

Handout: Recommendations for dealing with ChatGPT in the context of examinations at Saarland University

Education and Quality Assurance Division | Staff unit: Digitalisation and
Sustainability | DaTa-Pin | Version 1.0 | 21.09.2023

1 Recommendations for dealing with ChatGPT at a glance

1. If ChatGPT is used without permission in examinations and/or if the use of ChatGPT is neither adequately marked nor documented, it must be considered a deception, which at least leads to the invalidity of the examination, study, and doctoral thesis.
2. If ChatGPT is allowed to be used, the guidelines of "good scientific practice" apply, for example, marking ChatGPT as a source and documenting the used prompts. If the use of ChatGPT is not indicated, one may conclude that an attempt of deception is at hand and thus the above-mentioned consequences apply.
3. ChatGPT is not a reliable scientific source and cannot be considered a substitute for independent research or critical review of scientific sources. ChatGPT may be used as a tool for information gathering. In this case, the use of ChatGPT must be critically reviewed and transparently documented by students.
4. Written examinations that are conducted digitally (e.g., open-book exams) are currently recommended only to a very limited extent, as the (possibly unauthorized) use of ChatGPT cannot be controlled. To what extent ChatGPT is able to generate answers to exam questions, which are sufficient for passing an exam, remains unclear. A general answer to this question cannot (as of yet) be provided since variations across different subjects and fields of research need to be considered. If you are planning a digital written exam, you could consider solving the exam or separate tasks with ChatGPT to check the quality of the answers generated by ChatGPT for your subject area. You may then decide which form of examination is adequate.
5. Tasks that require a sheer reproduction of knowledge and little to no application/transfer are not recommended, since they can be solved "well" with the support of ChatGPT. Instead, tasks aiming at higher learning objective levels (application, analysis, synthesis, evaluation) should be compiled. The higher competencies that students face in these cases must, however, be consistent with the competencies that they could have been able to acquire up to this point in their studies. The level of requirements must be in line with the competencies as formulated in the module manuals for individual study sections.

2 An overview of ChatGPT

2.1 What is ChatGPT?

Chat Generative **P**re-trained **T**ransformer (ChatGPT) is the prototype of a text-based chatbot, which is based on artificial intelligence. The chatbot is being developed by the US-American company OpenAI and Microsoft. Since November 2022, different versions of the prototype are freely accessible and enable the user to generate and summarize texts or to provide explanations. Many languages from German and English to Serbian and Sindhi are supported (Jiao et al., 2023). ChatGPT also understands some programming languages such as Python or C++.

ChatGPT is based on a language model or on a "natural language model" rather than on a knowledge model: The answers are based on an artificial neural network which tries to generate answers based on statistical probability. The statistical probability is based on training with billions of web-based words. Thus, the answers only imitate communication and do not contain any own cognitive processes or creative impulses (International School of Management, 2023).

2.2 What is ChatGPT capable of?

ChatGPT is able to generate texts based on an input ("prompt") using machine learning algorithms. It is also possible to obtain specific and more detailed information with targeted and more detailed prompts. ChatGPT enables a conversation in the sense of a question-answer system. ChatGPT can also generate translations (Jiao et al., 2023). However, all outputs must be meticulously reviewed, since ChatGPT always makes mistakes, has problems with reasoning, cannot prioritize, and sometimes freely invents references (Thorp, 2023; van Dis et al., 2023).

2.3 What is ChatGPT not capable of?

Although it is often felt that ChatGPT can perform very well, there are also obvious limitations. For example, ChatGPT cannot reliably perform arithmetic operations, evaluate, or interpret graphics. Likewise, ChatGPT cannot access current or new information because the respective version of the program has only been fed with data up to a specific point in the past (depends on the version). It may also provide fictitious statements that are simply false. ChatGPT is neither able to make moral/ethical decisions, nor is it able to comprehend emotions (OpenAI, 2022). However, as the application is under constant development, it remains to be seen which functions will be added in the near future and how long the restriction for current information will persist.

2.4 What does ChatGPT require of its users?

Due to the relation between the specificity of prompts and the concreteness of answers, a precise analysis of the task is necessary. Questions that users must/should ask themselves before using ChatGPT are, for example: What is the goal of the task? Which steps are necessary to reach the goal? At which point of the goal achievement process can I integrate ChatGPT? In order to purposefully communicate with the chatbot, users must analyze the task and the initial situation in advance. To do this, they must have prior knowledge and be in a position to be able to adopt a critical and reflexive meta-level (Azaria, 2022).

The specificity of questions can be increased via the formulation of prompts. Prompts are in the case of ChatGPT questions or statements that the user enters in the text box. The user communicates with the chatbot and, based on the previously given answers, might come up with more precise prompts, so he/she can narrow down the results.

