



Practice Paper

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PRACTICE REFLECTIONS WITHIN A WORKSHOP: SUPERVISING STUDENTS' SCIENTIFIC READING IN THESIS WRITING IN TIMES OF ARTIFICIAL INTELLIGENCE

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ABSTRACT

To reflectively supervise students in final theses along the research process is very much under pressure in the age of artificial intelligence (AI). Being inspired by TL;DRs (abbreviation for «too long; didn't read», automatically generated hyper-short paper summaries), we emphasize in this article on the rather unattentive aspect of reading competences within the intertwined reading – writing – researching – critical thinking approach. We asked: “How can academics support students' reading competences when supervising them in their final theses in the age of AI?” Thus, we encouraged reflection in a workshop for 17 supervisors by using (1) a self-designed, survey consisting of three parts: reflection, exercise and transfer, and (2) a peer exchange. Supervisors' reflections showed that they read scientific articles with joy, less time and rely on traditional reading strategies rather than using AI tools for reading. Being unaware of TL;DRs first, an exercise on writing and generating a hyper-short summary using a university's HAWKI-based LLM led them to evaluate the text quality to be both promising and risky. This resulted in assessing their training of competences to be multifaceted. Together, they updated their supervision guidelines considering multiple deskilling risks and various competence development potentials for students when using AI or not. Finally, we argue that such practical reflections and peer discussions raise supervisors' awareness for responsible guidance of students in their final theses (best earlier within the curriculum) to strengthen their critical and AI literacy in an AI-enriched learning environment.

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1 INTRODUCTION

In final theses, it is key that students are supervised by competent academics using salient practices (Shanahan et al., 2016) anything but reflected (Thompson, 2022) especially in times of artificial intelligence (AI). At this stage, students are expected to be able to work (partially) independent(ly) on a research question along a research process (Huber, 2009) using technology responsibly. Throughout the curriculum, it is best that students develop *Critical Literacy* in an integrated reading-writing-researching-critical thinking approach (Appotova & Horning, 2023). This involves *scientific reading competences* meaning to be able to understand and reflect on texts in a comprehensive sense. Specifically, this includes (1) understanding their meaning in a detailed and structured way, (2) being able to critically reflect on their quality and argumentation, (3) categorising them in the relevant academic discourse, (4) assessing the relevance of the text related to one's own research questions and (5) making justified decisions on whether to use information or not (ibid., Wolter et al., 2020, Philipp, 2024).

Unfortunately, for decades and throughout disciplines, it has widely been experienced by lecturers that students often do not fully or closely read texts and in turn lack in-depth scientific reading skills (Appotova & Horning, 2023). Complexity increases due to multi-dimensional aspects: (1) problematic assumptions, like the belief that students can already read scientifically upon entering their study programs; (2) a fragmented implementation of critical literacy approaches throughout study programs and (3) a not fully developed critical literacy skill set of instructors, following a lack of skills on how to enhance students reading competences (ibid.). On top of that, AI stresses this weakness enormously. While AI tools are widely introduced as reading, writing, and researching assistance (e.g. KI-Campus, 2025), warnings on individual and societal deskilling when relying on AI tools in higher education were expressed (e.g. Reinmann, 2023) and curricular approaches on dealing with AI are just growing (Tillmanns et al, 2025).

At the outset of research, when students familiarize with literature of the field and identify relevant literature, AI-based search tools come into play. Highlighting one, Semantic Scholar is a large search engine that incorporated automatically generated hyper-short, single-sentence paper summaries called TL;DR (abbreviation for “too long; didn’t read”) on top of abstracts for Millions of research articles in 2020. They advertise that “[...] parsing a long list of papers from various sources by reading paper abstracts is time-consuming. TL;DRs help users make quick informed decisions about which papers are relevant, and where to invest the time in further reading.” (Semantic Scholar, 2025). Chou (2025) argues that “TL;DR” stands for a shift in how we consume nowadays information caused by a collective thirst for quick takeaways. The author illustrates both potentials (e.g. assessability, time saving, better understanding, role in decision making) and risks (oversimplification & loss of nuance, dangers of (contextual) misunderstanding, misinformation, accuracy) in using TL;DRs.

