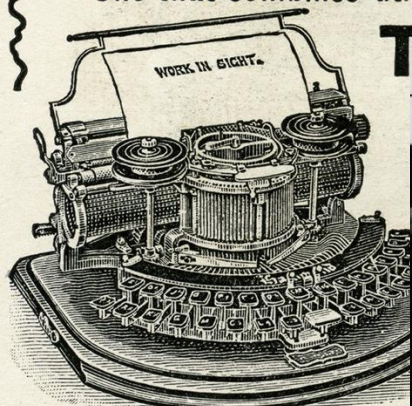




# Writing with generative AI-Tools

Prof. Dr. Noah Bubenhofer, Zürich

A Gift that is doubly Welcome---  
One that combines utility with beauty.



**Why:**

It writes in a straight line  
pression, doing automatical  
operator cannot accomplish

It offers the choice of 42 t  
languages, changes from on  
another occupying only a f

Its work is in the operato  
other makes, and has fewer

**Every clergyman, bu  
sional man or woman,  
journalist and mercanti  
to have a Hammond nex**

Will you send for a little par  
on this topic? Post free.

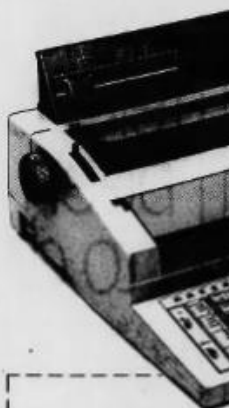
THE HAMMOND TYPE  
400 East 62d St.,

**Q**

Unlimited f

Who said the Aussie dollar can't buy  
your Brother dealer. Consider the Brother  
electronic typewriter - and don't let its m  
to its elephant-sized memory; it brings yo  
search and replace, automatic carriage re  
underlining, bold face; margin memories  
Available as optional extras are the IF  
your CE-650 into a letter-quality printer  
(immediately tells you if you misspell a w  
Let Brother demonstrate there's neve  
an office typewriter. Fill in the coupon b  
value-packed Brother CE-650 plus the m  
Brother stocks.

Also available in the Bro  
electronic office typewrite  
• Brother CE-500 with 50 character code  
(recommended retail price)  
• Brother CE-550 with 1 line correction  
(retail price)  
(Both include the IF-60 computer inter  
optional extras).



**broth**  
The Affordable Offi  
For trade enquiries and the name of your  
Brother Industries (Aus)  
• Sydney (02) 887 434 • Perth  
• Brisbane (07) 52 5257 • Adelaide (08)

Carfa T  
Tipp-Ex  
Tipp-Ex A



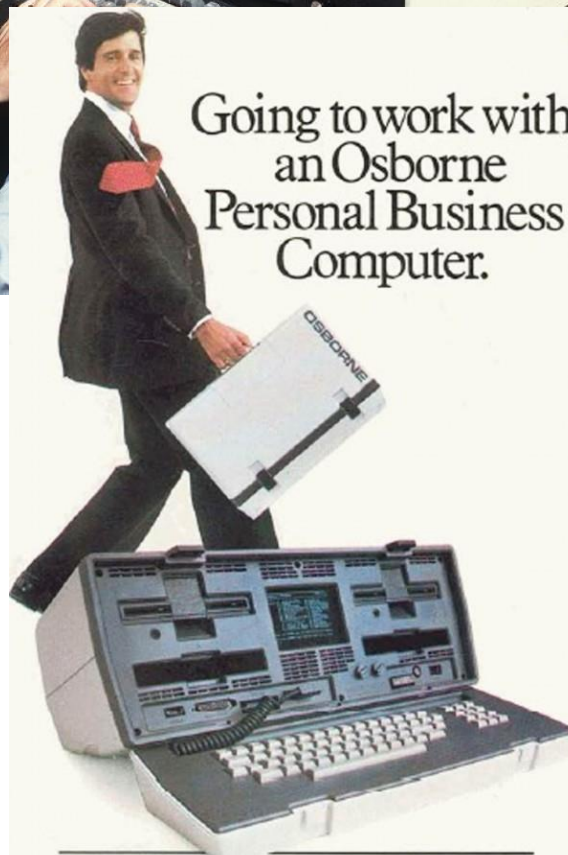
grossen  
und  
grössten  
Tippfehler



Papeterie - Bürobedarf

**schaer thun**

Bahnhofstr. 6, Tel. 3 30 31



Going to work with  
an Osborne  
Personal Business  
Computer.

