

Experiencing AI Together: A Design-Based Research Approach to Collaborative Prompting in Education

Benedikt **Brünner** Michael Nestler Martin Ebner

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Benedikt Brünner,
Michael Nestler,
Martin Ebner
ed-tech.at



Outline

- 1 Background
- 2 Research Question
- 3 Platform Overview
- 4 Methodology
- 5 Findings
- 6 Discussion
- 7 Limitations & Outlook

Background

- genAI has rapidly entered everyday education (Nagler et al., 2025)
 - summarise, explain, brainstorm, draft, revise
- Prompting: a 21st century skill (Federiakin et al., 2024)
 - reflective & iterative practice
- Commercial tools
 - data privacy & ethical concerns
 - open-source & digital sovereignty (Schön & Ebner, 2025)

Motivation

- Much AI learning stays hidden in *private chats*
- No simple rating of a “good prompt”
 - small changes in wording, context, examples → different output
 - more context helps, but no guarantee
 - especially with smaller in-house LLMs
- AI literacy $\neq$ prompt formulas
 - compare prompts, observe revision, discuss outputs

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Research Question

- **RQ:** How can AI be experienced collaboratively in education while preserving learner control over what becomes visible?

Aim of this Work: `collab.prompting.school`

- Builds on prior work
 - guided prompt engineering (Brünner et al., 2026)
 - collaborative teacher settings (Brünner et al., 2025)
- Experience AI *collaboratively* in education
- Central tension
 - collaboration needs visibility
 - learners may not want to disclose their AI history

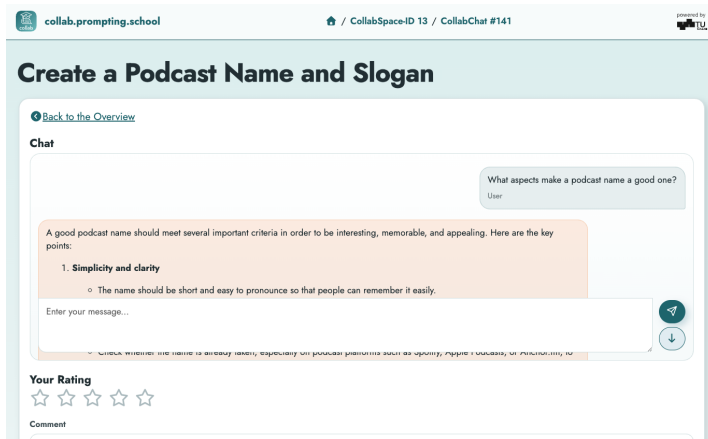
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collab.prompting.school

- Open source: <https://github.com/ed-tech-at/collab-prompting-schule>
- Teacher prepares task → shared space
- Any /chat/completions API
 - here: on-premise Ministral 3 14B (Mistral AI, 2025)
 - served via LLMduckt (Lehr- und Lerntechnologien, TU Graz, 2026)
- **Release control:** chats are private by default
 - prompt privately → rate & comment → chat released

Interface: Private Chat, Rating & Comment



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Design-Based Research & RETURN

- DBR (Reimann, 2011)
 - iterative design cycles
 - authentic learning contexts
- RETURN Manifesto (Brünner, 2026)
 - short feedback loops, real users
 - learner experience as design knowledge
- Baseline surveys
 - pre-service teachers ($n = 20$)
 - in-service teachers ($n = 23\text{--}31$)
- Four settings (S1–S4)
 - own task & system prompt
 - 1–5 star rating + comment

Four DBR Settings

Setting	Date	Context	Task
S1 – Learning goal	2026-03-11	Pre-service BA	one learning goal
S2 – Worksheet	2026-03-23	Pre-service MA	data storage, passwords
S3 – Institution slogan	2026-04-14	Higher ed. teaching	slogan for institution
S4 – Podcast	2026-05-11	In-service	pupils' podcast name & slogan

Outline

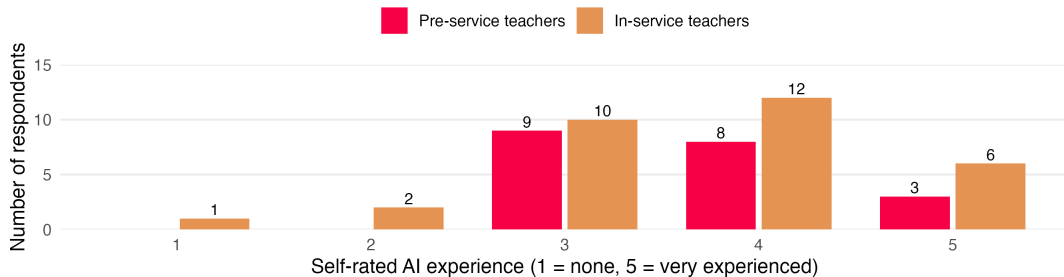
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Baseline: AI Experience

- Self-rated AI experience in upper half of scale: pre-service $\bar{x} = 3.70$ ($n = 20$), in-service $\bar{x} = 3.65$ ($n = 31$)

Baseline self-rated AI experience by cohort

Pre-service teachers ($n=20$): mean = 3.70 | In-service teachers ($n=31$): mean = 3.65



Baseline: Sharing the Private Prompt History?