Importantly, in the Reading-Writing-Researching-Critical Thinking approach, reading seems to be a rather unattentive and underinvestigated aspect, especially when it comes to reflections on competences and practices related to the supervision of students' final theses and to specific AI functionalities like hyper-short, single-sentence paper summaries (abbreviated here as SSPS). Our contribution emphasises on supervisors' reflection on guiding students' scientific reading competences in final theses in the age of AI. Hence, we ask: How can academics support students' reading competences when supervising them in their final theses

in the age of AI? To address this question, we describe the context and practical reflection (chapter 2). Then, we highlight supervisors' reflection on their own practice related to reading of scientific articles and their AI usage (chapter 3.1), their reflection on their SSPS exercise using one AI tool (chapter 3.2), and their supervision practices along with potential competence rise and loss (chapter 3.3, 3.4). Finally, we conclude our findings and share ideas for the future (chapter 4).

2 CONTEXT AND PRACTICAL REFLECTION

This study took place at Hamburg University of Technology, characterized among others by having implemented a strong research-based learning approach in courses (Bulmann et al., 2020), offers a flexible teaching training program (Bulmann & Podleschny, 2023), has developed guidelines for AI in teaching and learning (Baumhauer et al., 2024), and provides access to a HAWKI-based Large Language Model (LLM). In the beginning of 2025, a specialized workshop on "Accompanying students as co-researchers in final theses" has been conducted there for 17 mid-level academics (undertaking their PhD, having teaching duties in STEM and having different prior expertise in supervising students in their final theses). The workshop aimed at participants being able to discuss specific topics in supervising theses based on the participants' own reflections. The workshop has been designed as flipped classroom: Before the participants enter the classroom to discuss various topics (4.5 hours), they worked individually in self-study time (1.5 hours) on specific topics (one voluntary and one obligatory topic).

The individual reflection on dealing with AI in supervising students' final theses (obligatory topic for all) was encouraged by using a self-designed questionnaire to be anonymously responded. The survey design based on the idea of the intertwined connection of reading, writing, researching, and critically reflecting and was inspired by TL;DRs. On the one hand, the survey contained closed questions to be answered (mostly) on a 4-point scale, which then were analysed using descriptive statistics. On the other hand, the survey contained free text questions, which were categorized by content analyses. Importantly, this reflection via survey included three parts: (1) supervisors' reflection on their own reading practices, (2) an exercise to write and generate a SSPS (using the university's HAWKI-based LLM) and evaluate it as well as (3) supervisors' reflection of their guiding practice related to students' scientific reading with and without AI tools. 17 participants responded in this survey (see results sections 3 introduction, 3.1, 3.2, 3.3). Based on that reflection on AI, all participants discussed in the classroom, first the rise and fall of reading competences with/ without AI (conducted in pairs), and second collected ideas on Do's and Don'ts for supporting students' reading competences in the age of AI when supervising students' final theses (conducted in a World-Café) (see results section 3.4).

3 RESULTS AND INSIGHTS

The results of the survey show that on average, supervisors here use AI tools for activities related to writing, revising and translating texts or publications on a regular basis. Compared to that, AI tools are rarely (if at all) used for activities related to literature research and analysis, data analysis and visualisation, results interpretation and gathering feedback, with lowest values for reading, data collection and project management. However, in some items, the standard deviation is rather high, e.g. for literature search or reading. Overall, this indicates that supervisors' usages of AI tools along the research process emphasises on writing rather than on literature

search or reading, while their use frequency varies among individuals. Only two supervisors use AI tools in literature research, analysis and reading articles as standard in day-to-day research.

3.1 Supervisors' reflection on their reading of scientific articles

First, supervisors were asked to respond on their attitude and time spent for reading scientific literature. Most supervisors agree on enjoying reading scientific articles. However, they disagree on having enough time to spend on reading scientific articles. Additionally, most of them agree on suffering an information overload.

Supervisors' reading practices of scientific articles

Being asked about their reading practices of scientific articles most supervisors describe orientational reading strategies, like scanning or skimming. Often, they first read the abstract and based on what they have read decide on how to continue. After reading the abstract they often continue skimming the introduction and results section, and sometimes the discussion. Also, they skim visual data like figures and tables as they often summarize essential findings. While many supervisors seem to apply these global reading strategies to direct their time and attention to what is most relevant, very few tend to read the text as a whole in order to get deep knowledge of how to organise a paper and to not miss any details. Additionally, some supervisors explicitly describe defining a concrete purpose of reading before starting and that their reading practice depends on their own progress in the research process.

Supervisors' knowledge of reading strategies

Most supervisors seem to be aware of reading strategies and to have explicit knowledge about those strategies. They name, for example, global strategies like "orientational reading", "scanning", "reading across", "selective reading" resp. "skipping" as well as strategies for a closer reading, like "deep reading", "intensive reading" or the in-depth "SQ3R method" (Survey-Question-Read-Recite-Review).