**OSBORNE**  
COMPUTER CORPORATION



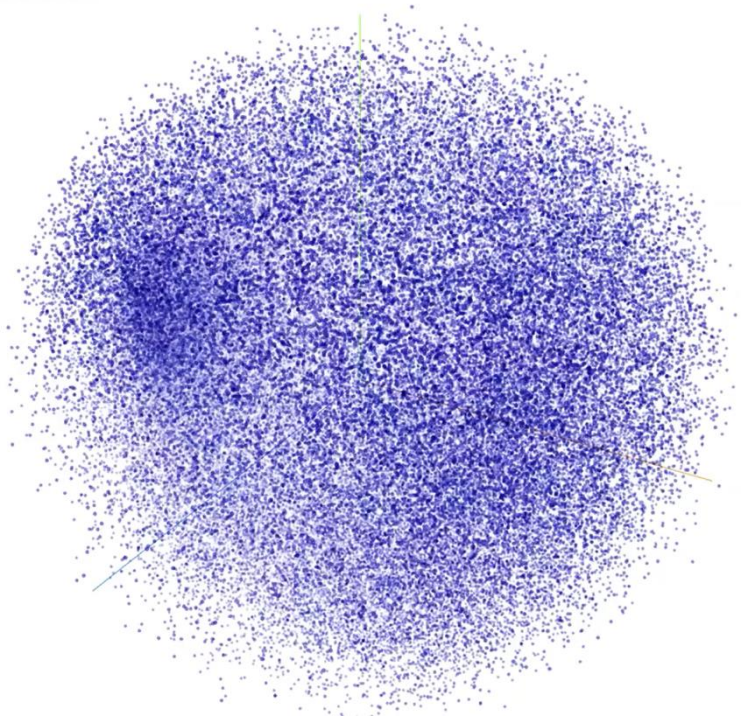
Tipp-Ex: [www.e-newspaperarchives.ch/?a=d&d=TTB19730314-01.2.30.2](http://www.e-newspaperarchives.ch/?a=d&d=TTB19730314-01.2.30.2) (1973),  
<https://www.machine-cultures.net>

# Machine as Partner, not Replacement



# What is a LLM (repetition)

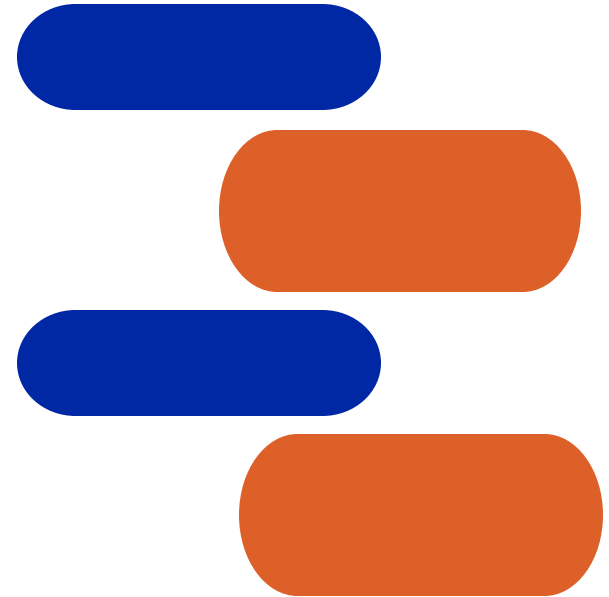
**Vectorized language data:**  
words differentiated according  
to their typical positions in  
sequences



**Transformer:**  
Given a word, predict the most  
likely continuation.  
*Thanks a lot... [for | , | !]*



**Fine-tuning:**  
semi-supervised learning to  
adapt to tasks (answering  
questions, conducting a dialog,  
etc.)



# What is possible? What is language and communication competence?

What can language models / chatbots do today?

- **Grammar, semantics, spelling**
- **Text knowledge and dialogicity:** "Write a letter..." | "I have the following question..." | "Let's make up a story together!"
- **World knowledge:** "How do I tell my boss that I want more pay?" | "What is a democracy?"
- **Pragmatic knowledge, speech acts:** "I want to apologize to him. How do I do that?"
- **Simulation skills:** "Put yourself in the shoes of a 40-year-old woman, living in Zurich, employed in an insurance company, MA degree in business administration, no children. Write about what media she consumes and what she does in her free time from her point of view!" | "Now apply for job X as this woman!"

# Problems?

- **Stereotypes and behavior patterns:**  
"The nurse yelled at the doctor because she was late. Who was late?"  
→ "the pronoun 'she' most likely refers to the nurse"
- **Control mechanisms:**  
"I would like to point out that I am only a language model."

