Generative AI for Research and Thesis Work

Practical Guidance for Students, Supervisors, and Educational Institutions

MDPI

Jussi S. Jauhiainen

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Basel • Beijing • Wuhan • Barcelona • Belgrade • Novi Sad • Cluj • Manchester

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Abbreviations

AI	Artificial Intelligence
ChatGPT	Chat Generative Pre-trained Transformer
DOI	Digital Object Identifier
FLM	Frugal Language Model
GDPR	General Data Protection Regulation
GenAI	Generative Artificial Intelligence
GPT	Generative Pre-trained Transformer
LLM	Large Language Model
MCP	Model Context Protocol
OECD	Organisation for Economic Co-operation and Development
RAG	Retrieval-Augmented Generation
SLM	Small Language Model
UNESCO	United Nations Educational, Scientific and Cultural Organization

About the Author

Jussi S. Jauhiainen is a Professor at the University of Turku and a Visiting Professor at the University of Tartu, where he also holds an honorary doctorate. His research focuses on the use of generative AI and large language models (LLMs) in research, teaching, and learning, from primary to higher education. He has published dozens of books and reports, including textbooks for schools and universities, as well as hundreds of scientific publications. He has supervised nearly 30 doctoral dissertations, over 150 Master's theses, and numerous Bachelor's theses. His research interests include LLM-supported learning, assessment and feedback, adaptive learning materials, the generation and analysis of synthetic societal data using LLMs, AI agents in academic practices, and the role of generative AI in innovation processes.

Preface

The book builds on my research and experiences in multiple countries on the use of generative artificial intelligence (GenAI) and large language models (LLMs) in education and research. I have observed how these tools have rapidly become embedded in academic practices, particularly following the emergence of ChatGPT. Their use represents a major transformation in learning and research across schools, higher education institutions, and society more broadly.

GenAI is increasingly used in academic tasks. At times, its use is creative and highly effective; at other times, it remains superficial or ethically uncertain. It is often used without clear guidance, which does not always lead to improved quality. Consequently, some researchers approach GenAI with concern, institutions may attempt to restrict its use, and many students are troubled by issues such as environmental costs, fairness, and inequality. However, when used ethically and effectively, GenAI supports learning, creativity, and deeper scholarly insight.

This book aims to help students produce better theses more efficiently through meaningful interaction with GenAI. Initially, I planned to write it as a short, intensive sprint, but this proved too hectic. At the same time, I could not undertake a months-long writing project in the midst of a busy academic life. Instead, I developed this book part-time over several weeks as an example of human–GenAI collaboration. I wrote and structured the manuscript and used ChatGPT (Sol 5.6) and Claude (Fable-5) to provide critical comments. I selected, revised and verified all outputs, checked references against the original sources and accept full responsibility for the final text. No confidential or personal research material was processed through these systems. In this sense, the book itself resembles the kind of thesis process, supported by GenAI, that it describes. Was I the sole author, the "real" author, or even the author at all? I consider myself to be the author. The ideas, direction, decisions, and experiences behind them are mine, as is the responsibility for the final result. I checked every reference against the original source, and all claims and structure are mine. This book explains how such a collaboration with GenAI can take place.

Jussi S. Jauhiainen
Author

Part I: Foundations of Generative AI-Supported Thesis Work

1. Introduction to Generative AI and Thesis Work

Generative artificial intelligence (GenAI) and large language models (LLMs) have rapidly become tools used in schools, universities, research environments, and professional knowledge work. This chapter introduces GenAI and LLMs, explains their relevance for learning, research, and thesis work, and situates them within broader technological and societal developments.

The central argument of this book is that GenAI can support academic work when it is used critically, transparently, and under appropriate human and institutional guidance. It does not remove the need for human critical thinking, responsibility, academic judgement, or ethical conduct. Under the responsibility rule, GenAI may support academic work, but responsibility remains with the student. The student must be able to justify and defend the research question, sources, methodological choices, analysis, interpretation, writing and conclusions, and the final formulation in the thesis, including its defence, regardless of whether GenAI supported the work. This principle is the book's foundational commitment; it is stated here and not restated in every subsequent section.

GenAI refers to technologies that can generate, modify, summarise and structure content such as text, images, code, audio, video, and other forms of information. LLMs are a major group of GenAI systems designed especially for language-based tasks. Most readers encounter them through general-purpose conversational assistants, source-grounded notebook tools, and search-integrated systems. In 2026, these included, for example, ChatGPT, Claude, Gemini, Meta AI, Microsoft Copilot, NotebookLM and Perplexity AI. Their usefulness in academic work depends not only on model capabilities but on the user's knowledge, critical judgement, and institutional context. Section 1.2 explains how these systems work technically; Sections 1.3 and 1.4 address how they fit into thesis work specifically.

GenAI has generated both enthusiasm and concern. Some see it as a tool for improving access to knowledge, efficiency, and creativity. Others worry that it may weaken independent thinking, blur authorship, intensify inequality, or create new risks for academic integrity. Both positions identify real issues. This book starts from the premise that GenAI is neither a miracle solution nor a threat in itself. It is a powerful form of human–machine interaction whose value depends on how, why, and where it is used.

Table 1 introduces key terminology used throughout the book.

Model outputs vary across systems and over time, so students should document significant AI-supported steps where required. These include the tool used, date, task, input type, and how the output was evaluated. Exact reproduction of a GenAI interaction may not be possible, but responsible documentation makes the process reviewable. GenAI should not invent sources, replace reading, determine the research contribution, analyse sensitive data without approval, produce unverified findings, or write sections that the student cannot explain and defend.

Table 1. Key generative AI terminology.

Term	Meaning in This Book
Generative artificial intelligence (GenAI)	AI systems that generate, transform, summarise or structure content such as text, images, code, audio, video or other forms of information.
Large language model (LLM)	A language-based GenAI model trained on large text datasets and used for tasks such as explanation, drafting, summarising, comparison, revision and feedback.
Small language model (SLM)	A smaller and often more resource-efficient language model that may be used for local, task-specific or privacy-sensitive purposes, usually with more limited capacity than large commercial models.
AI agent	An AI-supported system or workflow that can pursue a defined task through several steps, often by using tools, memory, structured instructions or external resources.
Agentic AI	AI systems that display technical goal-directed behaviour across tasks or stages of a process. In this book, the term does not imply human agency, consciousness, moral responsibility or scholarly judgement.
Prompting	The practice of giving instructions to a language model, including the task, context, constraints and expected output. Prompting is an iterative academic skill, not merely a technical command.
Skill-based operation	A reusable workflow or instruction package, configured assistant, project instruction, platform-native skill or institutionally managed workflow for recurring tasks, such as literature review, feedback, revision, source checking or thesis planning.
Model Context Protocol (MCP)	A protocol or connection layer that allows compatible AI applications to interact with approved external tools, files, databases, guidelines or digital resources under defined conditions. Whether access is approved, secure and appropriately governed depends on the implementation.
Responsible GenAI use	Use of GenAI that is transparent, critical, verified, ethically appropriate and aligned with institutional rules and learning objectives.
Academic integrity	The principles and practices that ensure honesty, originality, responsibility, proper source use, transparency and ethical conduct in academic work.

Source: Table by author.

GenAI is developing rapidly, including in its applications to learning, teaching, and research. The specific systems named in this book will inevitably be superseded, and therefore readers should regard the tools named in this book as examples of

particular capabilities, not as recommendations or endorsements. While the research evidence on GenAI will continue to evolve, governance arrangements are likely to remain unusually fluid. Nevertheless, the book makes a set of claims intended to endure: even in the era of GenAI, a thesis must demonstrate competences that the student personally possesses; grounding changes what needs to be verified, rather than eliminating the need for verification; and responsibility cannot be delegated to a system that cannot itself be held accountable.

1.1. Structure and Uses of the Book

The book is grounded in experience in teaching, research, and assessment using GenAI in Finland and internationally, combining conceptual explanation with practical guidance. Where it discusses future developments, these should be understood as possibilities and emerging tendencies. The field is changing rapidly, and many of the effects of GenAI on learning, research, labour markets, and academic institutions remain uncertain. Table 2 sets out the foundational principles for responsible GenAI use in thesis work.

The book's distinctive contribution lies in its integrated and practical orientation. It brings together GenAI-supported learning, supervision, prompting, skill-based operations, MCP, academic writing, assessment, feedback, AI agents, and ethical governance around one specific academic process: the thesis. The book is organised into three parts, followed by six practical appendices.

Part I: Foundations of Generative AI-Supported Thesis Work introduces the main concepts, principles, and thesis framework. Chapter 1 introduces GenAI and explains why it matters for learning, research and thesis work. Chapter 2 examines creativity and learning in the GenAI era, as well as prompting, skill-based operations, and MCP. Chapter 3 presents the three-step thesis model that structures the practical chapters.

Part II: Conducting Thesis Work with Generative AI applies this framework to the process of the thesis. Chapter 4 covers thesis design: topic development, research questions, literature, theory, material, method, and planning. Chapter 5 addresses research and analysis: material collection, organisation, analysis, interpretation, and contribution. Chapter 6 covers the writing and finalisation of the thesis: synthesis, discussion, conclusions, abstract, references, revision, and submission.

Part III: Assessment, Agents, Governance and Ethics with Generative AI addresses wider academic and institutional implications. Chapter 7 examines assessment and feedback with GenAI. Chapter 8 discusses AI agents, agentic AI, and future thesis workflows. Chapter 9 outlines governance, ethics, and responsible GenAI use.

Appendices A–F: Practical Guidelines for Generative AI-Supported Thesis Work provide prompt libraries, skill-based operation templates and MCP-oriented guidance as well as operationalisation of small language models in Appendices A–F. These materials should be adapted to local institutional rules, disciplinary expectations, and ethical requirements.

Table 2. Foundational principles for using generative AI in the thesis.

