Research Note: AI-Supported Thesis Development: A Practice Report on Implementing Prompt Engineering for Graduate Student Support in an East Asian Studies Program

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Abstract

This practice report details an innovative pedagogical intervention developed to address a persistent challenge in graduate education: supporting students in developing the theoretical framework for their master's theses. In the summer semester 2025, the East Asian Economy and Society (EcoS) program at the University of Vienna created the EcoS Prompt Generator (EPG), a low-barrier tool leveraging artificial intelligence (AI)[1] through optimized prompt engineering. Rather than training AI systems or committing to specific platforms, the project focused on developing individually customized prompt templates that students can use with any AI system of their choice. Early findings suggest improvements in submission quality, greater student autonomy, and more effective use of faculty supervision time. The intervention thoughtfully addresses practical, ethical, and data protection concerns while maintaining rigorous academic standards. This scalable model provides transferable insights for other graduate programs seeking to responsibly integrate AI tools into their thesis supervision processes.

1 Throughout this practice report, we employ the umbrella term "artificial intelligence" or "AI" in a deliberately broad and pragmatic manner, primarily to enhance readability. In most instances, our discussion centers on the use of large language models (LLMs), which, strictly speaking, represent only one subset of AI technologies. Unless otherwise specified, references to AI should therefore be understood as denoting those text based, conversational systems that currently dominate educational and public discourse, while acknowledging that the underlying concept of AI is considerably wider.

Introduction and Context

Graduation rates serve as a key indicator of a graduate program's performance. In our experience, master's theses consistently constitute the main bottleneck in degree completion once all coursework has been finalized. Developing and writing a thesis of at least 35,000 words that adheres to rigorous academic standards poses a considerable challenge for students with limited prior experience in academic writing. We found that the theoretical section, in particular—consisting of a precise and relevant research question, a purposeful literature review, and a cohesive analytical framework to address the research question—represents the primary impediment. This is further compounded by limited faculty resources and supervision capacity, as well as the varied methodological backgrounds of incoming students, as is to be expected in area studies programs, including East Asian Studies.

The MA program in East Asian Economy and Society (EcoS) at the University of Vienna exemplifies these pressures. The program is deliberately small, admitting around 25 students annually, and is supported by a lean core faculty comprising one full professor and one assistant professor, who are also the sole faculty members overseeing master's theses. As of July 2025, the program was supervising over 60 ongoing master's theses, some of which originated as far back as 2019. These theses cover a wide array of topics within contemporary East Asian political economy. Regular internal student surveys have consistently indicated that the thesis—particularly its theoretical development—represents the primary obstacle to degree completion. Many students successfully complete their coursework but struggle with the autonomous research required for thesis writing. This issue also applies to term papers written in seminars, though to a lesser extent. Within this context, expectations for independent, theory driven work converge with limited supervisory resources and a diverse student body, creating a structural dynamic where thesis completion can be protracted even for highly motivated students.

This practice report documents our solution: the systematic integration of AI-supported feedback through optimized and customized prompt engineering. In contrast to approaches involving the training of custom AI models or commitments to specific platforms, our solution emphasizes developing high-quality prompts specifically tailored for the EcoS program, usable with any AI system. This design choice not only ensures operational effectiveness but also addresses technical sustainability, data protection concerns, and institutional flexibility, all while equipping students with transferable skills.

The Challenge: Theoretical Framework Development

Identified Obstacles

Student surveys and faculty observations revealed four critical hurdles in thesis development:

- Formulating appropriate research questions
- Justifying research relevance using appropriate evidence
- Conducting targeted analyses of relevant scholarly literature
- Constructing sound and sufficiently concrete analytical frameworks

Students entering the program typically possess strong data-collection skills but often have limited experience in developing original research frameworks. Their prior training generally focuses on answering predetermined questions using established, and often pre-supplied, approaches, rather than on formulating and structuring their own inquiries. The EcoS student body includes both European and non-European students, resulting in varied educational backgrounds and different expectations regarding academic writing. A core didactic objective of the EcoS master's program is to develop the transferable competence of independently constructing theoretical frameworks, a skill that remains highly relevant across various professional contexts.