Supervisors' usage of AI for their reading

Being asked about their usage of AI when reading scientific papers, supervisors stated to rather not or rarely use AI for reading, while only two supervisors responded that they used AI in their reading as a standard, as shown in Figure 1.

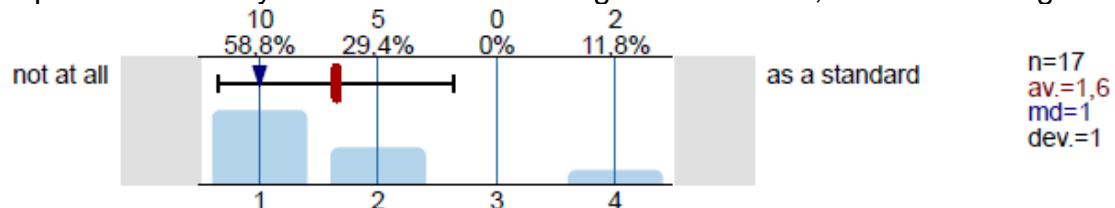


Fig. 1 Survey responses on "I use AI for reading" (1: not at all, 2: rarely, 3: regularly, 4: as a standard, n=number of respondents, av=arithmetic mean, md=median, dev=standard deviation)

If supervisors use AI in their reading practice, they primarily do so to clarify questions or to translate unclear content of the paper. A few supervisors use AI for summarizing – however primarily for website content and other texts rather than for scientific papers. One supervisor reported to use "chat with pdf" functionalities to get a deeper understanding of the content. Overall, our findings indicate that the supervisors themselves enjoy reading scientific articles but have limited time and face information overload. Applying their knowledge of reading strategies, they start by reading abstracts, which is key, and barely utilize AI tools. On the one hand, this

underpins the situation why SSPS functionalities have been developed and implemented in the first place (see TL;DR of Sematic Scholar) and aligns with some potentials seen in SSPS (see Chou, 2024), but contradicts on the other hand the actual reading practices being foremost traditional, leaving out AI tools.

3.2 Supervisors' reflection of the SSPS exercise

Specifically, being asked about their recent experience with SSPSs, most supervisors reported to barely, if at all read SSPSs in the context of research. Only one person stated to read SSPSs regularly and three persons on a standard basis. Interestingly, their position differed on the question whether automatically generated SSPSs can help researchers decide which articles to put on a reading list. Again, this might be related to the importance the abstract plays in their reading practice and also the presumed potential of SSPSs for making decisions on further readings as highlighted by Sematic Scholar (2025) and Chou (2024). Additionally, most supervisors stated not to write SSPSs themselves nor generate SSPSs using AI in the context of their research. This leads us to the assumption that SSPSs are to date less important to the supervisors, respectively, they did not experience SSPS (too much) until being faced with an assignment in this workshop reflection.

Supervisors' evaluation of self-written vs. AI-generated SSPS

Comparing the AI-generated SSPS with the self-written SSPS one respondent stated: "AI-generated SSPS accurately reflects the original abstracts' essential points, maintaining the core findings and potential applications while offering a brief overview suitable for readers seeking a quick understanding of the study's outcome and significance." However, the supervisors' evaluation of the AI-generated SSPS compared to their self-written SSPS draws a very contradictory picture in various core aspects: One supervisor found that the generated SSPS matched more with the state-of-the-art, while two others missing the overarching view of the context. Importantly, some supervisors argued that apparently in the generated SSPS, the focus of the work was "misunderstood" or described as facts instead of try outs or even entail false descriptions that could lead to hasty or misleading conclusions. Some supervisors described the generated SSPS to contain more details, appealing smoother and more understandable, others reported on a vague, less informative generated text with "weird" terminology. This strongly points out that – only in a sum over all individuals – potentials, but also serious risks of generated SSPSs have been experienced here as described for TL;DRs by Chou (2024).

Supervisors' reflection on their competence training in this SSPS exercise

Supervisors reflected that they trained various competences by writing a SSPS themselves: Selection and prioritization of key aspects of the abstract or paper as well as text reduction skills. This goes along with a specific language style (like short, clear-structured sentences, precise choice of words) and to adopt the readers' perspective. Additionally, they listed here also creativity, memory training, concentration and critical synthesis skills. However, "First and foremost, it's important to thoroughly understand the content", as one respondent summarized. Being asked to reflect on their exercise to generate a SSPS, they highlighted various skills to be trained: Getting to know the university's HAWKI-based LLM, increasing prompting skills (like incorporating the target group and context), critical reading, analysis and evaluation skills. They also underlined to have reflected their own writing skills while comparing with the generated SSPS (like simplifying technical

terms, using action-oriented phrasing, writing a concise sentence and avoid unnecessary specifics) to make the SSPS more appealing, less overwhelming for readers and thus to make it more accessible for a wide range of readers. Summarizing this short exercise, supervisors experienced multifaceted competences to be enhanced that relate to writing, reading and AI literacy and beyond.