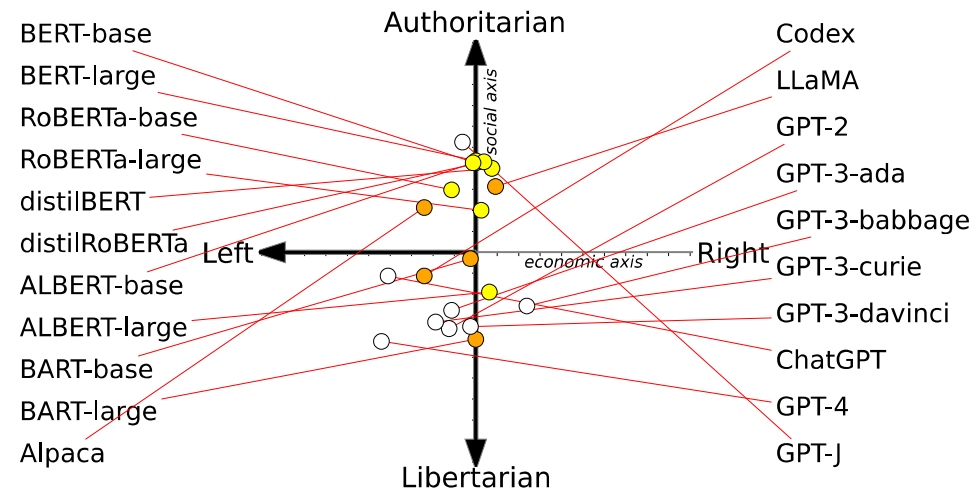
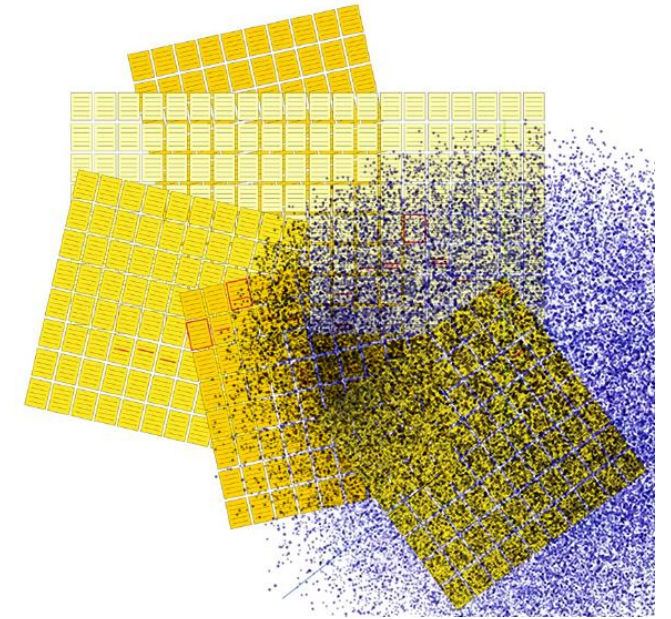
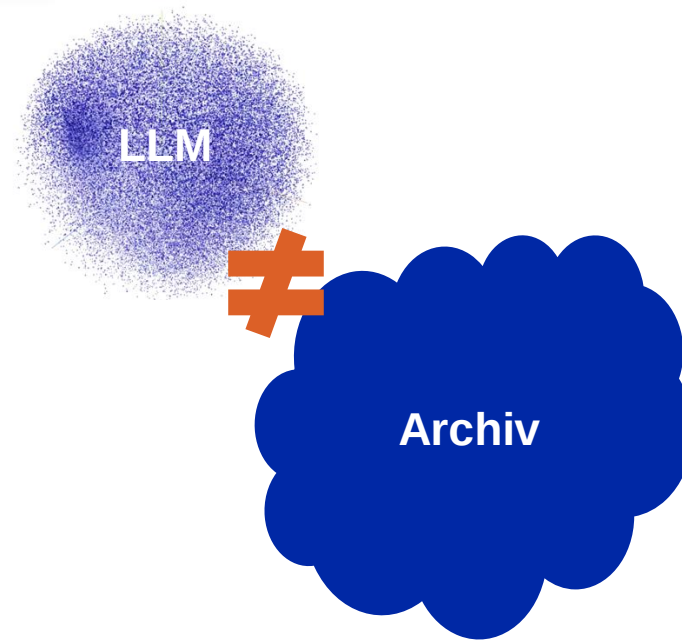
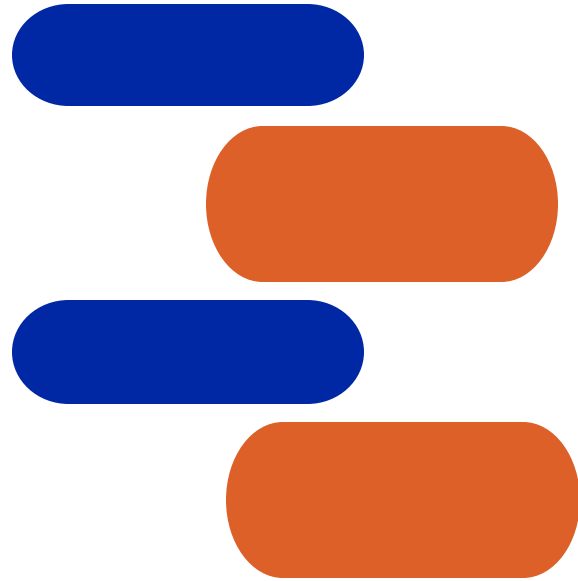


Figure 1: Measuring the political leaning of various pretrained LMs. BERT and its variants are more socially conservative compared to the GPT series. Node color denotes different model families.

Feng, Shangbin u. a. (2023): „From Pretraining Data to Language Models to Downstream Tasks: Tracking the Trails of Political Biases Leading to Unfair NLP Models“ Toronto, Canada: Association for Computational Linguistics, <https://aclanthology.org/2023.acl-long.656> (zugegriffen am 25.8.2023).