Previous Interventions

The program had already invested resources to address these challenges. Its two-year English-language curriculum was restructured to include dedicated research methods courses: two exercise courses supporting the development of term papers and one research seminar to lay the groundwork for students' master's theses. Requirements were made transparent through detailed assessment rubrics and nine component-specific checklists. Ten instructional videos, explaining each stage of theoretical framework development, were produced and made publicly available on YouTube, accumulating over 4,250 views by July 2025.

Despite these efforts, significant room for improvement remained. Individual supervision revealed that while passive engagement with videos offered some utility, it was insufficient for many students to develop the required competencies. Although more intensive direct supervision could remedy this, it would necessitate additional qualified staff—an unfeasible solution due to resource constraints.

The Solution: Prompt Engineering for AI-Supported Feedback

Design Principles

We identified AI as a cost-neutral, continuously available dialogue partner capable of providing concrete feedback on key aspects of students' work. Our intention and guiding principle were to complement and enhance personal supervision rather than replace it. By lowering the barrier for repeated inquiries and improving the quality of materials submitted to supervisors, the intervention aimed to increase supervisory efficiency while strengthening student autonomy. Accordingly, the use of AI remains voluntary, serving as a supplementary resource for students alongside direct supervisor feedback.

Our initial idea of training an AI system with hundreds of structured examples of faculty feedback proved to be suboptimal for several reasons. Most importantly, the AI frequently failed to adequately grasp the underlying reasoning behind the feedback, resulting in inconsistent output and unreliable feedback. Furthermore, platform dependency introduced concerns regarding technological obsolescence, long-term sustainability, and associated costs. Lastly, integrating previous student submissions and faculty feedback presented data protection challenges due to international data storage regulations. Political considerations related to platform ownership further complicated this approach.

Collaborating with students in the summer 2025 course, "Methods in East Asian Studies: The Use of AI for Thesis Development," we determined that developing standardized AI prompts through prompt engineering would be the optimal solution. This method refines queries posed to AI systems, thereby ensuring high-quality, academically sound responses. Crucially, it is platform-agnostic, enabling students to use any preferred AI system—open-source, proprietary, local, or cloud-based. This approach is also sustainable, acknowledging the rapid evolution of large language models and the impracticality of committing to a single model long-term. Ultimately, this design ensures operational effectiveness, addresses technical, legal, and political concerns, and cultivates transferable digital-literacy skills.

Implementation

The project was centered on a dedicated course in the summer semester 2025, taught by Professor Rüdiger Frank with the assistance of Hubert Pawlowski. A guest lecture by an EcoS alumnus, who is involved in AI implementation within the Austrian federal government, enriched the course by offering a practical perspective on real-world opportunities and challenges of AI-integrated work processes.

The EcoS Prompt Generator (EPG)[2], a simple and publicly accessible

2 Accessible with instructions at *https://ecos.univie.ac.at/studies/ecos-students/ecos-prompt-generator, or directly at https://ecos-univie.github.io/ai*

HTML webpage hosted on GitHub, serves as the intervention's centerpiece. Corresponding to the current theoretical development stage of their thesis, students select from four options: (1) Topic and Research Question, (2) Relevance of the Research Question, (3) Literature Review Structure, (4) Literature Review and Analytical Framework. A fifth option allows them to check formal aspects of their submissions to ensure consistency. For each phase, the tool provides optimized prompts that integrate established assessment criteria, checklists, and explanatory materials. For instance, for the development of research topics and the formulation of a corresponding research question, students receive detailed prompts that encode geographic requirements—including the mandate for theses to cover at least two East Asian countries or to address a regional issue—structural criteria, causality considerations, and feasibility parameters.