3.3 Supervisors' reflections on their practices of guiding students' final theses

Supervisors' recent practices

Supervisors' practices of dealing with the topic of AI in the process of supervision very much differ, as shown in Figure 2: Two supervisors address the topic as a standard to all of their students when supervising final theses, however, many do not at all. Two supervisors address the topic occasionally to individual students and four supervisors occasionally to all students.

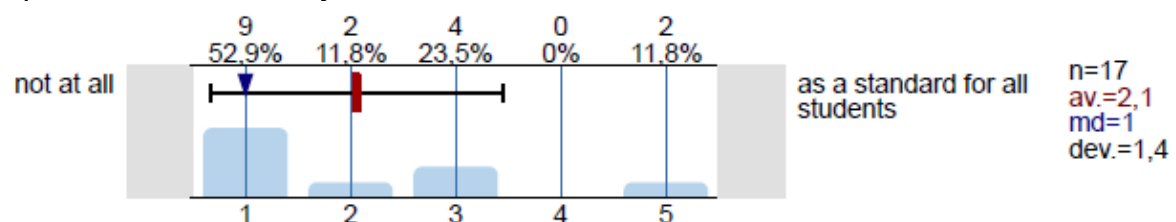


Figure 2: Survey responses on "I already address the use of AI by students in the supervision of theses." (1: not at all, 2: occasionally for some students, 3: occasionally for all students, 4: as a standard for individual students, 5: as a standard for all students, n=number of respondents, av=arithmetic mean, md=median, dev=standard deviation)

If supervisors address the topic of AI, they usually do so in face-to-face meetings, discussing advantages, potentials and risks of AI use, like negative effects on competences and creativity. One supervisor stated to encourage students to use AI tools in the process of thesis writing (e.g. university's HAWKI-based LLM, ChatGPT, deepWrite, Scite.AI), but also emphasized the importance of reflecting on AI use and of guiding students in this regard (e.g. discussing limitations like hallucinations in personal meetings and emphasizing the correct documentation). With regard to good scientific practice, one supervisor referred to the University's Guidelines on AI usage. Another supervisor explained that they elaborated on when to use AI in the writing process together with the students. Further, some supervisors shared their personal experiences with the use of AI tools with their students, e.g. recommendation to also read original paper when generating a literature review. One supervisor shared Do's and Don'ts: AI use possible for language style, grammar, and spell check, but not for content creation. Interestingly, here the data shows different attitudes of supervisors. While many supervisors rather try to prevent students from uncritical and ingenuous use of AI tools, one supervisor prioritizes understanding methods of the literature. The person stated that for reading papers, the students could use whatever they wanted to - as long as they understood the methods behind. Summarizing, the supervisors have either neglected or minimally addressed students' use of AI in their final theses. But when they do so, they focus on discussing technical aspects, potential benefits, risks, transparency, hint to the university's guidelines and elaborate AI usage together with students.

Supervisors' attempts for future practices

Supervisors have been asked about their future practices on students scientific reading skills with regard to AI usage. The common essence among the respondents

is “Be critical”. Supervisors emphasized to support students to use AI tools critically; they want to enhance students’ analytical and critical thinking to question and evaluate AI output. Despite the use of AI (e.g. automated summaries), students should be able to develop a deeper understanding of the text. Hence, supervisors want to promote students’ ability to independently and thoroughly read scientific papers. AI is rather seen as an assistance but does not do the thinking for you. Some supervisors recommended that AI could be used for finding literature, however, that students needed to be aware of incorrect summaries of content. Others stated that AI tools could be useful to summarize results, especially from a large collection of papers, however, it was strictly necessary to check the references critically. Understanding AI tools and using them in a targeted manner seems to be very important to the supervisors. In an essence, they aim to support the development of critical thinking, evaluation of AI outputs, enhance knowledge of AI applications, and foster a deeper understanding of scientific literature.