3 ChatGPT and methods of examination

3.1 What methods of examination are affected?

ChatGPT especially affects written elaborations which need to be optimized to counteract ChatGPT. This applies to written tasks with a short time frame (e.g., open-book exams) as well as to tasks with a longer timeframe (e.g., for Bachelor's and Master's theses, but also for advanced scientific work such as doctoral theses, dissertations, postdoctoral theses, or other publications). Conceivable implications may also concern digital oral examinations (see sections 3.2.1 to 3.2.4 for effects of ChatGPT on examinations).

From a current perspective, an impact on analogue face-to-face examinations, both oral and written, seems unlikely.

3.2 How does ChatGPT affect current methods of examination?

ChatGPT as well as other AI-based technologies (see Bidirectional Encoder Representations from Transformers, BERT, Devlin et al., 2018; Robustly Optimized BERT Pre-training, RoBERTa, Liu et al., 2019) are currently still under development. It is likely that these technologies will spread quickly and will be able to cover additional functions and tasks in the near future. In examinations, methods should be chosen or tasks should be formulated that ChatGPT either cannot be used for (e.g., "classical" written or oral exam) or cannot significantly contribute to in order to pass the exam. This will require an adaptation of the common exam formats, but at this point in time we can only make recommendations regarding the use of the current exam formats. Following the handout "Use of

ChatGPT in Teaching" of the Technical University of Munich (2023), there are basically two ways to handle ChatGPT in the context of examinations, namely either to explicitly allow ChatGPT as a tool or to explicitly forbid it. Corresponding information should be available to the students.

ChatGPT is not allowed as a tool in an exam unless the contrary is explicitly stated. However, for reasons of clarity and transparency, it is strongly recommended that the lecturer clearly communicates in advance that the use of ChatGPT is forbidden. Thus, non-compliance will be considered cheating. Especially for Bachelor's and Master's theses a declaration of authorship must be included, which confirms the renunciation of programs such as ChatGPT. If necessary, it can be useful to differentiate subject-related questions and to exclude, for example, the creation of program codes, but to allow, for example, content-related research with ChatGPT, keeping the appropriate requirements regarding the documentation in mind (see section 4.2).

At this point, one of the challenges is that there is not yet any reliable software nor other method available to determine whether a text has been written independently or with the help of an AI tool, especially if the person has reformulated the text originally output by ChatGPT. Therefore, we can currently only recommend focussing on the requirements of good scientific practice, to actively address the problem of attempted cheating (plagiarism), and to refer to the tools under development for the identification of AI-generated texts (e.g., for Turnitin). The use of ChatGPT as a tool can currently only be entirely prevented if you perform an examination on site without digital devices (e.g., a handwritten exam on campus).

If you allow ChatGPT as a tool, students can use ChatGPT as part of an exam. In this case, it is imperative that students cite ChatGPT as a source and document the prompts used to avoid attempts of deception. In this case the aforementioned problem that AI-generated texts cannot currently be identified with certainty remains. If the examination regulations allow sufficient leeway, it would also be possible to perform a supplementary oral examination to confirm the quality of a written performance. In any case students should be informed about the risks of ChatGPT and the necessity of a critical review of the texts generated should be emphasized (see sections 2.2 and 2.3). "The tool does not think *for you*, but *you think with the help of the tool*" (Spannagel, 2023, p. 2). In this sense, ChatGPT must be classified primarily as an information gathering tool, but does not represent a reliable scientific source, since ChatGPT partly invents references, and the generated texts are not necessarily correct. The use of ChatGPT assumes that students have already critically familiarized themselves in advance with the handling of the chatbot and the use of prompts, because the quality of prompts can have a decisive impact on the quality of the response. In addition, students need prior knowledge so that they can check the content that ChatGPT generated for accuracy.

Since the use of ChatGPT requires the provision of personal data, you cannot require the use of ChatGPT from your students in the context of an examination. In this context, please note that students who do not wish to use ChatGPT, for example for data protection reasons, should not suffer any disadvantage. We still need to evaluate how equal opportunities can be ensured in individual cases. Regarding data protection, it is absolutely necessary to inform your students that personal data should never be included in prompts since this data will be reused by the application and can thus be passed on to many other users.

In summary, one cannot totally prohibit the use of ChatGPT in certain examination formats (e.g., for term papers or scientific theses). Therefore, it is recommended that you (pro-)actively clarify at which points in the editing process or for which use cases ChatGPT can be consulted with the appropriate documentation and critical reflection in mind. It is crucial that ChatGPT and other AI-based tools have the status of aids for information retrieval, thus the output must be critically reviewed and not adopted on a 1:1 basis (see sections 2.2 to 2.4). The own process of thinking, writing, and performance can and should in no way be replaced. If ChatGPT is approved as a resource, students must document its use, label, and cite the chatbot. A requirement of a meaningful usage is that students learn and practice the adequate use of ChatGPT in advance, also in the context of acquiring digital skills and competencies.