Crucially, the EPG does not directly interact with AI systems. Instead, it generates prompts for students to copy and paste into their preferred AI platform. This design ensures student control over their data, prevents institutional liability for AI outputs, and maintains platform agnosticism. The tool underwent three development iterations based on systematic user feedback, demonstrating its capacity for continuous improvement.

Results and Initial Experiences

Observed Outcomes

Initial evidence indicates that the intervention is effectively achieving its core objectives. The quality of student submissions has demonstrably improved, with students consistently presenting more thoroughly developed concepts during supervision meetings. Students also report increased confidence in their independent work and appreciate the ability to refine their ideas multiple times before formal submission. Furthermore, the threshold for seeking clarification has decreased, as students more frequently engage with course materials, facilitated by the AI's feedback.

Consequently, faculty supervision has become both more efficient and more valuable. Instead of reiterating foundational concepts, supervisors can now focus on substantive methodological guidance and disciplinary input. The AI effectively acts as an initial filter, identifying obvious problems prior to faculty review. In addition, students demonstrate a stronger understanding of academic standards and assessment criteria through their AI-mediated revisions.

Significantly, faculty supervision can identify AI-generated errors, thereby ensuring the maintenance of academic quality standards. The human supervisor retains final authority, preventing AI limitations from affecting thesis quality. This design operationalizes a central principle: AI functions as a support tool, not a decision-maker.

Student Engagement

Student adoption has been encouraging. Students use the EPG regularly and particularly appreciate the immediate feedback as well as the non-judgmental nature of AI interactions. Several students have reported that iterating with AI helps them articulate ideas more clearly before presenting them to faculty. Platform agnosticism, which allows students to use the AI systems they are most familiar with, further supports uptake.

Moreover, students view prompt engineering as a valuable transferable skill, recognizing its broad relevance and professional development advantages extending beyond thesis writing and academic support. Learning to structure effective prompts improves students' critical thinking regarding their own research, because the process of encoding their questions for AI consumption requires a more systematic reflection on underlying assumptions and research design.

The iterative nature of AI-mediated feedback appears particularly beneficial for students who are not native English speakers. This includes East Asian students writing in a second or third language, as

well as other students for whom English is not a first language. They report that refining their research questions through multiple AI interactions—free from time pressure or the fear of judgment—enhances both their conceptual development and their academic English expression. In this way, the AI functions as a patient interlocutor for both substantive reasoning and language practice.

Impact on Supervision Workflow

Faculty supervision patterns have shifted noticeably. Preliminary meetings now frequently focus on substantive methodological questions rather than basic structural issues. Students arrive with more concrete proposals that have already undergone initial refinement through AI feedback. These advancements enable supervisors to engage at a higher analytical level, providing the kind of disciplinary expertise and nuanced guidance that represents irreplaceable human contribution.

The time savings for faculty, while not yet systematically quantified, appear substantial. Anecdotal evidence suggests a significant reduction in the number of preliminary meetings needed before a research question receives approval. Students self-screen more effectively before requesting formal supervision time. This efficiency gain could potentially enable supervisors to manage larger student cohorts without compromising the quality of supervision.

Importantly, faculty retain full control over academic standards and remain the ultimate approval authority. The EPG explicitly frames AI feedback as a preliminary assessment subject to final faculty judgment. Students are made aware that AI approval does not guarantee faculty approval, although it significantly increases its likelihood given the improved quality of submissions. This hierarchy preserves academic quality while leveraging AI's capacity for immediate, tireless feedback on fundamental compliance criteria.