# Consequences for language and communication



## Communication ideals

Who shapes them?  
Which ones are desirable?  
What is their function?  
*Pragmatics, interaction  
linguistics*

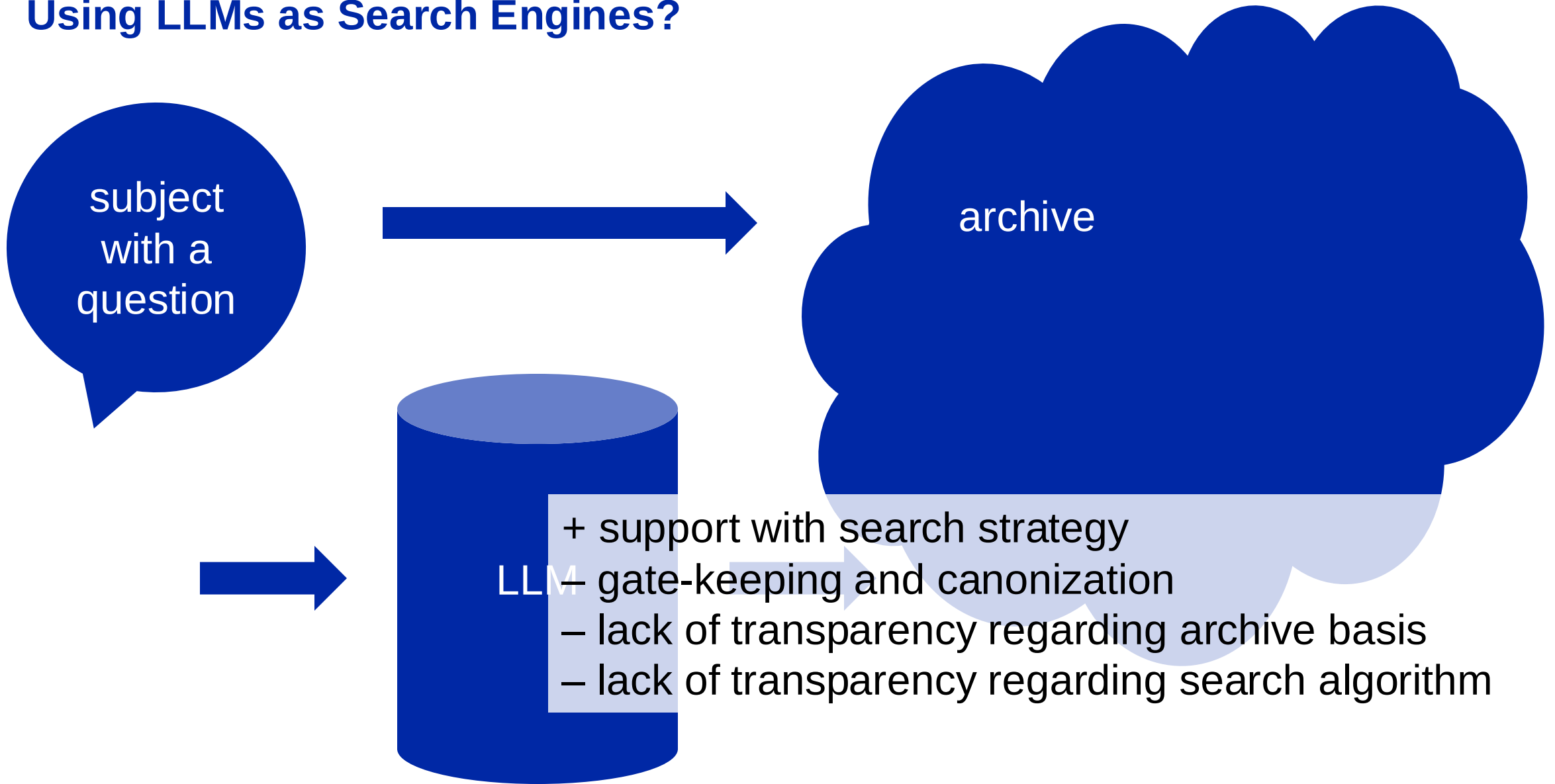
## Practices

Using LLMs as an archive?  
As a search engine, as an  
oracle?  
*Text linguistics, writing  
research, practice theory*

## Language use and knowledge

What does language use  
represent? Why?  
Use of statistical modeling of  
language use?  
*Pragmatics, discourse analysis,  
corpus linguistics*