3.2.1 What does this mean for written and oral exams on site?

For analogue examinations on site, you may forbid digital devices (e.g., smartphones, smartwatches, and laptops), which means that students will not have access to ChatGPT during the exam.

If you do not want to allow ChatGPT as a permissible aid for your exam, you should conduct your exam in an analogue setting on site (e.g., as an in-person paper and pencil exam).

If you want to conduct a written digital exam in a face-to-face format that excludes ChatGPT (e.g., on a laptop or tablet), you may want to use digital tools (e.g., Moodle Safe Exam Browser) that block all access to other applications for the duration of the exam. The legality of their use must be explicitly agreed upon in advance.

If you are conducting an online digital written exam and do not want to exclude ChatGPT as a permissible aid (e.g., for open-book exams), you should follow the recommendations for open-book exams from section 3.2.3 as well as the recommendations for the design of assignments from section 4.1.

3.2.2 What does this mean for online digital oral exams?

For digital oral exams, you can prohibit the use of ChatGPT, but it is difficult to control if the examinee irregularly uses ChatGPT or not.

During a digital oral exam, watch for unusual pauses in student speech. The use of ChatGPT requires additional time as students first enter appropriate prompts, wait for the response, and then possibly rephrase the text afterwards.

You can also ask students to position their hands in the camera's field of view during the exam. Please also take note of the [general recommendations for conducting digital oral examinations](#) (in German only).

3.2.3 What does this mean for online digital written exams (open-book/take-home exams)?

For online digital written exams, you can prohibit the use of ChatGPT. However, you cannot control or prove the use of ChatGPT. For this reason, these types of examinations and tasks, respectively, are only to be recommended with limitations. The quality of the content generated by ChatGPT varies greatly and is different for different subjects and content areas. In order to check the quality of ChatGPT's answers to your exam questions, you may consider taking the exam or some of its tasks using ChatGPT. Based on these results, you can decide which form of examination (digital written or written on site) is appropriate and adapt the tasks if necessary. Inform your students that they are required to report the use of ChatGPT as well as the prompts used.

If you plan to administer an online digital written exam, consider the recommendations for designing assignments from section 4.1.

3.2.4 What does this mean for individual written examinations (term papers/scientific theses)?

For individual written exams, you can prohibit the use of ChatGPT, but you cannot control the use of ChatGPT and may often not be able to prove misconduct due to a lack of reliable evidence.

Inform your students that they have a responsibility to critically review the information they use to write their paper for accuracy and reliability. ChatGPT generates text according to a probabilistic model with no guarantee of correctness. Make clear to your students that ChatGPT cannot be used as a reliable scientific source.

Insist on a list of references and check the correctness of the references (at least randomly). ChatGPT also generates references according to a probabilistic model, which may result in incorrect or invented references.

Require your students to cite ChatGPT as a resource as part of their declaration of authorship and, in the case of using ChatGPT, also have them indicate the prompts used.

4 Measures

In the medium term, it will be important to discuss the role of ChatGPT and comparable AI tools in teaching and studying in order to enable the integration of these technologies in the sense of a co-creative process with such tools and, at the same time, to avoid attempts of deception in the context of scientific theses. For this purpose, the study committee created an ad hoc group to address these issues in order to develop ways to determine how these technologies can be purposefully integrated into teaching and studying and how methods of examination can be adapted further.

4.1 Design of tasks

First, it is important to create a holistic awareness of ChatGPT regarding all possibilities and limitations. Since ChatGPT (still) makes a lot of mistakes but appears very "self-confident" and apparently provides appropriate answers, it is especially important that students do not blindly copy and paste the answers of ChatGPT, but critically review them. This requires a corresponding prior knowledge from the students, and the students must have (meta-)cognitive competencies which they can use to plan, control, and critically reflect upon their learning process in the spirit of a lifelong learning process. In this context, it is therefore of great importance to teach an adequate and responsible use of ChatGPT, for example, the target-oriented use of prompts (see section 2.4). Students should understand ChatGPT as well as future AI tools as an opportunity to optimize their learning and working processes.

Along with the function of being a consultant or supporter, which ChatGPT can do for teaching and studying, requirements for the formulation of tasks also need to be discussed. Basic operators like "name" or "describe" should be avoided and tasks should instead be formulated with a higher learning objective level in mind (e.g., Anderson et al., 2001; Bloom, 1956). The goal is to formulate tasks which are oriented towards the application, analysis, synthesis, and evaluation of learning content and consequently aim at inferential thinking and transfer. In this context, you have to consider to what extent your students, based on the competencies they have acquired so far, are able to perform (see module manuals).