Transferable Insights for Practice

Key Success Factors

Several design choices seem critical to the intervention's success:

- **Platform Independence:** An agnostic approach to AI systems ensures technical sustainability, addresses data protection concerns, and respects diverse student preferences. Focusing on prompt design rather than AI training creates a more robust and transferable solution.
- **Transparency:** Embedding assessment criteria into prompts clarifies expectations for students, while ensuring AI feedback aligns with faculty standards. This approach transforms implicit evaluation norms into explicit, actionable guidance.
- **Human Oversight:** Retaining faculty as final authority upholds academic standards and allows for the correction of AI errors. The AI functions as a supportive tool for preliminary review rather than an autonomous evaluator—a crucial distinction for academic integrity.
- **Iterative Development:** Systematic user feedback and rapid iteration cycles drove continuous improvements in prompt quality and user experience. Three development iterations within a single semester demonstrate the approach's flexibility.
- **Skill Development Focus:** Framing prompt engineering as a transferable competency adds professional development value that extends beyond immediate thesis support, thereby enhancing student buy-in and delivering long-term benefits.

Scalability and Adaptation

The model demonstrates substantial scalability potential. The EPG infrastructure requires minimal technical resources—essentially a simple web interface for prompt delivery. While initial faculty time is necessary for prompt development, this investment yields reusable assets that can be refined incrementally. Once operational, the system demands minimal

maintenance, with only periodic updates needed to align with evolving AI capabilities and student needs.

Adapting this framework to other disciplines appears straightforward. The core principle of encoding disciplinary standards and assessment criteria within AI prompts is broadly applicable. While EcoS-specific criteria include regional coverage requirements and familiarity with East Asian sources, other area studies programs could easily tailor the framework to their particular geographic or thematic focuses. Although discipline-specific content would necessitate customization, the underlying technical infrastructure and pedagogical approach are directly transferable. The project has been made available across the University of Vienna to facilitate such adaptations.

Addressing Concerns

The intervention directly addresses common concerns about the use of AI in education. Mandatory faculty oversight preserves academic integrity, while platform agnosticism ensures technical sustainability. Data protection is handled by keeping information under student control and avoiding institutional AI contracts. Moreover, this approach enhances equity by providing all students access to the same high-quality feedback, regardless of their personal resources or their willingness and comfort in initiating faculty contact.

The approach also explicitly acknowledges AI limitations. The AI output generated through the prompts frames the feedback as a preliminary assessment rather than a definitive judgment, reminding students of the potential shortcomings of AI and encouraging them to question AI-generated suggestions. This method cultivates a healthy skepticism while leveraging the AI's utility. Specific disclaimers warn students that AI assessments can be inconsistent and may overlook important nuances requiring human judgment.

The tool's design mitigates concerns about over-reliance on AI. Given that the EPG only provides feedback on students' original submissions rather than generating content, students must develop their initial concepts independently. This design prevents the tool from becoming a substitute for genuine intellectual engagement. Instead, it functions as a mirror, helping students reflect on and clarify their own work.

Implementation Considerations for Other Institutions

Institutions considering similar interventions should attend to several key factors. First, clear learning objectives are essential. Effective prompts embed explicit assessment criteria developed from years of pedagogical experience; without such criteria, prompt quality suffers. Programs should begin by defining the standards for high-quality work in their specific context before attempting to integrate them into prompts.

Second, faculty buy-in is critical. The intervention's success depends to a considerable extent on the faculty's understanding and endorsement of the embedded criteria. Successful implementation requires collaboration between discipline experts and those proficient in AI applications. Neither group can develop effective prompts alone—disciplinary expertise ensures academic rigor, while AI literacy guarantees technical efficacy.

Third, iteration and feedback cycles are invaluable. The EPG improved significantly through three development rounds based on systematic user input. Programs should plan for continuous refinement rather than expect immediate perfection. Student feedback is particularly important for identifying unclear instructions or unhelpful AI responses. Incorporating mechanisms for improvement into the implementation plan enhances long-term effectiveness.

Fourth, technical simplicity offers distinct advantages. The EPG's straightforward web interface requires minimal maintenance and presents few barriers to adoption. While more sophisticated approaches might offer a marginally better user experience, they would demand greater technical resources and introduce more potential points of failure. For most academic contexts, simple and robust trumps complex and fragile.