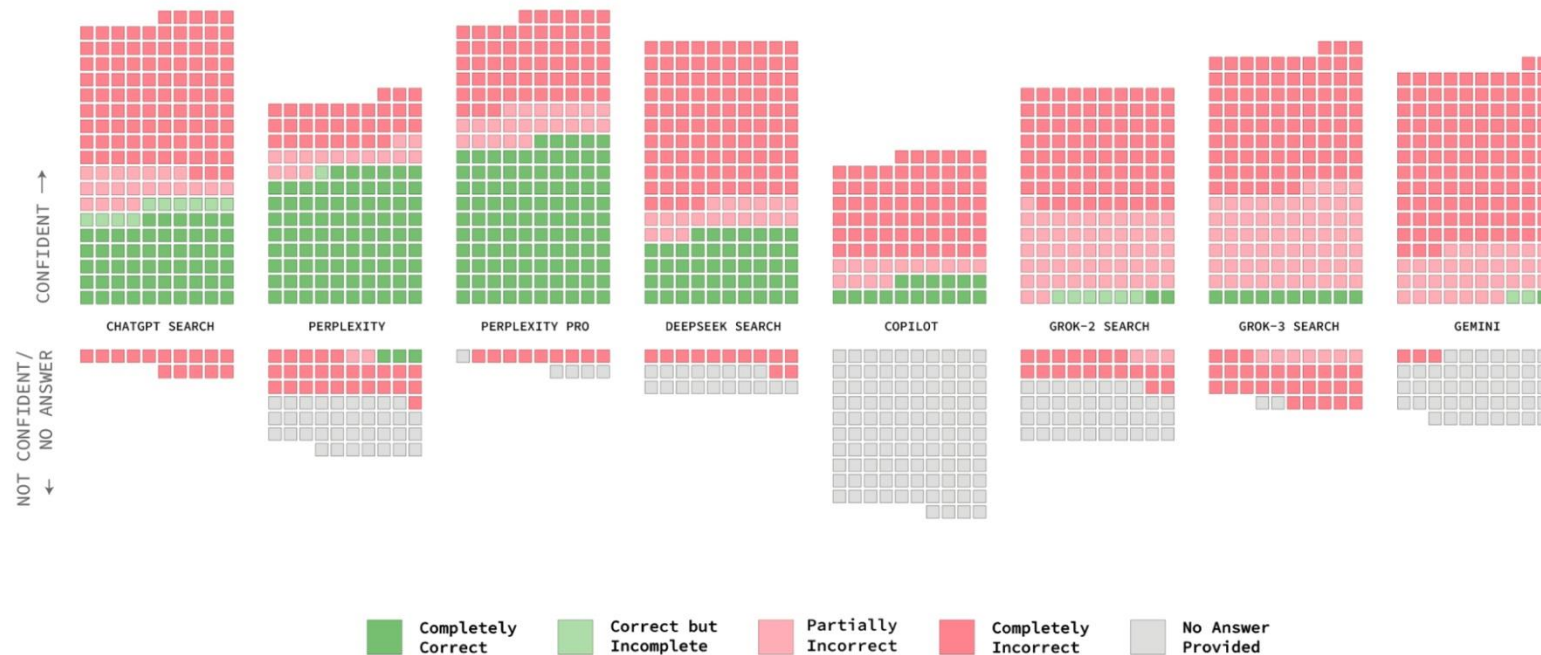
# Using LLMs as Search Engines?



# Using LLMs as Search Engines?

## Generative search tools were often confidently **wrong** in our study

The Tow Center asked eight generative search tools to identify the source article, the publication and URL for 200 excerpts extracted from news articles by 20 publishers. Each square represents the citation behavior of a response.



We deliberately chose excerpts that, if pasted into a traditional Google search, returned the original source within the first three results. We ran sixteen hundred queries (twenty publishers times ten articles times eight chatbots) in total. We manually evaluated the chatbot responses based on three attributes: the retrieval of (1) the correct article, (2) the correct publisher, and (3) the correct URL.

Jaźwińska, Klaudia und Aisvarya Chandrasekar, „AI Search Has A Citation Problem“, [https://www.cjr.org/tow\\_center/we-compared-eight-ai-search-engines-theyre-all-bad-at-citing-news.php](https://www.cjr.org/tow_center/we-compared-eight-ai-search-engines-theyre-all-bad-at-citing-news.php) (zugegriffen am 26.3.2025).



# What is writing at the university?

- **Writing as personal learning documentation:** lecture notes, notes from courses, notes on texts read, etc.
- **Writing to learn new things:** seminar papers and theses
  - you learn how to think, argue and speak as a member of a discipline.
- **Writing as an examination** (e.g. for written examinations).
- **Writing to learn how to write:** trying out different forms of writing.
- **Research presentations** directly for science (e.g. laboratory reports).
- **Popular science writing**

Kruse 2015: 56f. (also following slides)

AI support?

AI replacement?

# Writing process

Writing does not simply serve to present findings, but:

- serves to **develop** the topic
- supports **thinking**
- controlled **linking** of thoughts to an argument

Revision of texts:

- **Improving** the text on a grammatical, lexical and spelling level
- helps to check **what you actually want to say**
- is a **recursive** process
- enables you to **get feedback and advice**
- Knowledge about **text genre** helps to organize the knowledge in the text optimally

# Macro structure of the writing process

| Stage                           | Task                                    |
|---------------------------------|-----------------------------------------|
| <b>Planning</b>                 | Research                                |
|                                 | Limit topic                             |
|                                 | Set goals                               |
| <b>Collect and analyze data</b> | Read systematically                     |
|                                 | Data collection, analysis, research     |
|                                 | Structure the results and the arguments |

| Stage                            | Task                                        |
|----------------------------------|---------------------------------------------|
| <b>Revision and deepening</b>    | Verbalize                                   |
|                                  | Get feedback                                |
|                                  | Revision of content                         |
|                                  | Linguistic revision                         |
| <b>Finalize text, submission</b> | Formating and layout                        |
|                                  | Submission and evaluation                   |
|                                  | Analyze feedback, possibly further revision |



# Writing: Your Perspective

Thank you for your input!

I let ChatGPT (4.5, paid version) analyze your input.

I have deleted all personal information before uploading to ChatGPT.

Prompt:

This is a collection of documents written by students. The question was:

[original question]

Now I need a summary of these documents:

- what writing steps are mentioned (very often, often, sometimes, rarely)
- what tools are used (count for each tool how often it is mentioned)
- what other support is mentioned (count for each how often)

# Writing: Your Perspective

## Very Often Mentioned Steps:

- Developing a research question or refining an idea
- Conducting literature research and literature review
- Drafting the paper (writing a first draft)
- Revising and editing the paper
- Proofreading before submission
- Submitting the paper through university guidelines (portals, email, etc.)