3.4 Supervisors’ joined reflections on competence-related guiding practices

Gained or lost reading competences when using or not using AI tools

As a first step in the presence workshop, supervisors collected in pairs students’ competences that they presumed to be potentially gained or loosed when using or not using AI for reading within final theses. Supervisors anticipated both enhanced competence development and potential deskilling in areas such as reading literacy, writing skills, research abilities, critical thinking, and AI literacy, depending on the use or non-use of AI in these contexts, as shown in Table 1. Importantly, they anticipated especially deskilling in reading competences when using AI tools that are addressed in traditional reading strategies (compare sections (2) and (3)) as well as missing chances to develop AI literacy when just relying on traditional reading strategies (section (4)). In turn, they expect enhanced competence development when using both traditional reading strategies as well as AI tools which strongly indicates that a combined usage might be promising. Notably, such enhanced competence development is not only important to promote a new generation of researchers/ academics but also to face the urgent matter of deskilling, especially since final theses are the last possibility to foster those competences.

Table 1: Reading competences gained or loosed when using or not using AI tools discussed by supervisors in pairs (presence workshop)

Compe- tences	Using AI for reading	Not using AI for reading
Increased	(1) AI literacy (e.g. prompting, AI tool application), simplification skills, critical thinking (e.g. critical reflection, skepticism towards AI content) and efficiency (pace)	(2) Patience, text comprehension (e.g. ability to make interconnections, deep understanding, learn technical terms), reading skills (e.g. reading techniques), writing competences (recognising terminology, conventions, writing styles)
Decreased	(3) Critical thinking (e.g. critical reading, thinking on methods, results, details, reflection/ evaluation on output), reading competences (focus on something, read fast, read and comprehend long academic texts, select appropriate literature, understand connections and the broader context), furthermore academic writing competences	(4) AI literacy (e.g. prompting skills, AI tool application), critical reflection as well as text comprehension (uncertainties, ambiguity and deep understanding)

Supervisors' collected Do's and Don'ts to facilitate reading competences

As the second step within the presence workshop, supervisors collected via World-Cafe "Good" and "Bad" Practices in accompanying students in final theses towards advanced reading in times of AI (see Table 2). Those relate to appropriate attitudes, knowledge, skills and purposes of AI usage. This may be suitable as a short-list of clear recommended Do's and Don'ts that supervisors can discuss with students.

Table 2: Do's and don'ts for using AI for reading in final theses, collected by supervisors (presence workshop)

Category	Good Practices (Do's)	Bad Practices (Don'ts)
Attitude	be careful, validate yourself, use AI consciously	trust everything; completely ignore AI usage, advances, capabilities and limits
Knowledge and Skills	get yourself informed, acquire prompting skills, try it to make own experiences	neglect detailed reading by yourself, miss out verification, stay up-to-date
AI usage	as starting point for literature overview, to simplify new topics, only when needed	use AI as the one and only tool, ignore transparency

4 CONCLUSIONS AND IMPLICATIONS

Semantic Scholars' TL;DRs inspired us to investigate the recently quite unattentive question on 'How can academics support students' reading competences when supervising them in their final theses in the age of AI?' Therefore, we conducted a pedagogical workshop that combined an individual reflection with a questionnaire in a self-study time as well as discussions in presence. Our findings, although limited, are partly consistent with the introduced literature, but partly contradict it. We found in the survey that the supervisors enjoy reading scientific articles but have limited time, leading them to rely on reading strategies, start reading abstracts, but barely use AI tools here. Before the workshop unit, they are largely unaware of SSPS and find them mainly inadequate to retract for assessing article relevance. After the exercise on writing, generating and evaluating a SSPS based on their own abstracts, the supervisors have observed both promising and risky quality in the SSPSs and stated to have trained different competences in regard to reading and AI literacy. After fruitful discussions in the workshop, they have crafted practicable guidelines for an appropriate use of AI tools in supervising students' final theses, anticipating both enhanced competence development and potential deskilling related to reading and AI literacy as well as research competences.

Reflecting our methodology, we highlight that the supervisors appreciated to take time to reflect on AI, get to know the university's HAWKI-based LLM and experienced a combination of reflection, exercise and transfer within the survey, but will be improved. We conclude that this three-fold individual reflection via survey leads to in-depths insights and is a prerequisite for peer discussions and in turn to derive guidelines of how supervisors can support students' reading competences in the age of AI. Therefore, we recommend that current formats of teacher training in higher education addressing topics in thesis supervision comprise time slots for individual reflection and practical exploration, best with a university's AI tool. In the future, the exercise on SSPSs can be exchanged by other AI tools or functionalities promising to ease scientific reading (like "chat with .pdf") or other research activities. Also, this three-fold reflection and discussion methods will be offered to specify the university's guidelines on AI for supervision practices in single institutes. Finally, we argue that it is key nowadays to develop critical and AI literacy along the curriculum in learning activities that intertwine reading, writing, researching and critical thinking both with and without AI tools guided by reflected academics.

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