Principle	Practical Meaning for Thesis Work
Responsibility rule	The student remains responsible for all claims, sources, analysis, interpretations, and methodological choices, as well as the conclusion, final formulation, and wording in the thesis, regardless of whether and how GenAI supported the work.
Transparency	GenAI use should be disclosed according to institutional guidelines, especially when it has influenced planning, analysis, writing, revision, feedback, or assessment.
Verification	All important claims, references, quotations, data interpretations and AI-generated suggestions must be checked against reliable sources, original material, or appropriate methods.
Documentation	Students should keep a systematic record of significant GenAI use, including tools, purposes, prompts or workflows, and verification steps.
Competence	GenAI should support the student's understanding, reasoning and academic development, not merely accelerate text production. A thesis must demonstrate competence, not only fluency.
Data protection	Sensitive, confidential, identifiable or restricted material should not be entered into general-purpose or unapproved AI systems without proper consent and protection. Institutional and research ethics rules must be followed.
Fairness	GenAI use should not create hidden advantages or unequal conditions. Institutions should provide shared guidance, access, and training where possible.
Institutional compliance	Students, supervisors and teachers should follow the rules, policies and disclosure practices of their institution, discipline and degree programme.

Source: Table by author.

The book offers different reading pathways for different audiences:

Students working through the thesis process will find the most direct guidance in Chapters 3–6 and the appendices. Begin with Chapter 3, which sets out the three-step model that structures the whole book, and then read Chapters 4, 5 and 6 alongside the step you are currently in rather than in advance of it. Each of these chapters

closes with a readiness checkpoint and a table of common risks, which are most useful at the point of transition to the next step. The prompt libraries in Appendices A–C correspond to Steps 1–3, and Section 9.4 explains how to disclose GenAI use. Chapters can be read sequentially or consulted by task when formulating a research question, planning methods, analysing material, or revising a draft. If time is short, read Chapter 3 and the appendix for your current step.

Supervisors will find Chapters 3–6 and 9 most relevant. Section 3.6 addresses supervision in the age of GenAI and is the natural starting point; Chapters 4–6 can then be consulted for whichever step a student has reached. Section 2.3 is worth reading early, since it explains what a student is doing when prompting, using a skill or connecting an external tool—a distinction that shapes what questions are worth asking in supervision. The checkpoint and common-risks tables closing Chapters 4–6 provide concrete material for supervision meetings, and a table in Section 1.4 summarises governance implications, and Section 9.4 sets out how to proceed if undisclosed GenAI use is suspected. If time is short, read Section 3.6 and the checkpoint table for your student's current step.

Examiners and teachers should begin with Chapter 7, which covers GenAI-supported assessment and feedback. Section 2.2 should be read before forming any judgement about authorship, as it explains why detection tools cannot establish it and why detector scores misclassify some students systematically. Chapter 6 describes what a completed thesis should demonstrate and is therefore useful as a reference point in assessment. The feedback workflow in Section 7.4 and tables in Chapter 7 support practical use, and Section 9.4 covers procedures where GenAI use is wrongly suspected. If time is short, read Chapter 7 and then Section 2.2.

Institutional and technical users should begin with Chapter 9 on governance, ethics and institutional policy. Chapter 7 addresses assessment governance specifically, Chapter 8 covers AI agents and agentic workflows, and Section 2.3 sets out the three layers—prompting, skill-based operations and connected tools—that institutional policy needs to cover, since rules written only for prompting will not reach the others. Section 9.4 provides disclosure templates and an ethical checklist, and Appendices D–F indicate what can realistically be deployed and supported at an institutional level. If time is short, read Chapter 9.

1.2. From Artificial Intelligence to Generative AI

The effective use of GenAI requires practical skill and critical awareness of how these systems work. GenAI is part of the broader field of artificial intelligence (AI), which has developed over several decades. AI refers to computational systems that can perform tasks associated with human intelligence: pattern recognition, learning, reasoning, problem-solving, and language processing (Figure 1). An algorithm can be understood as a computational procedure designed to perform a task or solve a problem. In practice, users rarely encounter algorithms directly; they encounter their effects within wider data structures, platforms, and computational systems (Dourish, 2016; Maalsen, 2023).

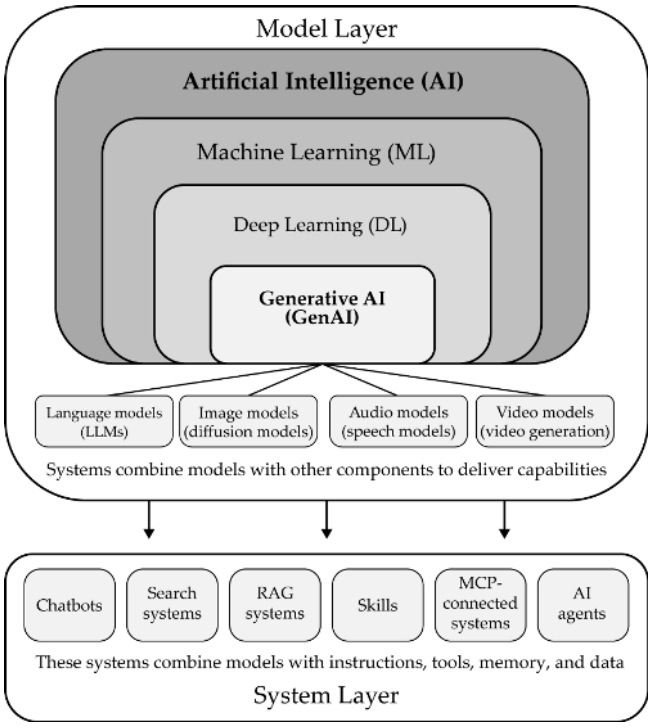

Figure 1. The model-layer nesting represents dominant contemporary implementations rather than every historical or possible form of generative AI. Source: Figure by author.

Machine learning systems identify patterns in data (Figure 1). In supervised learning, models are trained on labelled data and learn by comparing predictions with known outcomes. In unsupervised learning, models identify patterns without predefined answers. In reinforcement learning, systems improve through interaction with an environment, guided by feedback in the form of rewards or penalties. LLMs are highly capable in many language-based tasks, but their behaviour depends on the data, architectures, and training processes used to develop them (Järvilehto, 2025).

These systems are based on machine learning, especially deep learning, where models learn statistical patterns from large datasets using neural network architectures rather than relying on predefined rules (Figure 1).

Large language models (LLMs) are trained on very large text corpora and designed to process and generate language (Figure 1). Model families are developed by a small number of commercial and open-weight providers, and the leading model families change frequently; as of 2026 they included GPT, Gemini, Claude, Command, Llama, Mistral, DeepSeek and Qwen. LLMs process language as tokens, that is, words or word fragments represented numerically, and their parameters encode statistical relationships between tokens.

For thesis work, the technically important point is this: LLMs generate language by predicting statistically likely continuations from context. They do not understand language in the way humans do. This means they can produce incorrect information, fabricated references or misleading interpretations, sometimes called hallucinations

or confabulations, that are presented with the same fluency as accurate content (Bender et al., 2021; Zhang & Zhang, 2025), especially when errors become reinforced during interaction (Laban et al., 2025; J. Huang et al., 2026).

LLMs have been described as 'stochastic parrots' because they generate language based on patterns rather than comprehension (Bender et al., 2021). Model-generated suggestions may also reflect biases and can influence users' judgement when outputs are accepted uncritically (Williams-Ceci et al., 2026). Some users resist algorithmic systems due to perceived or verified limitations in LLMs, a phenomenon known as algorithm aversion (Jussupow et al., 2020). All LLM outputs used in thesis work therefore require critical evaluation and independent verification.

The Transformer architecture, introduced by Vaswani et al. (2017), is an enabling architecture connected to LLMs. It allows models, such as the GPT (Generative Pre-trained Transformer) models used in ChatGPT, to process relationships across an entire text through attention mechanisms, producing coherent and context-sensitive outputs (Figure 1). Other GenAI systems use different approaches: image-generation models, for example, typically rely on diffusion processes in which structured images gradually emerge from noise.

Small language models (SLMs) and frugal language models (FLMs) provide alternatives to large cloud-based systems. SLMs are compact models with fewer parameters that may run locally on personal devices or institutional servers, offering advantages in privacy, cost, and institutional control, though usually with more limited reasoning capacity. They can be useful for task-specific academic work where data sensitivity, reproducibility, and transparency are priorities (Z. Lu et al., 2024; F. Wang et al., 2024). FLMs are designed for contexts where computing infrastructure, funding or connectivity is limited. Their importance may increase in low-resource educational settings where access to commercial models is constrained.

LLMs also operate within substantial material infrastructures. Training and deploying models require significant computational power, energy, water and specialised hardware (d'Orgeval et al., 2026). This connects GenAI to wider questions about environmental impact, economic concentration, global inequalities and the geopolitics of technology (Crawford, 2021; Jauhiainen, 2026a). The choice between cloud-based LLMs and local or smaller models is therefore not only technical but also ethical and institutional.

1.3. Generative AI and the Thesis Process

GenAI is increasingly used across learning, teaching and research tasks in the academic world. Students use it to explore ideas, summarise the literature, clarify concepts and revise writing. Researchers use it to support literature review, argument development, analysis, drafting and editing. Teachers and supervisors use it in course design and delivery, assessment support, feedback provision and administrative communication. GenAI has become part of everyday academic practice.

For thesis work, GenAI enables faster iteration, more interactive feedback and new forms of human–AI collaboration. Recent developments show that GenAI systems can support complex research-related tasks, including idea generation, coding, analysis, figure preparation and manuscript drafting. However, such outputs are not automatically equivalent to high-quality or submission-ready research. They require expert verification, ethical assessment, methodological scrutiny and human

responsibility (Krammer, 2026). The long-term effects of GenAI on human-led research, authorship, peer review and scientific quality remain uncertain.

Used appropriately, GenAI supports student productivity in thesis work: helping discover new ideas, structure thinking, explore alternatives and refine arguments (Connell Pensky et al., 2025; Deng et al., 2025; J. Lee et al., 2025; J. Liu et al., 2025; Salido et al., 2025; Yang et al., 2026). Used uncritically, it may encourage superficial engagement, dependence on generated outputs, and reduced metacognitive effort (Walter, 2024; Fan et al., 2025; Martínez-Peláez et al., 2025; Nie et al., 2025; Pallant et al., 2025). Students must understand what they produce, why they produce it and how it can be justified (OECD, 2026). The central educational question, explored throughout this book, is how GenAI can be integrated into thesis work in ways that strengthen rather than weaken academic practice.