At this point in time, ChatGPT is not able to autonomously evaluate issues according to relevance or evidence level, analyze problems in the context of the application or to solve complex problems with an extensive multi-faceted context. ChatGPT can, however, support during these tasks. Here, the prior knowledge of users and the quality of the chosen prompts are of great importance. The question of how tasks will have to be adapted in the future so that students can make a significant contribution of their own while using ChatGPT remains.

The following task formats and questions are not recommended for digital/individual written examinations and facilitate a possible misuse/unauthorized use of ChatGPT in the context of a written paper (e.g., term paper, scientific theses):

- Tasks that are geared towards the sheer reproduction of knowledge/content and do not require transfer/reflection (e.g., naming, describing, explaining).
- Tasks that focus on comparing facts in a non-judgmental manner. ChatGPT can compare texts and summarize the differences/common features.
- Tasks without contextual reference or tasks that do not require an analysis of the contextual conditions. ChatGPT can generate application examples, but the contextual conditions must be transmitted to ChatGPT via appropriate prompts.

4.2 Obligatory list of references

It is essential that, if ChatGPT is used, ChatGPT is cited as a reference and the prompts used are indicated. It is also recommended that students provide a brief rationale for the used prompts to document how the work was done with the help of the consulted AI tool in a comprehensible way.

4.3 Declaration of authorship

The declaration of authorship of Saarland University for individual and digital written exams will be adapted and shared as soon as possible with regard to the use of ChatGPT and comparable technologies.

5 Further links

Current information and further links regarding the topic of ChatGPT can be found in the MS Teams Team **Digitale Lehre Uds**. You can easily join the team by entering the following team code in MS Teams: **24fhh2f**.

6 References

- Anderson, L. W., Krathwohl, D. R., Airasian, P. W., Cruikshank, K. A., Mayer, R. E., Pintrich, P. R., Raths, J. & Wittrock, M. C. (Eds.). (2001). *A taxonomy for learning, teaching, and assessing. A revision of Bloom's taxonomy of educational objectives*. Addison Wesley Longman, Inc.
- Azaria, A. (2022). *ChatGPT usage and limitations*. HAL. <https://hal.science/hal-03913837>
- Bloom, B. S. (Ed.). (1956). *Taxonomy of educational objectives. The classification of educational goals. Handbook 1: Cognitive domain*. David McKay.

- Devlin, J., Chang, M.-W., Lee, K. & Toutanova, K. (2018). *BERT: Pre-training of deep bidirectional transformers for language understanding*. arXiv. <https://doi.org/10.48550/arXiv.1810.04805>
- International School of Management. (2023). *Die Illusion einer Denkleistung von ChatGPT: ISM-Hochschullehrer differenzieren*. <https://www.presseportal.de/pm/70776/5429461>
- Jiao, W., Wang, W., Huang, J.-t., Wang, X. & Tu, Z. (2023). *Is ChatGPT a good translator? A preliminary study*. arXiv. <https://arxiv.org/abs/2301.08745>
- Liu, Y., Ott, M., Goyal, N., Du, J., Joshi, M., Chen, D., Levy, O., Lewis, M., Zettlemoyer, L. & Stoyanov, V. (2019). *RoBERTa: A robustly optimized BERT pretraining approach*. arXiv. <https://doi.org/10.48550/arXiv.1907.11692>
- OpenAI. (2022, November 30). ChatGPT: Optimizing language models for dialogue. *OpenAI*. <https://openai.com/blog/chatgpt/>
- Spannagel, C. (2023). *Rules for tools*. <https://csp.uber.space/phhd/rulesfortools.pdf>
- Susnjak, T. (2022). *ChatGPT: The end of online exam integrity?* arXiv. <https://arxiv.org/abs/2212.09292>
- Technische Universität München. (2023). *Einsatz von ChatGPT in der Lehre*. <https://www.prolehre.tum.de/fileadmin/w00btq/www/Angebote/Broschueren/Handreichungen/prolehre-handreichung-chatgpt-v2.2.pdf>
- Thorp, H. H. (2023). ChatGPT is fun, but not an author. *Science*, 379(6630), 313. <https://doi.org/10.1126/science.adg7879>
- van Dis, E. A. M., Bollen, J., Zuidema, W., van Rooij, R. & Bockting, C. L. (2023). ChatGPT: Five priorities for research. Conversational AI is a game-changer for science. Here's how to respond. *Nature*, 614, 224-226. <https://www.nature.com/articles/d41586-023-00288-7>