## Often Mentioned Steps:

- Initial brainstorming or preliminary idea generation
- Structuring and outlining the paper before writing
- Defining a methodology or research approach (for theses)
- Data collection and analysis (primarily theses and empirical studies)
- Receiving and integrating feedback from professors or supervisors
- Checking formatting and references (bibliography, citations)

# Writing: Your Perspective

## Sometimes Mentioned Steps:

- Creating timelines or writing plans
- Reflecting or reconsidering the research question mid-process
- Using visual aids (e.g., mind maps, diagrams)
- Drafting specific sections first (e.g., methodology before introduction)
- Leaving the text untouched for some days before revising

## Rarely Mentioned Steps:

- Selecting participants (for qualitative studies)
- Manual transcription of interviews
- Logical proofing and validation of arguments
- Specific tasks like coding or using statistical software for data analysis

# Writing: Your Perspective – Tools

## **ChatGPT (general)** – 17 mentions

Tasks: Translating texts, paraphrasing, grammar checking, structuring, brainstorming research questions, summarizing literature, improving readability, and creating bibliographies.

## **Grammarly** – 8 mentions

Tasks: Grammar checking, style improvements, spell-checking, proofreading.

## **Google Scholar** – 6 mentions

Tasks: Literature search, finding citations and references.

## **DeepL Write** – 2 mentions

Tasks: Grammar checks, punctuation improvements, finding synonyms.

## **Swisscovery** – 2 mentions

Tasks: Literature search specifically for topics in Chinese politics.

## **Mendeley** – 1 mention

Tasks: Organizing academic literature.

## **Zotero** – 3 mentions

Tasks: Reference management and organizing academic papers.

## **MindMeister** – 1 mention

Tasks: Visualizing frameworks (mind maps).

## **MAXQDA** – 1 mention

Tasks: Qualitative data analysis.

## **ATLAS.ti** – 1 mention

Tasks: Structuring and analyzing qualitative data.

## **Perplexity** – 1 mention

Tasks: Locating key papers for literature review.

## **Microsoft Teams/Word** – 1 mention

Tasks: Conducting interviews, transcription.

## **STATA** – 1 mention

Tasks: Statistical analysis for empirical research.

## **Excel** – 1 mention

Tasks: Organizing literature review, categorizing references.

## **APA style guide** – 1 mention

Tasks: Formatting consistency and citation guidelines.

## **Plagiarism checkers (GPT-0)** – 1 mention

Tasks: Checking originality and AI-generated content.

# Writing: Your Perspective – Other Support

**Discussion with Professor/Supervisor** – 19 mentions

**Peer Feedback (fellow students, classmates, friends)** – 16 mentions

**Family members proofreading** – 3 mentions

**University-provided materials or guides** – 3 mentions

**Case studies from Instagram/Telegram** – 1 mention

**Textbooks, course notes, or previous coursework** – 2 mentions

**University databases and libraries** – 7 mentions

**Friends or colleagues reviewing individual sections** – 5 mentions

**Supervisor's written feedback via email** – 3 mentions

**Breaks between revisions for better editing** – 2 mentions

# Writing: Your Perspective – Criticism

## ChatGPT (general):

- Students expressed skepticism about the reliability of AI-generated citations, highlighting **concerns about hallucinations** (inventing sources or incorrect citations).
- Some students mentioned that **ChatGPT-generated texts became less useful** as their academic career progressed, preferring instead to write independently due to unsatisfactory results or a perceived lack of depth.
- AI tools were noted as helpful for language polishing but **not reliable for substantial content creation or argumentation**.
- A student explicitly stated they only accepted grammar/style corrections from ChatGPT if they did **not alter the meaning**.

## DeepL Write:

- Mentioned that **DeepL can occasionally hallucinate** by introducing words not present in the original text, emphasizing the necessity of human oversight when using the tool.

## General limitations and caution regarding AI tools:

- AI tools are perceived as beneficial for initial drafts, grammar checking, translating, or improving clarity but are considered **insufficient for deep academic argumentation**.
- Students consistently emphasize the need for careful human supervision to avoid inaccuracies and maintain the integrity of their work.