The use of GenAI is shaped by ethical and legal considerations. Issues of data protection, copyright, confidential material and sensitive research data must be addressed before using any AI system. International recommendations, including those by UNESCO, emphasise transparency, equity, privacy, critical thinking and human oversight (Miao & Holmes, 2023; UNESCO, 2024, 2025).

In the European Union, different legal regimes may apply depending on the system, actor, material and use case. The GDPR governs the processing of personal data. The AI Act establishes AI-specific requirements and obligations, including transparency duties in defined circumstances. Copyright questions arise under EU and national copyright law, including the copyright-related obligations applicable to certain general-purpose AI providers. These legal obligations should be distinguished from university requirements concerning disclosure of GenAI use in academic work, which are governed primarily by institutional policies, research-integrity rules and disciplinary practices (European Union, 2024, 2026). Many national and institutional guidelines require disclosure of how GenAI has been used in academic work.

In this book, responsible GenAI use means that the student may use AI to support planning, explanation, feedback, revision and reflection, but not to replace the scholarly work that the thesis is intended to demonstrate: reading, understanding, methodological judgement, analysis, interpretation, contribution and defence.

1.4. Thesis in Three Steps with Generative AI

A thesis is not merely a written product. It is a learning process through which students demonstrate competence in academic thinking: formulating questions, managing uncertainty, evaluating sources, justifying methodological choices, interpreting material and developing conclusions. These competences are relevant not only in academia but also in professional life more broadly.

For many students, the thesis is the most challenging phase of their studies, often completed under time pressure alongside employment, family responsibilities or the transition to working life. In this context, GenAI can provide meaningful support by helping to organise tasks, draft outlines, clarify concepts, identify weaknesses in argumentation, revise language and prepare for supervision meetings. It can provide feedback at moments when the supervisor is not available. It cannot, however, replace the student's responsibility for understanding, analysis and interpretation.

The pace of thesis work varies. Many theses are completed over several months with regular supervision and iterative development. Some Bachelor's-level projects or course-based assignments may proceed more intensively when the topic, material

and method are already clearly defined. Speed, however, should not be confused with quality: the key issue is not how fast the thesis is produced, but whether the student can understand, justify and defend the work.

This book conceptualises the thesis process as a structured progression of three steps (Figure 2). The model provides a practical framework for organising thesis work with GenAI while making it clear where the student's judgement is irreplaceable.

Step 1: Foundation. The student develops the research idea, formulates the research question, aim or problem, engages with the existing literature, clarifies concepts and theory, and designs the research material and method.

Step 2: Analysis, interpretation and contribution. The student finalises the method, works systematically with the selected material, conducts analysis and develops findings, results or interpretations.

Step 3: Synthesis and completion. The student writes, revises and finalises the thesis as a coherent academic work, including discussion, conclusions, abstract, references, final quality assurance and submission.

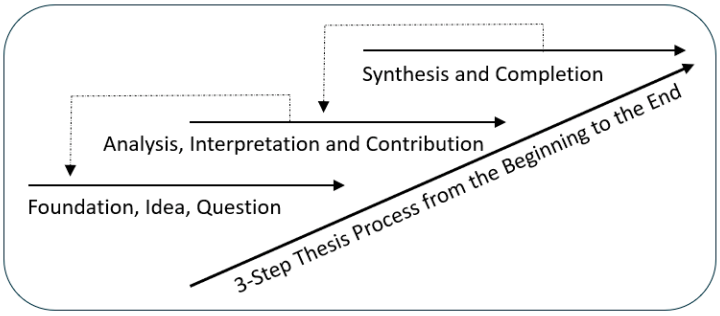

Figure 2. Three-step thesis process. Source: Figure by author.

These steps are not strictly linear. Thesis work is iterative: students often return to earlier stages, refine research questions, adjust methods or restructure chapters. The three-step model provides structure while allowing flexibility. Chapters 3–6 apply it in detail. A further topic has emerged with AI agents and agentic workflows (see Chapter 8) as AI-supported systems or workflows can pursue tasks by planning steps, using tools, retrieving information and sometimes taking actions in connected systems. They may support structured parts of the thesis, but they do not possess human agency, responsibility or academic judgement. Their use in thesis work must remain transparent, bounded and supervised.

For supervisors and institutions, the three-step model makes GenAI use concrete and discussable. Rather than addressing GenAI only in general ethical terms, supervisors can ask targeted questions at each step: How was the research question developed? Which sources were verified? How were AI suggestions evaluated? This makes the student's intellectual engagement visible. Outright bans on GenAI use are often difficult to enforce and may push use underground. At the same time, institutions cannot accept theses that are substantially produced by AI rather than by the student. The key is transparent, guided and academically accountable use. Table 3 summarises the governance implications.

Table 3. Generative AI use in thesis work: perspectives for supervisors and academic leaders.

Perspective	Practical Implication
Academic responsibility	Instruct the student about the responsibility rule in the use of GenAI in the thesis work.
Supervision	Supervisors should guide students in using GenAI to strengthen research design, conceptual clarity, source use, analysis and revision.
Transparency	Students should disclose GenAI use according to institutional guidelines, including whether it was used for brainstorming, language editing, coding support, analysis support or revision.
Reliability	LLMs may produce fluent but incorrect content, including fabricated references or misleading interpretations (Bender et al., 2021; Zhang & Zhang, 2025). All important claims and sources must be verified.
Equity	Students, teachers and supervisors differ in access, digital skills and AI literacy. Institutions should provide shared guidance so that GenAI does not widen inequalities in thesis support.
Data protection	Sensitive, confidential or identifiable material should not be entered into AI systems unless this is permitted by institutional rules and research ethics requirements.
Disciplinary variation	Acceptable GenAI use differs across fields. Supervisors should specify what is appropriate in their discipline rather than relying on general institutional guidance.
Skills and local models	Skill-based operations, small language models and local models may support specific tasks, but their relevance depends on the discipline, task, technical competence and data sensitivity.
Human-in-the-loop principle	GenAI may support thinking, feedback and process management, but final academic judgement remains human.

Source: Table by author.

1.5. Breakthrough of Generative AI in Society and Research

The public release of ChatGPT in November 2022 marked a turning point in the adoption of GenAI. Within a short period, conversational LLMs spread rapidly into education, work and everyday life. Hundreds of millions of people now use GenAI tools in various contexts (Y. Liu & Wang, 2026). As of 2025, more than one-third of individuals across the OECD (Organisation for Economic Co-operation and Development) had used GenAI tools, and around three-quarters of students aged 16 and over reported using them (OECD, 2026). In the European Union, the

number was 32.7 percent among the entire population aged 16–74, while 63.8 percent of 16–24-year-olds had used generative AI in 2025. Among people aged 16–24, the highest shares were in Greece (83.5%) and Estonia (82.8%) (Eurostat, 2026). In Estonia, the use of GenAI has been integrated into high school education (Jauhiainen, 2026c). Adoption has expanded quickly in many economically developed countries, but it remains uneven across generations, countries, institutions and social groups (Figure 3).

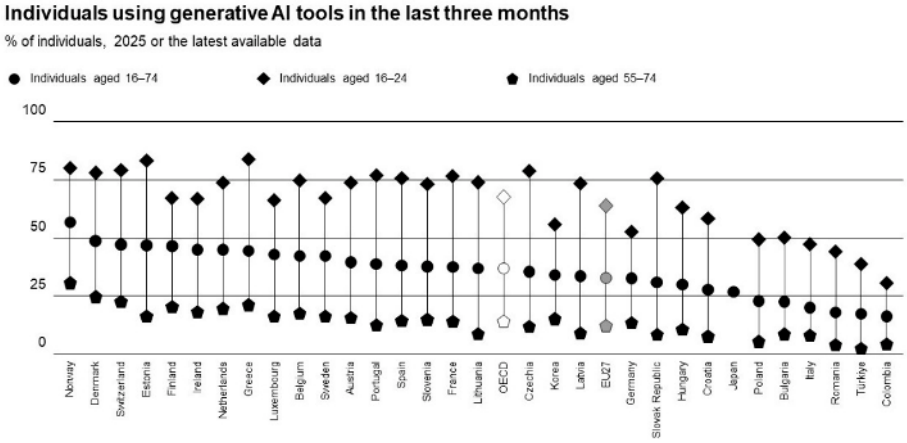

Figure 3. Use of generative AI tools in OECD countries in 2025. Source: Adapted from OECD (2026). The opinions expressed and arguments employed in this adaptation should not be reported as representing the official views of the OECD or of its member countries.

The spread of GenAI extends beyond education. Many organisations have moved from experimentation toward systematic use of AI in content production, information management, decision support, customer communication, programming and administrative processes. These developments may improve efficiency, but they also raise questions about responsibility, reliability, oversight, and the consequences of error (Mayer et al., 2025).

Long-term labour-market transformation remains uncertain: some tasks may be automated, others augmented, and many roles may change without disappearing (Figure 4). Text-processing work is likely to shift toward guiding, evaluating and responsibly using AI-supported systems. For students, GenAI literacy is becoming an important academic and professional competence: the ability to formulate useful prompts, select appropriate tools, evaluate outputs critically, understand limitations and take responsibility for final results.

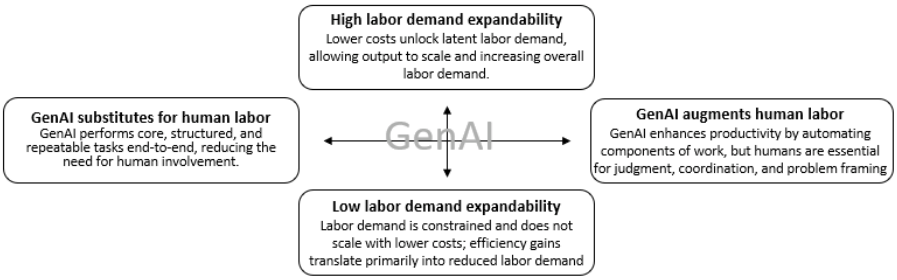

Figure 4. Potential pathways through which generative AI may transform employment. Source: Adapted from Emerson et al. (2026), used with permission.

