning before and that are outside of the learning goals of the course, but it should not be used to bypass the current course objectives.
10. **Other**
    (a) GenAI may be used if you are short on time for a deadline
    (b) GenAI may be used if it improves you learning
    (c) GenAI may be used if you understand the information used and you give it your own twist
    (d) GenAI may be used if you feel good about it

E.3.2 Inappropriate GenAI use

1. **Copy/paste:** You are not allowed to copy and paste content directly from GenAI into your work.
2. **Making exams:** It is not allowed to use GenAI to answer exam questions.
3. **Not learning from it:** GenAI may not be used if you do not learn from it.
4. **Write/finish assignments:** It is not allowed to use GenAI to write assignments.
5. **Violates learning goal:** You are not allowed to use GenAI to generate code if the learning goal is to understand how to develop this independently.
6. **Write text:** GenAI may not write your code or text without you understanding it.
7. **Other:**
   (a) GenAI may not be used at the university while the lecturer explicitly forbids it
   (b) GenAI cannot be used to form your personal opinion.
   (c) Do not provide GenAI with any personal or confidential information that you do not have permission to share.

D.4 Examples/prompts

D.5 How to reference a LLM?

E.5.1 Justification

- Checkbox on Brightspace
- Document with AI justification
- Sign document of no GenAI use
- Small piece of text at beginning
- Not needed

E.5.2 Referencing

When to reference:

- **Copy text or code:** You partially copy text or code from a GenAI output
- **Ideas or examples are used:** You use ideas, examples or explanations from GenAI.

When not to reference:

- **Used for structure, brainstorming or assistance:** You used it for language correction, feedback, structure assistance or brainstorming, as long as you determined the content yourself.
- **Gives direct source:** If the GenAI output has directed you to a particular source (such as an article, book, or study), you should cite that original source itself and not the GenAI.

How to reference:

- Ask several LLM's, compare and use as experts.
- Reference to direct source
- GenAI justification model
- Add chat conversation link
- Same as article (in-text)
- To AI appendix (in-text)
- Explain that GenAI is used (in-text)

Format for referencing

- Output, model used, why that model is used

- Prompt
- Prompt, output
- Prompt, output, model
- Why GenAI is used

D.6 Consequences

- *If your use of GenAI is unclear or suspicious, you may be asked for an interview to explain how your work was created.*
- *If it turns out that GenAI was used inappropriately, you have the chance for a resit however, the maximum grade you can receive will be 6.*
- *If you used GenAI without declaring it and this is discovered afterwards, the consequences may be more severe than if you have been transparent from the start.*
- *Dishonest use of GenAI may be treated as a form of academic fraud and will be handled through the Board of Examines, following the same rules as for plagiarism.*

D.7 Awareness

- Climate
- GenAI is a chatbot and can make mistakes
- How to use GenAI in a responsible manner
- Importance for learning
- Privacy

D.8 Lectures

- About prompt engineering
- About awareness and limitations of GenAI
- About the rules and regulations

D.9 Other ways of testing

- Essays as exams
- Oral exams

D.10 Support or guidance from teachers

- Lecturers should be available for questions, especially in the first year
- Lecturers should communicate rules
- Lecturers should explain how to write prompts
- Lecturers should know the rules

D.11 Communication

- Communicate regulations via Brightspace, e-mail, and website.
- Communicate these are the rules
- Every course should communicate the rules
- Just a booklet or pdf is not enough, nobody is going to read it
- Learn about AI in courses
- There should be a lecture about rules

Chapter E

Guidelines Design 2

E.1 When to use GenAI?

F.1.1 Appropriate GenAI use

1. GenAI can be used to assist with code-related tasks such as explaining errors, breaking down code into smaller pieces, writing comments, or generating small code snippets. It can help you structure your code but should not replace the learning process of writing and understanding code yourself.
2. GenAI can be used as a tool for idea generation and brainstorming.
3. GenAI can be used to clarify concepts you do not fully understand and ask questions when you need further explanations.
4. GenAI can be used to provide clear, step-by-step instructions or to explain the necessary steps for completing a task. However, it is essential that you understand the steps and can apply them independently.
5. GenAI can be used to increase productivity and efficiency by handling repetitive tasks or speeding up certain processes, but it should not replace the actual learning process.
6. GenAI may be used to rewrite or restructure sentences, improving clarity, grammar or writing style.
7. GenAI may be used in tasks that you have already learnt before and that are outside of the learning goals of the course, but it should not be used to bypass the current course objectives.
8. GenAI can be used as a search engine. However, always verify the information you receive.

F.1.2 Inappropriate GenAI use

1. You are not allowed to copy and paste content directly from GenAI into your work.
2. It is not allowed to use GenAI to answer exam questions.
3. GenAI may not be used if you do not learn from it.
4. You are not allowed to use GenAI to generate code if the learning goal is to understand how to develop this independently.
5. It is not allowed to use GenAI to write assignments.
6. GenAI may not write your code or text without you understanding it.

E.2 When to reference GenAI?

F.2.1 You should reference your use of GenAI in the following situations:

1. You use ideas, examples or explanations from GenAI.
2. You partially copy text or code from a GenAI output.

F2.2 It is not needed to reference your use of GenAI in the following situations:

1. If the GenAI output has directed you to a particular source (such as an article, book, or study), you should cite that original source itself and not the GenAI.
2. You used it for language correction, feedback, or brainstorming, as long as you determined the content yourself.