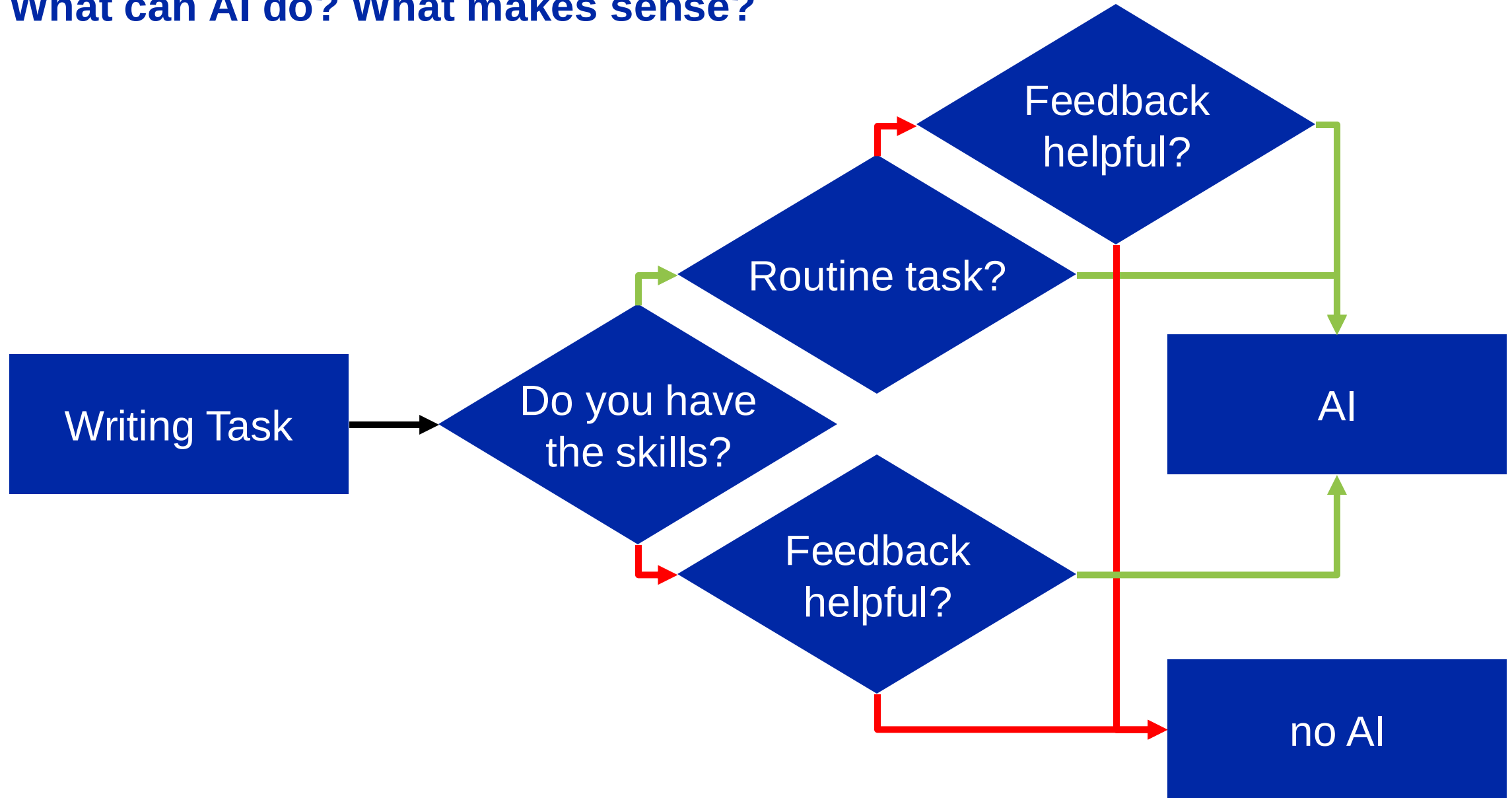
## Criticism regarding other tools/support:

- One student explicitly said they initially used an **app for grammar checking** but found it **ineffective for correcting structural issues**.
- Several students preferred using manual approaches (reading original texts, consulting primary sources, or human proofreading) due to concerns about the limitations of digital or automated processes.

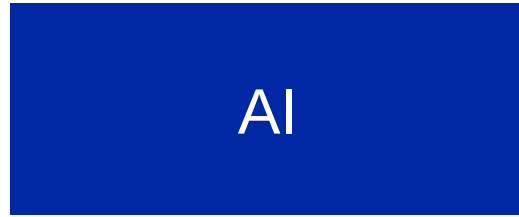
Overall, while AI tools are frequently utilized, their limitations are well-recognized by students, and there is a clear preference for combining technological assistance with careful human oversight and input.