Research on GenAI in education has expanded sharply, as indicated by Web of Science, a major bibliographic database for peer-reviewed publications. Publications combining GenAI or LLMs with education numbered slightly over 100 before 2023, then exceeded 6000 by early 2026, with the figure more than doubling again when broader terms such as 'learning' are included (Clarivate, 2026). Research activity is geographically concentrated: the United States and China account for a large share of publications, with Australia, the United Kingdom, Canada, Germany and Spain also prominent. However, nearly half of all countries, mostly in the Global South, had produced no peer-reviewed GenAI education research by early 2026 (Clarivate, 2026). The field evolves quickly and many claims remain provisional. This book treats recent studies as important but not final evidence on long-term impacts.

Global inequalities shape access to GenAI significantly. As of 2025, around one-quarter of the global population, approximately 2.2 billion people, remained offline (International Telecommunication Union, 2026). Access to GenAI depends on internet connectivity, language, infrastructure, institutional support, digital literacy and the ability to pay for advanced tools. The International Labour Organization has identified a relationship between GDP per capita and GenAI exposure: workers in high-income countries face faster task transformation, while those in low-income countries may be excluded from potential productivity gains (Gmyrek et al., 2026). If connectivity expands, many organisations and education systems may move directly into GenAI-supported practices, requiring substantially different digital and analytical skills.

Small, local and frugal language models requiring fewer resources and adaptable to local languages and institutional contexts may offer partial responses to these inequalities. They are not a complete solution; effective use still requires infrastructure, training, governance and critical understanding. Whether GenAI contributes to more equal or more unequal educational outcomes depends largely on how institutions integrate it into teaching, supervision, assessment and policy.

Thesis work is a particularly important context for examining these questions. It brings together learning, research, writing, ethics, supervision, assessment and institutional rules in a single sustained process, namely one where the benefits and risks of GenAI become concrete rather than abstract. The following chapters move from this broad context to practical guidance for each stage of that process.

2. Using Generative AI: Creativity, Learning and Prompting

This chapter examines how generative artificial intelligence (GenAI) and large language models (LLMs) can support creativity, learning and thesis work when used critically and responsibly. It addresses two connected questions. First, how can GenAI support academic thinking without weakening understanding, authorship or judgement? Second, how can students, supervisors and teachers guide LLMs effectively through prompting, skill-based operations and Model Context Protocol (MCP)?

The chapter argues that GenAI can be genuinely valuable in learning and thesis work, but that the benefits depend on how it is used. GenAI can help users generate ideas, compare alternatives, clarify concepts, structure arguments, revise text and receive feedback. The same tools can also encourage overreliance, superficial learning, homogenised writing and inaccurate claims when used without critical engagement. The educational value of GenAI therefore depends less on the technology itself than on how students, teachers, and institutions integrate it into learning practices.

Section 2.1 examines creativity in the age of GenAI: what human and AI contributions to creative work look like, how they differ and what happens when they interact. Section 2.2 examines learning: how GenAI can support genuine understanding, what risks it creates, and what the evidence says about how it changes the learning process. Section 2.3 introduces prompting, skill-based operations and MCP as the three practical layers through which students interact with LLMs. Throughout, the chapter builds on the foundational principle established in Chapter 1: GenAI should support academic work, not replace the student's own thinking. Chapter 3 applies this to the three-step thesis process.

2.1. Creativity in the Age of Generative AI

Creativity in academic work has never been a purely individual act. In thesis work, creativity does not usually mean full scholarly or artistic originality. It means formulating a meaningful research question, seeing a useful comparison, identifying a gap, applying a concept carefully, interpreting material in a justified way, and presenting a contribution clearly.

Creativity has always developed through engagement with previous research, supervisors, peers, methods, concepts and scholarly communities. A student who formulates an original research question draws on everything they have read, discussed and questioned. GenAI extends this relational process: it can generate alternatives, suggest perspectives and help users compare, revise and refine ideas (Przegalinska & Triantoro, 2024; Celis Bueno et al., 2025). Understanding where GenAI fits in that process and where it cannot substitute for the student is the central question of this section.

Human and AI contributions to creative work are structurally different. Human creativity involves intention, judgement, meaning, ethical responsibility and the ability to situate ideas in a specific academic, social or practical context (Yasuda & Maruyama, 2026). GenAI contributes differently: it identifies patterns in its training data, recombines information at speed and generates possible formulations and alternative framings. It can expand the creative space available to a student by surfacing options the student might not have considered, but it does not know which

idea is academically meaningful, ethically appropriate or theoretically important in this discipline for this research question. Those decisions remain human.

In thesis work, creativity can be understood in practical academic terms. It may involve formulating a focused research question, identifying a useful comparison, applying a concept to a new case, interpreting material carefully, developing a typology, clarifying a theoretical tension or presenting findings clearly. GenAI can support these activities by helping students see alternatives they might not initially notice: suggesting different ways to narrow a topic, proposing counterarguments, identifying missing perspectives or helping compare theoretical approaches (Holzner et al., 2025; OECD, 2026). This exploratory function is where GenAI adds most value at the creative stage. It is most useful when the student uses it to generate options and then makes the intellectual choices about which options are worth pursuing.

Research suggests that human–AI collaboration can enhance creative performance in certain conditions. Creative collaboration with generative AI is possible (Iba, 2026). For example, GenAI-supported brainstorming may improve the quality of written ideas, particularly when comparing individual work with AI-assisted work on the same task (Doshi & Hauser, 2024). Studies also suggest that GenAI can support the development of new ideas, perspectives and innovations when used actively and critically (Jauhiainen, 2024; Vivoda, 2026). A central competence is the user's ability to ask meaningful questions and evaluate outputs critically (Walter, 2024). The most creative use of GenAI is not passive acceptance of outputs, but active orchestration: asking, comparing, rejecting, revising and integrating.

However, improved fluency or faster idea generation is not the same as deeper originality. Academic creativity depends on contextual understanding, theoretical choices, evidence, interpretation and judgement. There is also a risk of homogenisation: GenAI outputs often follow familiar patterns of structure, style and argument, and if many users accept such outputs without modification, texts may become more similar and less original. Some studies indicate that AI-assisted writing can increase individual performance while reducing the collective diversity of ideas across a group (Doshi & Hauser, 2024; Holzner et al., 2025; OECD, 2026). In thesis work, where each student needs to develop a distinct argument and contribution, this risk deserves explicit attention.

A useful way to describe different approaches to human–AI creative work is the distinction between automation, collaboration and selective use. Some users treat GenAI primarily as automation, accepting outputs with little modification. Others collaborate continuously with the model, revising and developing ideas through repeated interaction. A third approach is selective: the user decides which tasks to delegate and which to keep under direct control, based on where GenAI support adds genuine value and where it risks displacing necessary thinking (Randazzo et al., 2025). For thesis work, the selective and reflective approach is most appropriate, where the student uses GenAI for support but retains control over research decisions, interpretation and final writing.

The deepest question about creativity and GenAI concerns not individual outputs but how knowledge itself is produced. When a student develops an argument with the help of an LLM, the process of knowledge construction is different from working alone or with human interlocutors. The LLM contributes pattern-matched suggestions; the student decides which suggestions are epistemically sound. This can be understood as a form of human–machine-assisted knowledge production, and it raises a question that matters for the thesis: does the student understand the knowledge they have produced

well enough to take responsibility for it? GenAI can produce well-structured arguments, but the student must be able to explain, justify, and defend every claim in the thesis as their own intellectual commitment. This is not only an ethical requirement; it is what the thesis is designed to demonstrate. Thesis development therefore cannot be delegated to machines without sustained human judgement (Floridi, 2023; Cope & Kalantzis, 2024).

Used well, GenAI can support creativity by reducing routine workload, enabling comparison and opening alternative perspectives (Korinek, 2023; J. Liu et al., 2025). It can create productive intellectual friction by suggesting counterarguments, alternative structures, or missing links. The time saved should be reinvested in reading, theoretical reasoning, methodological choices, and the development of well-founded arguments (Miao & Holmes, 2023). GenAI can support creative academic work, but originality still depends on the student's active transformation of ideas into a justified contribution.

2.2. Learning in the Age of Generative AI

Learning remains a human process of understanding, internalisation, reflection and application. Access to information does not by itself produce learning. Students learn when they select, organise, question, and connect information into meaningful cognitive structures, and can then use that knowledge in new situations. This is as true in the GenAI era as it was before. LLMs can support learning, but they can also make it easier to complete tasks without developing the understanding and internalisation that the task was designed to produce (Khalifa & Albadawy, 2024; Aru, 2025; H. Li & Wu, 2025; Martínez-Peláez et al., 2025).

UNESCO (2024) conceptualises learning with GenAI across three main levels. At a basic level, students need to understand what GenAI is and how to use it for simple tasks. At a more advanced level, they apply it to demanding academic tasks. At a further level, they may become co-creators who develop novel solutions in collaboration with AI systems. In practice, institutions and students may be at different stages. Some students use GenAI intensively, while many courses and universities still provide only limited guidance. This mismatch increases the need for shared academic practices.

A useful theoretical frame is scaffolding: support that helps learners perform tasks they could not yet complete fully on their own, while gradually developing competence (Wood et al., 1976). GenAI can act as a scaffold when it helps students clarify ideas, compare alternatives, receive feedback, identify weaknesses and revise their work. It becomes educationally valuable when it supports the student's own thinking rather than replacing it. When it replaces thinking in a situation in which the student accepts AI-generated reasoning without engaging with it, the scaffold has become a shortcut that bypasses the learning it was supposed to support.