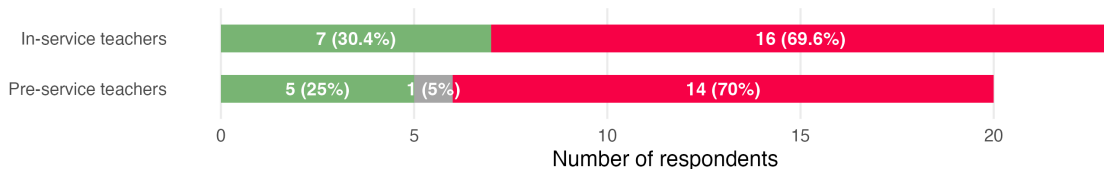
- Majority: **no** ($\approx 70\%$ in each cohort)
 - pre-service: 14 of 20
 - in-service: 16 of 23
- Reasons beyond data protection
 - private reflection, personal data, unfinished thoughts
 - *“No, because there are also dumb questions in there.”*

Sharing the Private Prompt History

Would you share your entire private AI prompt history?

Pre-service teachers, n = 20 | In-service teachers, n = 23

 No  Conditional  Yes



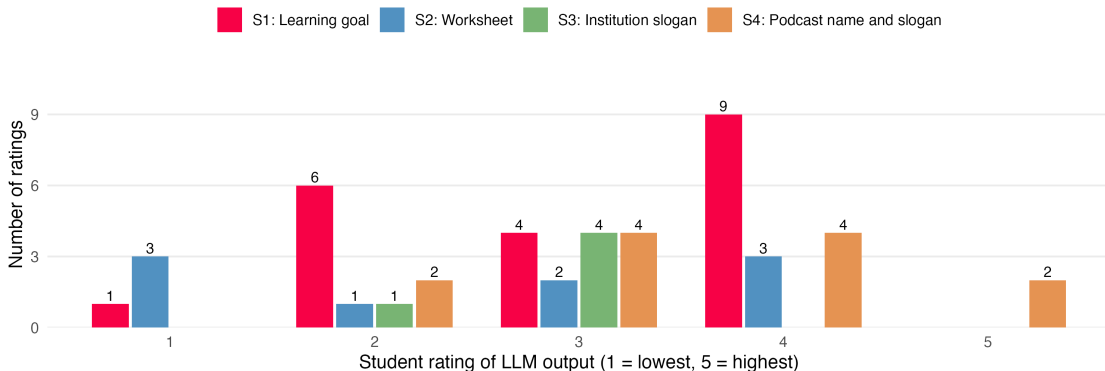
Ratings of AI Output

- Ministral 14B output: useful, but not finished
- Ratings remained moderate across S1–S4
 - S1 $n = 20$, S2 $n = 9$, S3 $n = 5$, S4 $n = 12$
- Perceived speed of on-premise LLM: $\bar{x} = 4.37$ ($n = 19$, in-service)
 - throughput not the main constraint
 - but: revising output into something educationally useful

Ratings Across the Four Settings

Distribution of student ratings across the four DBR settings

S1 n=20 | S2 n=9 | S3 n=5 | S4 n=12



Qualitative Feedback S1–S4

- S1 – Learning goal
 - ⊕ ideas & structure
 - ⊖ language drift
 - ➡ system prompt revised
- S2 – Worksheet
 - ⊖ spelling errors
- S3 – Institution slogan
 - small changes in prompt → big differences
- S4 – Podcast
 - ⊕ higher mean rating
 - ➡ context helps, no guarantee
 - “[...] sufficient as long as the prompt is good.”

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Interpretation & Implications

- Collaborative prompting as **revision practice**
 - not the search for one good prompt
- Release control as **pedagogical condition**
- What pupils should submit (according to in-service teachers)
 - reflection 72%, artefact 44%, best prompt 44%, full chat 28%
- Local AI: one deployment choice
 - visible limits → revise & evaluate

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Limitations, Outlook & Conclusion

■ Limitations

- small samples ($n = 5-20$)
- heterogeneous tasks
- self-reported ratings

■ Next DBR cycles

- analyse revision paths
- assess without full disclosure

■ Conclusion

- ⊕ engaged in shared AI tasks
- ⊖ reserved about full history
- ➡ release control
- ➡ make revision visible

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Open Questions



Benedikt Brünner
bruenner@tugraz.at

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