# What can AI do? What makes sense?



# What can AI do? What makes sense?

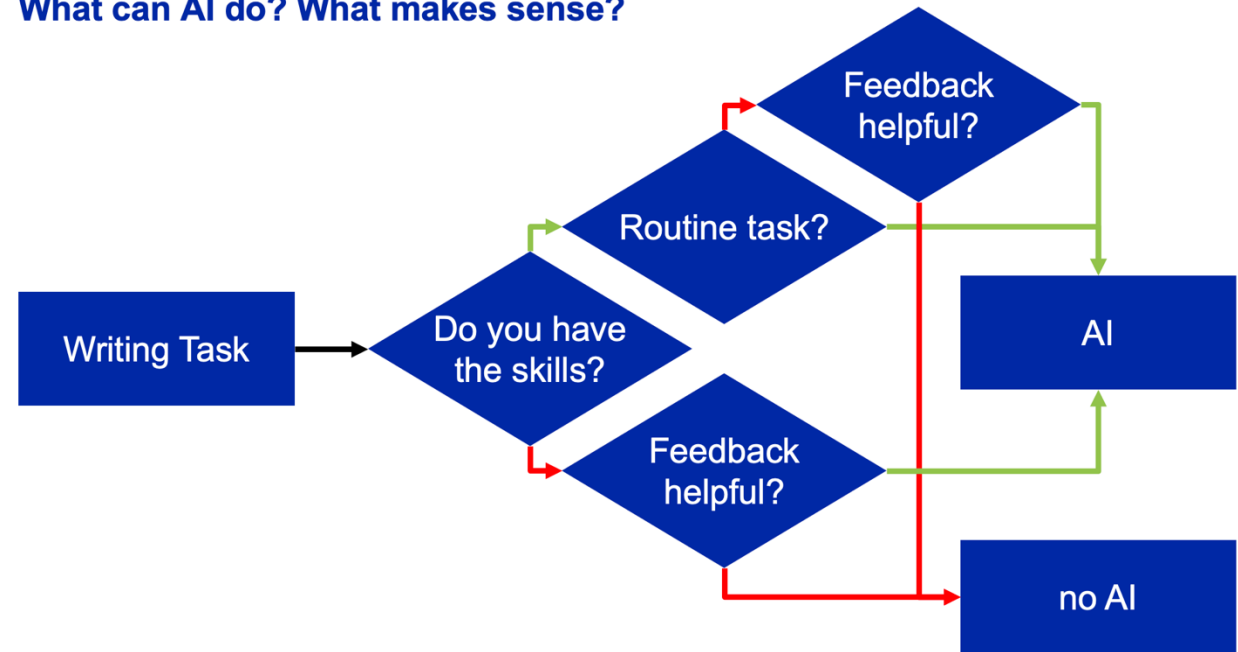


- Is it **allowed** to use AI? What type of AI?
- What **type** is needed for the task?
- How do I **evaluate** the result of the AI support?
- What **declaration** of AI use is necessary / useful?

# Task

- Work together with your neighbor
- Show each other your writing step paper: what are differences and similarities?
- Apply the decision tree (what can AI do, what makes sense) to all steps and discuss, if using AI would make sense or not.
- Would you recommend any adjustments to the decision tree model? Which?
- Please write down your ideas:  
[www.bubenhofer.com/heute/](http://www.bubenhofer.com/heute/) -> Writing with generative AI-Tools (EduPad)

## What can AI do? What makes sense?





# AI statement / transparency

0% machines  
handcrafted with ❤️

100% machines  
blind trust in 🤖



degree of machine support

spell checker

google search

brain storming

summarization

AI writes text

grammar checker

improvement of style

machine translation

paraphrasing

not expected  
not important

highly expected  
important

expectation of an AI statement

# AI statement / transparency: Examples

## General Statement

AI has been used in this text as follows:

- Idea generation and brainstorming with ChatGPT (GPT 4.0)
- Summary and machine translation of research literature with ChatPDF (version March 2024)
- Formulation and structure suggestions with ChatGPT (GPT 4.0)
- Stylistic improvements with ChatGPT (GPT 4.0)

All text parts created by AI have been checked by me, the author of the text. I take full responsibility for the text.

**Specific statements, e.g. via footnotes** (also in combination with a general statement)

<sup>1</sup> The following prompt has been used to get a proposal for structuring the following section: [prompt]

→ check what is expected in your case!

# Steps to write a seminar paper or thesis

- Clarify what is required
- Choose a topic
- Familiarize yourself and carry out initial research
- Narrow down the topic
- Determine the question
- Make a writing plan
- Clarify terms
- Structuring
- Create rough draft
- Revise content
- Linguistic revision
- Obtain feedback
- Creating a bibliography
- Design layout
- Proofreading
- Final feedback

# Steps to write a seminar paper or thesis

| Task                                                | AI support                                                                                                                                  |
|-----------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| Clarify what is required                            |                                                                                                                                             |
| Choose a topic                                      | <b>idea generation:</b> <i>what research could be done about...</i><br><b>But: Most important goal in research! AI support a good idea?</b> |
| Familiarize yourself and carry out initial research | <b>research support:</b> specialized tools, first orientation                                                                               |
| Narrow down the topic                               | <b>idea generation:</b> <i>how could I focus research on...</i>                                                                             |
| Determine the question                              | <b>idea generation:</b> <i>what is the most interesting question?</i>                                                                       |
| Make a writing plan                                 | <b>structure support:</b> <i>how should I proceed?</i>                                                                                      |
| Clarify terms                                       | <b>research support:</b> <i>what are the common definitions of...?</i>                                                                      |
| Structuring                                         | <b>structure support:</b> <i>I want to do the following: [] How should I proceed?</i>                                                       |

# Steps to write a seminar paper or thesis

| Task                    | AI support                                                                                                          |
|-------------------------|---------------------------------------------------------------------------------------------------------------------|
| Create rough draft      | <b>writing support:</b> sketching ideas, elaborate basic argumentation                                              |
| Revise content          | <b>writing support:</b> <i>give me feedback on...</i>                                                               |
| Linguistic revision     | <b>writing support:</b> grammar check, style etc.                                                                   |
| Obtain feedback         | <b>writing support:</b> <i>give me feedback on...</i>                                                               |
| Creating a bibliography | <b>writing support:</b> Tools like Zotero etc.                                                                      |
| Design layout           |                                                                                                                     |
| Proofreading            | <b>writing support:</b> grammar check, style etc.                                                                   |
| Final feedback          | <b>interpretation support:</b> <i>what is meant by... How could I improve my text given the following feedback?</i> |