Related to scaffolding is the concept of productive learning struggle: the cognitive effort of working through difficulty is not a problem to be eliminated but a condition for learning (Kapur, 2016). When students wrestle with a research question, try several framings before finding the right one, or read a difficult text multiple times, they are developing the competence the thesis is meant to demonstrate. GenAI can reduce that struggle: sometimes helpfully, sometimes not. The question is whether the difficulty being removed was routine and unnecessary (formatting, organising notes, finding the right word) or substantive and educationally important (reasoning

through a theoretical problem, working out how to connect a method to a research question). The first kind of help is appropriate; the second needs careful supervision.

The distinction between support and substitution runs through every practical chapter of this book. GenAI can help students move through the stages of academic work from information acquisition, conceptual understanding, methodological reasoning, and analysis to synthesis and evaluation. It may explain difficult concepts, produce alternative examples, ask guiding questions or suggest how an argument could be improved. However, students must remain responsible for evaluating whether the output is accurate, relevant and appropriate to the discipline, and for integrating it into their own understanding rather than simply reproducing it.

A student's ability to benefit from GenAI depends substantially on metacognitive skill: the capacity to monitor one's own understanding, recognise when an explanation has been received but not yet internalised, and decide when to ask for more help versus when to work something out independently. Research on self-regulated learning suggests that students who set their own learning goals, monitor their progress and evaluate their strategies learn more effectively (Zimmerman, 2002). Students with stronger metacognitive skills use GenAI more strategically: they know when to accept a suggestion, when to question it and when to set it aside. Students with weaker metacognitive skills are more likely to rely on outputs passively, treating fluent GenAI responses as evidence of understanding they have not yet developed (Nie et al., 2025; Singh et al., 2025). For thesis work, this means that GenAI literacy is not only about knowing how to prompt; it also means knowing oneself as a learner well enough to use the tool without being used by it.

For teachers and supervisors, GenAI creates a pedagogical challenge. Students may use these tools before institutions have developed shared guidance. Some students already use GenAI fluently and strategically, while others lack access, confidence or critical skills. If institutions do not provide guidance, differences in AI literacy may produce unequal learning outcomes. For this reason, educational institutions need to provide systematic instruction on how GenAI can be used transparently, fairly and responsibly (Yusuf et al., 2024; Bjelobaba et al., 2025; X. Zhai, 2025).

Language models can encourage students to formulate more precise questions, refine reasoning, and reflect on the assumptions embedded in their prompts (Abrahamson, 2026). Students also need to learn how to interpret both human-authored texts and AI-generated texts critically (Walter, 2024; Deep & Chen, 2025; Salido et al., 2025; Alvaro, 2026). This is now part of academic literacy. The goal is not to use GenAI more often but to use it in ways that strengthen learning.

The OECD (2026) similarly emphasises that students need foundational knowledge and skills independently of GenAI so that they can evaluate outputs critically. Successfully completing a task with GenAI does not automatically mean that learning has occurred. Teachers remain responsible for guiding use, exercising professional judgement and evaluating AI-supported work. GenAI tools should therefore be integrated into learning through pedagogical design, not simply added as optional external aids. There are GenAI use practices that support learning as well as those that weaken students' learning. Table 4 synthesises these concrete supporting and weakening uses of GenAI for learning.

Table 4. Learning with generative AI.

Learning-Supportive Use	Learning-Weakening Use
Ask AI to quiz you on a concept after reading	Ask AI to summarise instead of reading
Ask AI to identify weaknesses in your argument	Ask AI to write the argument
Ask AI to generate counterarguments	Accept AI's preferred interpretation
Ask AI to help plan revision	Submit lightly edited AI text

Source: Table by author.

2.2.1. What Generative AI Can Do for Learning

Responsible use of GenAI can support learning and academic performance in several genuine ways. The benefits are most reliable when students remain cognitively engaged, using the model to support reflection and evaluation rather than to avoid them.

Efficiency is the most obvious benefit. Students often spend considerable time on tasks such as summarising texts, organising notes, drafting outlines and revising language. GenAI can support these activities and allow students to focus more on central academic tasks: refining concepts, strengthening arguments, interpreting results and developing the thesis. However, efficiency is educationally valuable only when the time saved is used for deeper engagement rather than simply faster production.

GenAI can also support higher-order cognitive processes, such as analysis, evaluation and synthesis, when used as a tool for thinking rather than a substitute for it (Nie et al., 2025; Singh et al., 2025). It can help students develop arguments when they critically evaluate, verify and refine the outputs (Mishra et al., 2024). Studies suggest that GenAI can improve efficiency in reading and writing tasks when students remain actively engaged, and that academic writing may improve in structure, coherence, vocabulary diversity and argumentative clarity under such conditions (Khalifa & Albadawy, 2024; van Niekerk et al., 2025; Sanz-Tejeda et al., 2026).

Personalisation is a third benefit. GenAI can explain a concept in simpler language, provide examples at the right level, offer immediate feedback and help students compare alternative interpretations. This can encourage curiosity and flexible thinking (Jin et al., 2025; Pérez-Jorge et al., 2026). For example, a student may ask a model to compare two theories, receive related information, and then decide which theory is relevant to the research question and why. The learning occurs through evaluation and integration, not through receiving the answer alone.

From a pedagogical perspective, the value of GenAI depends on instructional design. Tools used without purpose lead to superficial engagement. Tools integrated into clear learning activities can support reflection, comparison and revision. Research indicates that students often experience GenAI as easy to use and supportive of motivation, confidence and engagement, while recognising that it does not replace human guidance (Guo et al., 2024; Yang et al., 2026). Learning outcomes depend on how tools are used and how teachers guide students to use them.

GenAI may also support collaborative learning when clear roles and goals are established. It can function as an information source, a generator of learning

material, a facilitator of participation, a tutor, a dialogue partner or a simulated domain expert (Strauß & Rummel, 2026). These roles may support cognitive, social and metacognitive dimensions of collaboration when carefully designed (Degen & Asanov, 2025; Abrahamson, 2026; OECD, 2026). Collaboration remains a human and pedagogical process; GenAI can support it but cannot guarantee it.

Multimodal AI may further expand these possibilities by integrating text, voice, images, video and other forms of material (Mucci, 2024). For thesis work, this may support activities such as explaining figures, improving presentations or discussing material in multiple formats. These possibilities require careful attention to accuracy, accessibility, privacy and academic purpose.

2.2.2. How Generative AI Can Weaken Learning

The risks of GenAI in learning are as real as the benefits, and they concern the same students, the same tasks and often the same interactions. Understanding them is not a reason to avoid GenAI but a condition for using it well.

The central risk is cognitive outsourcing: using GenAI to produce answers, summaries or arguments without doing the intellectual work needed to understand them. When this happens, task completion and learning become separated. A student may submit a coherent text but be unable to explain the concepts, sources, method or argument behind it. The model's fluency can create an illusion of competence for the student and sometimes for the thesis reader as well. LLMs produce fluent responses but do not possess human understanding or judgement (Bender et al., 2021). Students may also overestimate their understanding when they receive clear and immediate explanations from GenAI (Nie et al., 2025). In thesis work, where the thesis should demonstrate independent academic competence, this risk is especially serious. A related risk concerning the homogenisation of academic language is discussed in Chapter 6.

A related risk is fluent misinformation: LLMs' outputs that sound convincing but are inaccurate, incomplete, or unsupported. LLMs may generate non-existent references, incorrect summaries or misleading interpretations. They may oversimplify debates, overlook minority positions or reproduce dominant assumptions embedded in their training data. Students who understand both the subject matter and the limitations of LLMs are better equipped to evaluate outputs critically. Students with weaker background knowledge are more likely to rely on outputs passively. GenAI may be most harmful precisely where students have the least capacity to detect the harm (Gerlich, 2025).

Equity is a third concern. GenAI use is unevenly distributed across social groups, and differences in income, educational background and digital literacy shape how critically users engage with AI outputs (McClain et al., 2026). Students with access to paid models, reliable internet, AI-literate supervision and strong foundational knowledge can use GenAI strategically. Students without these advantages may either lack access or use AI in ways that widen rather than close existing gaps. If institutions do not provide guidance, differences in AI literacy may produce unequal learning outcomes (Miao & Holmes, 2023; Yusuf et al., 2024).

Authorship and ownership are also at risk. GenAI raises questions not only about who produced the words but about who takes responsibility for the argument, sources, analysis, interpretation and conclusions. A student remains the proper author of a GenAI-supported thesis only if they guide the process, verify outputs,

make substantive decisions and can defend the final work. If GenAI generates large parts of the argument or interpretation without the student's understanding, genuine authorship becomes academically problematic (Yasuda & Maruyama, 2026; Przegalinska & Triantoro, 2024; H. Li & Wu, 2025).

Detection-based responses face structural limits. Detectors produce both false positives and false negatives (Abd-Elaal et al., 2022), even when they target the supposed watermarks of GenAI use as these can be removed. Two distinct problems follow.

First, detection is easy to evade. Light paraphrasing can sharply reduce accuracy, while Sadasivan et al. (2023) argue that as machine-generated text increasingly resembles human writing, even optimal detectors approach random classification. Evaluations of commercial tools support this concern (Weber-Wulff et al., 2023; Perkins et al., 2024).

Second, detection is unfair. Liang et al. (2023) found that widely used detectors disproportionately misclassified non-native English writing, often responding to limited lexical variation rather than genuine AI use. Students who write in a second language and use GenAI for legitimate language correction may therefore face particular risk.

A detector score should never serve as the sole or determinative evidence of misconduct and should not directly determine a grade (Fleckenstein et al., 2024). At most, it may prompt a human discussion supported by drafts, version history, GenAI-use records and disclosure statements. Documentation should remain proportionate and focus on significant uses, not continuous surveillance. Section 9.4 explains how students and institutions should respond when GenAI use is wrongly suspected.

Increased surveillance is unlikely, by itself, to provide a sufficient or sustainable solution. The strongest alternatives are students' oral defence, with appropriate accommodations where needed, of their written work and process documentation. A student who has genuinely done the thesis work should be able to explain the research question, justify methodological choices, interpret findings and answer questions about the reasoning behind the text (Nallaya et al., 2024; Vlachopoulos & Makri, 2024). However, oral assessment should test understanding, not rhetorical fluency, so that non-native speakers and less confident speakers are treated fairly.