Future Directions and Research Opportunities

The initial implementation suggests several productive directions for future development and research. First, a key priority is the continuous refinement of existing components based on accumulated experience. This can be achieved by enhancing each prompt through analysis of student usage patterns, faculty feedback on submission quality, and identification of recurring conceptual gaps. The system's modular design allows for targeted improvements to individual components without disrupting its overall function.

Second, systematic evaluation is needed to substantiate the anecdotal evidence of the tool's effectiveness. A controlled comparison between student cohorts who use the EPG and those who do not could quantify its impacts on submission quality, revision cycles, time to completion, and student confidence. Such evidence would both validate the approach and identify areas for refinement. Additionally, a qualitative analysis of how students integrate AI feedback into their development process would illuminate the mechanisms through which the tool influences learning.

Third, tracking long-term outcomes is essential for assessing whether AI-supported thesis development affects degree completion rates and time-to-degree—the ultimate metrics of program effectiveness. The documented backlog of protracted thesis projects provides baseline data against which to compare future cohorts. If the intervention can demonstrably accelerate completion without compromising quality, the case for broader adoption will be considerably strengthened.

Fourth, investigating the tool's differential effects across student groups could inform crucial equity considerations. Do students with less initial preparation benefit more from AI feedback? Does platform agnosticism genuinely enhance access, or do resource constraints limit some students' AI options? Do non-native speakers experience particular advantages from the associated language practice opportunities? Such analysis can guide future efforts to maximize the intervention's equity-enhancing potential.

Fifth, adapting the model for other disciplines and institutional contexts would test its generalizability. While its fundamental principles appear broadly applicable, each field has distinct epistemologies and methodological traditions that define high-quality thesis work. Area studies programs beyond East Asian Studies—such as Latin American, African, or Middle Eastern Studies—face similar challenges in balancing regional expertise with transferable research skills. Documenting how different programs successfully adapt the approach would build a knowledge base to support wider adoption.

Finally, as AI capabilities evolve, prompt engineering best practices will also shift. Maintaining the EPG's effectiveness requires ongoing attention to developments in AI technology and periodic prompt revisions. This maintenance burden appears modest—perhaps requiring a review once per semester—but institutions should plan for sustained engagement rather than a one-time implementation. Building a community of practice among users facing similar challenges could distribute the burden of staying current with technical developments.

Conclusion

This practice report details a pragmatic, ethical, and scalable method for integrating AI support into graduate thesis supervision. By prioritizing prompt engineering over AI training or platform dependencies, the initiative ensures technical sustainability, data protection compliance, and pedagogical effectiveness. Initial findings indicate improvements in student work quality, enhanced supervision efficiency, and valuable skill development.

The model presents several advantages over alternative approaches. Its platform independence guarantees longevity amidst rapid AI advancements. Student data control addresses privacy concerns, while human oversight upholds academic standards. The focus on skill development offers lasting professional value, and low technical

requirements facilitate easy adoption and adaptation.

Future development will focus on refining the five existing prompt components—Topic and Research Question, Relevance of the Research Question, Literature Review Structure, Literature Review and Analytical Framework, and Formal Aspects—based on accumulated experience. It will also systematically evaluate the impact on completion rates and time-to-degree. The project has already proven viable and attracted interest from other programs, highlighting its potential as a blueprint for responsible AI integration in higher education.

The EcoS Prompt Generator demonstrates how educational institutions can leverage AI capabilities while simultaneously addressing legitimate concerns about sustainability, privacy, and academic integrity. Though developed within an East Asian Studies context, its principles are widely applicable to area studies and social science programs facing similar supervision challenges. Rather than viewing AI as a disruptive threat or an uncritical solution, this approach considers it a tool whose effectiveness depends on thoughtful integration into established pedagogical frameworks. As AI technologies continue to evolve, such frameworks—emphasizing human oversight, student agency, and explicit values—provide sustainable paths forward for their educational deployment.

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