VERSION 1:

E.3 How to reference GenAI?

F.3.1 In-text: reference to AI-bibliography in appendix

example:
This piece of text is written by GenAI [1].

E.4 Template for justification

Reference	Prompt	Output	Date of Retrieval	How is the output processed/used in the report?	Which model was used?	What is the version of the model?	Why did you use GenAI?
1							
2							

VERSION 2:

F.3 How to reference GenAI?

F.3.1 In-text: reference in APA style (and add sources in reference list)

example:
ChatGPT (OpenAI, 2023)

OpenAI. (2023). ChatGPT (Mar 14 version) [Large language model]. https://chat.openai.com/

F.4 Template for justification

Which model did you use?	Why did you use GenAI?	Why did you choose this model?	Link to conversation with the concerning tool

VERSION 3:

F.3 How to reference GenAI?

F.3.1 In-text: explain that you used GenAI.

example:
ChatGPT was used to design the organisational structure of the company. It generated a model that includes department divisions and specific roles.

F.4 Template for justification

Which model did you use?	Prompt	Date of retrieval	How is the output processed/used in the report?	Link to chat conversation.

Chapter F

Guidelines for the use of GenAI in academic education

F.1 Introduction

These guidelines provide guidance for both students and lecturers on the use of GenAI within the university. It is important to say that using GenAI is not something you have to do, but a choice you can make yourself. However, if you do use it, it must be done according to the guidelines set out below. The guidelines provide clarity and consistency throughout the institution. It ensures that it is clear what is and what is not allowed and makes the associated consequences of incorrect use clear.

F.2 Be aware when using GenAI

- **Verification and accuracy:** GenAI can be helpful, but it is not always accurate. It may confidently give wrong or misleading information. Always verify the output and do not trust it blindly.
- **You are here to learn:** Use GenAI in a way that enhances your learning, not replaces it. Ask yourself: does this contribute to my understanding? If not, reconsider using it.
- **When in doubt, ask:** Consult your teachers if you have any doubts or questions when using GenAI.

F.3 But what are the rules?

The university uses three scales in its guidelines. Your lecturer decides which scale applies to the course.

1. **Prohibited:** GenAI may not be used.
2. **2. Allowed under conditions:** Lecturers determine what is and is not allowed based on these guidelines and their learning objectives. This is communicated via Brightspace and the study guide.
3. **3. Free use:** GenAI is allowed, provided that the student **checks and verifies all generated output**, as further described in these guidelines.

F.4 Do's

You should always **verify the output** that GenAI gives you.

You should always **separate your academic and private GenAI chats** and be prepared to **share a chat link or output.**

You can use GenAI to **support your learning** by:

- **Explaining errors, breaking down code**, and generating small code snippets, as long as this does not replace the essential process of writing and understanding code yourself. GenAI is meant to help you learn, not just to produce answers.
- **Clarifying concepts** you do not fully understand and allowing you to ask the questions when further explanation is needed.
- Provid**ing clear,** step-by-step instructions or explanations for completing tasks.

You can use GenAI to enhance your **creativity and productivity** by:

- Generating ideas and supporting your **brainstorming** process.
- Creating **visual content** such as:
  - Logos

  - Models and diagrams

- Handling **repetitive tasks** or speeding up certain processes while staying actively engaged in your learning.
- Receiving **suggestions for rewriting or restructuring sentences** to improve clarity, grammar, and style.
- Finding relevant and primary **sources**.

You can use GenAI that you have already learnt before and that are **outside of the learning goals** of the course, but it should not be used to bypass the current course objectives.

F.5 Don'ts

You are not allowed to **copy and paste** text directly from GenAI into your work.

You are not allowed to use GenAI to **answer exam questions**.

You are not allowed to use GenAI to **write assignments**.

You are not allowed to use GenAI to **generate code if the learning goal is to understand** how to develop this independently.

F.6 Definitions/examples

This part should be determined by the university itself.

F.7 Consequences of inappropriate use

Are the same as for traditional plagiarism (vary per university).

F.8 Ethical considerations

- **Climate impact:** Training and running AI models requires significant computing power, which consumes energy. Be aware of the environmental footprint of these technologies and use them responsibly.
- **Privacy:** AI models store and process data. Do not use GenAI with sensitive or confidential information (e.g., from a company or university assignment) without permission.
- **Working conditions:** People who work for AI companies sometimes work under difficult conditions and are paid little. Be aware of this when using GenAI.
- **Property rights and plagiarism:** The content that GenAI creates is not always yours. Use it honestly and always indicate what belongs to others to avoid plagiarism.
- **Socio-political impact:** GenAI can impact work and opportunities for people worldwide. Think about how the use of technology affects society.

F.9 When to reference

You should reference your use of GenAI in the following situations:

- You use ideas, examples or explanations from GenAI.
- You partially copy text, code or visualisations from a GenAI output.

It is not needed to reference your use of GenAI in the following situations:

- If the GenAI output has directed you to a particular source (such as an article, book, or study), you should cite that original source itself and not the GenAI.
- You used it for language correction, feedback, or brainstorming, as long as you determined the content yourself.

F.10 How to reference?

In-text: In-text: reference to AI justification in appendix (AI-Appendix). **Example:** This piece of text is written by GenAI [1].

AI appendix:

Reference	**Which model & version was used?**	**For what purpose was GenAI used?**	**Give a reflection on your GenAI output**	**Link to chat conversation / Prompt + Output**

Table F.1: AI appendix