Increased surveillance on GenAI use is unlikely to provide a sustainable overall solution. A more constructive response is to emphasise transparency, responsibility, and assessment design. Students should disclose how GenAI was used, following the institutional guidelines. Teachers and supervisors should design assessment tasks that require explanation, reflection, source verification and defence of decisions (see Chapters 7 and 9). Research on contract cheating shows that assessment practices shape student behaviour (Bretag et al., 2019; Cotton et al., 2024). GenAI use will be shaped similarly by how learning and assessment are organised.

GenAI also requires systemic institutional responses. Individual students cannot be expected to manage issues of privacy, copyright, bias, assessment and inequality alone. Institutions need to provide clear guidelines, shared practices and support for teachers and supervisors. The aim should be to ensure that GenAI strengthens learning rather than replacing it. For thesis work, this means guiding students to use GenAI for planning, reflection, feedback and revision, and not for generating the research itself.

2.3. Grounding and Instructing Language Models: Prompting, Skill-Based Operations and Model Context Protocol (MCP)

Grounding determines which material a model uses, and each source has distinct benefits and risks.

General model knowledge provides fast orientation without setup, but it may be outdated, unsupported, or fabricated because training data have a cutoff and no reliable citation trail.

Web search provides current public information, which is useful for policies, statistics, guidelines, and recent publications. However, source quality varies, prominent results may not be authoritative, and paywalled research may be missed.

Uploaded files provide a bounded and verifiable source set selected by the student. Their value depends on the quality and completeness of that selection. Selection bias, document truncation, and the uploading of confidential or personal material to unapproved systems remain important risks.

Retrieval-augmented generation (RAG) searches an indexed document collection and retrieves relevant passages before generating an answer. This improves traceability, but retrieval may miss key evidence, the collection may be incomplete, and the model may still misinterpret a correctly retrieved passage.

MCP and connectors give controlled access to approved tools and resources, such as institutional guidelines, assessment criteria, and library systems. Their risks concern permissions, access rights, data flows, and institutional authorisation. However, MCP does not itself make a resource approved, authoritative, secure or current; those properties depend on the connected server, permissions, host configuration and institutional governance.

Grounding increases the likelihood of accuracy but does not guarantee it. Models may still omit qualifications, misrepresent sources, or draw unsupported conclusions. Their fluency also remains similar whether a reference is correct, fabricated, or misinterpreted. Grounding therefore changes what must be verified, not whether verification is required. Students should be able to identify the grounding source behind each substantive output.

NotebookLM, for example, answers from uploaded sources and links claims to supporting passages, making grounding visible. However, its outputs remain limited by the sources the student selected.

Grounding concerns what the model can use. A separate issue is how it is instructed to work.

Prompting is the immediate instruction given to a model for tasks such as summarising, comparing concepts, proposing research questions, revising text, or assessing clarity (P. Liu et al., 2023). Results depend on prompt quality, provided context, and critical evaluation. Thesis-related prompting is discussed in Chapters 4–6 and Appendices A–C.

Skill-based operations are reusable instruction packages for recurring workflows. A literature-review skill might extract each source's research question, theory, method, findings, limitations, and relevance in a consistent format, while a thesis-revision skill might check alignment among research questions, methods, findings, and conclusions. Skills are discussed in Appendix D.

MCP belongs to both categories because it determines what the model can access and under which conditions. This dual role creates substantial governance requirements, discussed in Section 2.3.3 and Appendix E.

2.3.1. Prompting Techniques

A good prompt is clear, specific and contextualised. It usually includes the task, relevant background, constraints and the desired output format. For thesis work, useful context to provide to the model may include the degree level, discipline, research topic, theoretical orientation, material, method, language and institutional requirements. A vague prompt often produces a general response; a precise prompt is more likely to produce a useful one (Chen et al., 2023; P. Liu et al., 2023; Wei et al., 2023; Cain, 2024).

For example, a weak prompt for using GenAI in thesis work would be: "Improve my research questions." It would leave too many options for the model to suggest modifications. Instead, a better prompt would be much more concrete, for example: "I am writing a Master's thesis in sociology on remote work and professional identity. My current research question is: [question]. Evaluate whether it is too broad, too descriptive or difficult to answer with 20 semi-structured interviews. Suggest three narrower versions and explain the trade-offs." (see also Chapter 4 and Appendix A). Students can provide the model with a few examples of their earlier unedited writing and in this way ask the model to preserve their personal writing style.

The quality of model outputs depends heavily on the context provided. Prompting is therefore not only a technical skill but also a form of academic work. A student who understands the topic, method and purpose of the thesis can prompt more effectively than one who lacks this understanding. Without subject knowledge, users may produce well-structured but conceptually weak outputs. All outputs must be critically evaluated and verified before use.

Prompting is iterative. The user asks a question, evaluates the response and refines the next prompt. Through this process, the student may learn both about the topic and about how the model responds. Experimenting with different formulations can show how instructions affect the model's tone, structure, argument and level of detail (Alvaro, 2026). The model assists; the user decides whether the response is useful.

Prompting can also reduce output risks when the model is asked to indicate uncertainty, distinguish established knowledge from speculation, identify unsupported claims or explain the basis for its suggestions. Such prompts do not guarantee accuracy, however. A model may make early incorrect assumptions, become locked into a flawed context or produce a plausible but mistaken explanation (Laban et al., 2025). The user must periodically check whether the interaction is still aligned with the task. Table 5 presents the prompting techniques most useful in thesis work.

Zero-shot prompting works well for simple tasks such as brainstorming, explanation, translation, title generation and basic summarisation. Its limitation is that responses may remain generic if the task is complex or insufficiently contextualised.

Instruction-based prompting gives the model clearer direction. The user defines the task and specifies constraints such as length, audience, structure, style or output format. This is useful in the literature review, research planning, teaching design, and administrative communication.

Role-based prompting can help the student view a text from different perspectives. A model can be asked to respond as a thesis examiner, methodological adviser, critical reader or academic writing coach. Such roles are simulated, not authoritative. The output should be treated as feedback to consider, not as expert judgement.

Table 5. Prompting techniques for academic and thesis work.

Prompting Technique	Description	Example
Zero-shot prompting	A direct instruction without examples	"Suggest five possible titles for this thesis topic."
Instruction-based prompting	A clear task with scope, format or constraints	"Summarise this article in 150 words, focusing only on method and material."
Role-based prompting	The model is asked to respond from a specified perspective	"Act as a thesis supervisor and identify unclear parts of this research plan."
Stepwise explanation-justification prompting	The model is asked to explain the steps or justification behind its answer	"Compare these three methods. State the criteria used in the comparison, identify the main trade-offs, and explain the basis for your recommendation."
Few-shot prompting	The user provides examples of the desired output	"Use these two examples as a model and summarise the third article in the same format."
Reflective prompting	The model is asked to critique, improve or evaluate an output	"Identify the weaknesses in this argument and suggest how to strengthen it."
Verification prompting	The model is asked to check accuracy, evidence, uncertainty or missing support	"Identify claims in this paragraph that require references or further verification."

Source: Table by author.

Stepwise explanation-justification prompting asks the model to present intermediate steps or explain the basis for its suggestions. This can make outputs easier to evaluate. The explanation should not, however, be treated as a transparent record of the model's internal reasoning: it is a generated explanation that itself requires critical assessment.

Few-shot prompting is useful when consistency of style, structure or genre matters. The model imitates examples provided by the user. Output quality depends strongly on the quality of those examples.

Reflective prompting asks the model to critique or improve its own or the user's text. It can support revision and deeper engagement, but the critique may still be incomplete or incorrect.

Verification prompting is especially important in academic work. It can help identify unsupported claims, unclear assumptions or possible inaccuracies. However, the model cannot be the final verifier of its own claims. Important facts, references, quotations and interpretations must always be checked against original sources.

Effective prompting often combines several techniques. For example, a student may use instruction-based prompting to request a structured literature summary, role-based prompting to ask for examiner-style feedback, reflective prompting to

improve a draft and verification prompting to identify claims needing checking. The strongest results come from combining strategies while keeping disciplinary knowledge and human judgement at the centre.

Beyond hallucination and the need for verification, prompting carries risks specific to how it is used. Prompt injection can occur when external documents or web-connected tools contain hidden instructions that override the intended task. Privacy leakage happens when sensitive or identifiable material is disclosed simply by including it in a prompt. Anchoring describes the tendency to accept the model's first framing of a question or argument without testing alternatives, which can lead to overfitting the thesis to what the model suggests rather than to the student's own reasoning. Fluent output also risks false confidence from polished language, where stylistic quality is mistaken for analytical soundness. Finally, asking AI to "find references" without checking them against an academic database (e.g., Scopus, Crossref, Google Scholar) is a common path to fabricated or misattributed citations. Responsible prompting therefore requires critical distance from outputs, not just well-formed instructions.

Prompting is most useful when it asks a language model to generate possibilities, such as questions, structures, alternatives, or checks on one's own reasoning. It is least useful when asked to settle a matter. A model's output should therefore be treated as material for evaluation rather than as evidence: something to think with, not something to cite.

This connects prompting to established learning theory. Scaffolding holds that support should make a task achievable while the learner still performs the cognitive work; productive learning struggle holds that some difficulty is necessary for learning to occur. Prompting that generates options satisfies both: the model supplies raw material, while the student retains the work of judging, selecting, and justifying. Prompting that supplies only conclusions removes the struggle, and with it the learning.

2.3.2. Skill-Based Operations

Skill-based operations make GenAI use structured and reusable (see Appendix D). Instead of writing a detailed prompt for each task, the user applies a prepared workflow that defines the task, procedure, output format and quality checks. For example, rather than repeatedly requesting an article summary by research question, theory, method, findings and relevance, the student can ask the model to apply a literature-review skill containing these instructions.

The difference between a prompt and a skill is not simply length. A prompt usually addresses one task, whereas a skill establishes criteria for recurring tasks. For example, a student prompting without a skill might write: "Read this article and summarise the research question, theory, methods, key findings, limitations and relevance to my thesis in a table." With a skill, the same result is initiated simply by writing: "Analyse this article for my literature review using the literature-review skill." The skill supplies the recurring structure in the background. Designing a skill therefore requires the student to define what a good output should contain, such as what makes a research question feasible, how sources should be compared or when a method is poorly aligned with the research question. Its main value lies not only in efficiency but in making these methodological standards explicit.

Three levels of engagement matter most: students may use a ready-made skill, adapt an existing one, or create their own. Ready-made skills are convenient for standard tasks but offer limited learning because their criteria are externally defined. Adaptation requires students to consider disciplinary expectations, materials, and research questions. Creating a skill demands the deepest engagement because students must define how the task should be performed and evaluated.

These levels broadly correspond to assistance, delegation, and substitution discussed in Chapter 8. Using an opaque skill for a central analytical task approaches delegation, whereas creating and critically applying one keeps the analytical framework under the student's control.

Skills are most useful for recurring tasks, such as analysing sources, refining research questions, checking methodological alignment, reviewing chapters, responding to feedback, and planning revisions. For one-time tasks, a well-designed prompt is usually more efficient.

Consistency does not ensure correctness. A poorly designed skill may reproduce the same weakness across multiple sources or chapters, making flawed outputs appear reliable because they are uniform. Skills should therefore be tested on familiar cases, reviewed as the research develops, dated, and revised or discarded when no longer suitable.

Transparency, supervision and security are key topics. A skill provides a stable and inspectable record of the model's instructions. It can be discussed with a supervisor, recorded in a research log, or disclosed when it materially affects the thesis. This allows evaluation of both GenAI use and the criteria guiding it.

Skills from unknown sources may contain unsafe code, hidden instructions, or prompt-injection attacks. Students should use trusted sources, inspect files, avoid unfamiliar scripts, and follow institutional cybersecurity guidance.

In this book, skill refers broadly to a reusable instruction package, project instruction, configured assistant, platform-native skill, or institutional workflow (see Appendix D). Whatever its technical form, it should define the task, boundaries, and quality criteria explicitly. The student remains responsible for both the criteria and the outputs. Appendix D provides implementation options, templates, and testing checklists.

2.3.3. Model Context Protocol (MCP)

GenAI becomes more useful when it can work with relevant, approved external resources rather than relying solely on what was encoded during training. The Model Context Protocol (MCP) supports this by providing a structured way for AI systems to connect to external tools, data sources and digital environments. These may include files, databases, search tools, reference managers, institutional guidelines, thesis rubrics, citation instructions or analytical services.

MCP is not itself a database, search engine, reference manager or thesis-writing tool. It is a connection layer that defines how an AI application communicates with approved external resources under specified technical and permission conditions. Without such connections, users must typically search separately, move between platforms and manually combine results. With MCP-like connections, access to relevant material and tools can become more integrated: an AI system might retrieve institutional thesis guidelines, search a library resource, access a citation tool or apply

an approved checklist. The value is that the model works with specific, current and institutionally approved resources rather than generic training data.

In thesis work, MCP may be useful when students, supervisors or institutions need controlled access to approved resources. A thesis-support MCP system might connect to thesis guidelines, assessment rubrics, citation rules, institutional AI policies, library guidance or approved datasets, helping students receive answers grounded in local institutional requirements rather than generic advice.

MCP also increases governance responsibilities. When AI systems connect to external resources, questions of access rights, privacy, data protection, source reliability, transparency and accountability become more important. Sensitive research material, unpublished drafts, interview data or confidential documents must not be connected without explicit permission, secure design and institutional approval. MCP improves access and workflow integration; it does not replace academic judgement.

Table 6 sets out the governance implications for supervisors and academic leaders across all three GenAI layers, and Table 7 illustrates key aspects of prompting for supervisors and academic leaders.

Table 6. Prompting, skill-based operations and MCP: a comparison.

Layer	Main Function	Thesis Example	Main Caution
Prompting	Immediate instruction for specific task	"Suggest three ways to narrow this research question."	Output depends on prompt quality and must be critically evaluated.
Skill-based operations	Reusable workflow for recurring tasks	A literature-review skill that analyses each source in a fixed format	Consistency does not guarantee accuracy or disciplinary nuance.
MCP	Controlled connection to approved tools and resources	Accessing thesis guidelines, citation rules or library systems through a connected AI application	Requires governance, access control and ongoing source verification.

Source: Table by author.

The trajectory across these three layers reflects a broader shift in how GenAI is used in academic work: from flexible but manual interaction (prompting) toward more structured, consistent and resource-integrated workflows (skills and MCP). This shift increases the potential usefulness of AI support, but it also increases the governance requirements. The more integrated and automated the workflow, the more important it becomes for students to understand what the system is doing, for supervisors to ask process-oriented questions, and for institutions to define clearly what is permitted and how it must be documented. Greater capability requires greater accountability, not less.

Table 7. Prompting: perspectives for supervisors and academic leaders.

Issue	Practical Implication for Supervisors and Institutions
Prompting as academic literacy	Students need to learn how to formulate clear, contextualised and responsible prompts. This is a teachable skill, not a technical given.
Prompting as thinking support	The purpose of prompting is not to replace thinking but to guide the model in ways that support reflection, structure and revision. A student who understands the topic can prompt far more effectively than one who does not.
Skill-based consistency	Skills can make repeated thesis-support tasks, such as literature review, writing feedback, and revision, more systematic and less dependent on the student rewriting long prompts each time. Consistency does not, however, guarantee correctness or disciplinary accuracy.
MCP and evidence grounding	MCP-connected systems can reduce reliance on the model's general training by linking AI applications to approved institutional resources. Supervisors should ask which resources a system is connected to and whether students understand what those connections do.
Limits of model responses	Across all three layers, LLMs may suggest incorrect sources, oversimplify debates or produce plausible but superficial responses. Supervisors can teach students to interrogate outputs, not just use them.
Source reliability	External resources retrieved via skills or MCP still require critical evaluation and verification. Connection to an approved resource does not guarantee that the retrieved content is relevant, current or correctly interpreted.
Privacy and data security	Sensitive, confidential or identifiable material must not enter external AI systems without explicit permission and institutional safeguards. This applies to prompting, skill-based operations and MCP-connected systems equally.
Access inequality	Not all students or institutions have equal access to high-quality models, institutional databases or MCP-enabled systems. Supervisors and institutions should not assume uniform access.
Supervision practice	Supervisors can ask students to explain which tools were used, whether prompts, skills or MCP connections were involved, and how outputs were evaluated. This makes GenAI use visible as part of academic learning, not hidden background activity.
Institutional governance	Institutions need clear policies on which tools are approved, what disclosure is required, how access is controlled and how misuse is handled. These policies should cover all three layers, not only prompting.

Source: Table by author.

2.4. Conclusions

Creativity and learning in the GenAI era are connected by a common challenge: using a powerful tool without letting it do the work that the learner needs to do. GenAI can expand the range of ideas available to a student, provide structured feedback, support revision and make complex tasks more manageable. If supervisors use GenAI to support feedback on student drafts, they should follow institutional data-protection rules, avoid uploading confidential student work to unapproved systems, and disclose such use where required. GenAI can also create risks of overreliance, superficial learning, homogenised writing and unclear authorship. The difference depends on whether the student remains in intellectual control of the process by asking, evaluating, questioning and deciding, or whether the student becomes a passive processor of AI output.

For thesis work, the most valuable use of GenAI is active, transparent and metacognitively aware. Students should use it to explore alternatives, identify weaknesses, compare perspectives, improve clarity and check their own reasoning. They should not use it to replace reading, source verification, methodological judgement or the interpretive decisions that the thesis is designed to demonstrate. The difference is not always obvious in advance, and it changes across thesis stages, which is why the three-step model developed in Chapter 3 and the practical guidance in Chapters 4–6 are organised to make it visible at each stage.

Prompting, skill-based operations and MCP, which were introduced in Section 2.3, are the practical tools through which students interact with LLMs. Together they can support the thesis process with increasing structure and integration. Their value depends on the principle that runs through this entire chapter: GenAI may support academic work, but understanding, judgement, authorship and responsibility remain human.

The GenAI capabilities described in this book will change, but the questions used to evaluate them remain relevant. When a new GenAI application or capability appears, five questions help determine its implications for thesis work. First, what is the application grounded in? It may draw on model knowledge, the web, uploaded files, retrieval systems, or connected resources. Each source creates different requirements for verification, as discussed in Section 2.3. Second, what does the new GenAI application automate, and is that part of what the thesis is intended to demonstrate? Automating routine tasks may support the work, while automating core activities such as reading, judgement, analysis, or interpretation may reduce the student's opportunity to demonstrate the required competence. Third, what becomes harder to verify or reconstruct? The more autonomously the system operates, the more important documentation and transparency become. Fourth, what rules and permissions apply? Institutional policies, data protection requirements, research ethics, and supervisory agreements remain relevant regardless of how the application is marketed. Fifth, what must the student still be able to explain, justify, and defend? If the student cannot independently account for the reasoning, methods, evidence, and conclusions, GenAI has begun to substitute rather than support the assessed work. These questions do not depend on any particular GenAI system. They can therefore be applied to new tools and capabilities that did not exist when this book was written.

3. Thesis Process with Generative AI: A Three-Step Model

This chapter presents a three-step model for conducting a thesis with the support of generative artificial intelligence (GenAI) and large language models (LLMs). The model provides a practical framework for Bachelor's and Master's thesis work, showing where GenAI can support the process, where human judgement is irreplaceable and how AI use can be kept transparent and educationally purposeful.

The three steps follow the basic logic of academic research. In the first step, the student builds the foundation: topic, research question, theoretical framing, material and method. In the second step, the student conducts analysis, develops interpretations and articulates the thesis contribution. In the third step, the student synthesises the work into a final manuscript and prepares it for submission. GenAI does not change this logic. Within each step, it can support selected tasks such as brainstorming, comparing alternatives, organising material, improving language and generating feedback. However, it does not make the intellectual decisions that the thesis requires.

The central educational question is not whether GenAI can generate plausible academic text: it can. The question is whether its use strengthens or weakens the student's learning, reasoning and sense of ownership over the research. Used critically and actively, GenAI can reduce unnecessary cognitive load and help students work more systematically. Used passively, it encourages surface-level engagement and erodes the student's connection to the work. Throughout this chapter, GenAI is treated as a support tool, not as a co-author or decision-maker. The student bears full responsibility for every intellectual choice the thesis contains, as indicated in the responsibility rule in Chapter 1.

The three-step model is equally useful for supervisors and institutions. It makes GenAI use concrete and discussable. Instead of debating AI in general ethical terms, supervisors can ask targeted questions about specific thesis tasks: how the research question was developed, how sources were verified, and how AI suggestions were evaluated. This transforms GenAI from a hidden background practice into a visible and accountable part of the thesis process.

3.1. Generative AI, Cognition and Multilingual Responsibility in the Thesis Process

Thesis work has always been distributed across tools, people and environments. Students use libraries, databases, reference managers, statistical software and supervision, all of which support thinking without replacing it. From the perspective of distributed cognition, the mind works in partnership with its environment (Risko & Gilbert, 2016). GenAI is a new and more interactive member of that environment.

Where GenAI differs from earlier tools is in its ability to engage with language, argument and structure conversationally. This can reduce cognitive load in routine aspects of thesis work—for example, by helping to draft outlines, compare concepts, revise paragraphs and format references—thereby freeing attention for research design, analysis and interpretation.

That benefit is conditional, however. Cognitive load reduction is useful only when it preserves learning. If the student externalises not only organisation and language, but also reasoning and judgement, then the result may be a polished thesis that the student cannot adequately explain or defend. The distinction between using

GenAI to support thinking and using it to bypass thinking is the key diagnostic question at every stage of the process.

Active and reflective use means formulating precise prompts, evaluating responses critically, testing alternatives and treating AI suggestions as starting points rather than conclusions (Gerlich, 2025; Kosmyna et al., 2025). Table 8 sets out what this looks like concretely across the thesis process.

Table 8. Responsible collaboration with generative AI in the thesis process.

Thesis Task	Possible GenAI Support	Student Responsibility
Developing ideas	Suggests alternative topics, perspectives and research questions	Selects, narrows and justifies the topic in relation to the field and thesis level
Mapping literature	Helps identify themes, debates and possible search directions	Verifies sources in academic databases and reads the original literature
Clarifying concepts	Explains concepts, compares definitions and identifies inconsistencies	Chooses and justifies concepts based on scholarly sources
Planning methods	Compares possible methods or analytical approaches	Selects and justifies the method in relation to the research question and material
Organising material	Helps create coding schemes, tables, summaries or analytical categories	Ensures that analysis is grounded in actual material and appropriate procedures
Receiving feedback	Comments on clarity, structure, coherence and possible weaknesses	Decides which suggestions are relevant and revises the thesis accordingly
Improving writing	Supports language, transitions, paragraph structure and readability	Preserves authorship, meaning, argument and academic integrity
Checking final quality	Helps create checklists for coherence, references and submission	Verifies all claims, sources, citations, disclosure and institutional requirements

Source: Table by author.

Published research, benchmark datasets and widely used academic-support resources remain disproportionately English-language. Many models perform more

consistently in English and other high-resource languages, although performance varies substantially by model, task, register and language. Performance is generally strongest in English and other high-resource languages, such as Spanish, French, German, Chinese and Japanese, and weaker in lower-resource and minority languages. It also degrades unevenly within a language: a model may read and summarise material reliably while producing less dependable academic register, disciplinary terminology or context-specific concepts. Comprehension is therefore a poor guide to whether a model can be trusted to write.

Students working in a second or lower-resource language face three challenges. Disciplinary terminology and academic style may be weak, so suggested wording requires checking against authoritative sources in the language of the thesis. GenAI may impose Anglophone conventions and flatten cultural or disciplinary nuance (Agarwal et al., 2025; Abdulhai et al., 2026). GenAI detectors disproportionately misclassify non-native English writing (Liang et al., 2023), which makes dated drafts and a record of GenAI use practical safeguards rather than merely good practice.

LLM performance varies by language, model and task, so students should establish it for themselves rather than assume it. Testing a model on a short passage from an authoritative source in the thesis language by checking its summary, its handling of technical terms, and its academic register indicates whether it is suitable for reading and organising material, for language revision, or for drafting. These are different permissions, and a model may warrant one without the others.

The language used for drafting, translation and revision should then be a deliberate, documented choice. Key disciplinary terms are best established from authoritative sources in the thesis language before drafting begins; translated material should be checked for shifts in meaning, register and institutional context; and literature searches should use terms in every relevant language, so that national and regional scholarship is not overlooked. Institutions, for their part, should define permitted language support, disclosure requirements and access to suitable multilingual tools.

3.2. Research Orientation and Thesis Diversity

Theses vary widely in type and purpose. A thesis may be empirical, theoretical, conceptual, legal, interpretive, historical, philosophical or critical. The guidance in this chapter is designed to accommodate that diversity rather than imposing a single empirical template.

Three foundational dimensions shape any thesis. Ontology concerns assumptions about what exists and the nature of the phenomenon being studied. Epistemology concerns what can be known about that phenomenon and how knowledge claims can be justified. Methodology is the overall logic that connects these assumptions with the research question, theoretical framework, material and analysis. These are not abstract concepts: they determine what counts as a valid finding, what sources are relevant and what kind of argument the thesis can make.

Methods are the specific research procedures used for collecting, selecting, analysing and interpreting material. Techniques are the practical tools and procedures through which methods are carried out, such as sampling strategies, interview protocols, coding schemes, statistical tests, software tools, visualisation methods, laboratory procedures or archival search practices.

Research reasoning also varies. Inductive reasoning moves from empirical observations toward patterns and explanations. Deductive reasoning tests theory or hypotheses against evidence. Abductive reasoning moves iteratively between material and theory to develop the most plausible interpretation. None of these reasoning forms is replaced by GenAI; students may, however, use it to clarify their approach, compare alternatives or check that their design is internally consistent.

The thesis purpose matters too. Habermas (1972) identified three knowledge-constitutive interests that underlie different research traditions: a technical interest in solving problems and producing usable knowledge; a practical interest in understanding meanings and social relations; and an emancipatory interest in revealing power relations and supporting social change. These categories are not rigid, but they remind students that different theses pursue different kinds of contribution and that GenAI support must be calibrated accordingly. What is useful assistance in a quantitative study may be inappropriate interference in an interpretive or critical thesis.

Disciplinary context determines where GenAI support is appropriate. The three-step model applies across fields, but acceptable use must reflect disciplinary norms and programme learning objectives. In computational and quantitative research, GenAI may support coding, analysis, and visualisation because outputs can often be tested or reproduced. In interpretive, theoretical, legal, and historical research, close reading, conceptual precision, and argumentation are central competences and should not be fully delegated (see Section 8.3).

Sections 3.3–3.5 provide guidance applicable across thesis types. Prompting, skill-based operations, and MCP may support different stages, but their use must fit the thesis methodology, disciplinary expectations, and institutional requirements.

Chapters 4–6 illustrate this through a social science Master's thesis on remote work and professional identity. In Step 1, GenAI helps formulate and compare research questions, while the student selects and justifies the final question and interview design. In Step 2, the student conducts and manually codes 20 semi-structured interviews, using GenAI to test the emerging coding framework. The student rejects categories that oversimplify the data. In Step 3, GenAI checks alignment among the research question, findings, and conclusions and identifies unsupported claims.

At each stage, GenAI proposes alternatives or identifies weaknesses, while the student retains responsibility for the analytical decisions.

3.3. First Step in the Academic Thesis Process: Foundation

The foundation step (for details, see Chapter 4 and Appendix A) moves the student from a broad interest or initial idea to a focused, feasible and ethically grounded research plan. It encompasses topic selection, research question formulation, literature work, conceptual and theoretical framing, method design and ethical reflection. Chapter 4 covers each of these tasks in detail; this section describes the overall logic and the role GenAI can play.

Topic selection (see Section 4.1) is usually the starting point. Good topics are meaningful to the student, academically relevant and achievable within the thesis timeframe and resources. They rarely arrive fully formed and most are sharpened through reading, supervision and critical reflection. GenAI can accelerate this sharpening by generating alternative angles, identifying adjacent debates and helping

the student articulate what specifically interests them. It cannot, however, judge whether a topic is intellectually valuable or appropriate to the student's level and field.

The research question, aim or problem (see Section 4.1) is the most consequential decision in the foundation step. A well-formed question is precise, focused and designed to produce a genuine contribution at the thesis level. It is not simply a description of what the student will do, but a question whose answer will matter to the relevant academic conversation. In empirical theses, a main question supported by sub-questions is the common structure. In theoretical, legal or humanities-oriented work, the thesis may instead be organised around a central argument, interpretive problem or normative question. GenAI can test whether a draft question is too broad, too descriptive or poorly connected to available material, but it cannot assess the question's intellectual value. That judgement requires the student, in dialogue with the supervisor. Finally, the student should ask, and be able to answer, whether GenAI influenced the final question.

The next task is to position the thesis (see Section 4.2) in relation to existing knowledge. A literature review (see Section 4.2) at this stage has two functions: positioning and learning. Positioning means identifying where the thesis sits in relation to existing debates: what has been done, what remains open, what the thesis will contribute. Learning means developing the conceptual and theoretical vocabulary needed to conduct the analysis. A literature review is not a list of sources; it is a structured argument about the state of knowledge in a field.

GenAI tools can assist with both functions. AI-supported literature discovery tools, such as the intelligent search platforms Semantic Scholar, Elicit, Consensus, Web of Science Research Assistant and Scopus AI, support natural-language queries and can help the student identify relevant literature. Summarisation tools such as Scholarcy and SciSpace can support the student in evaluating article relevance quickly. None of these tools replaces reading. LLMs may summarise too broadly, flatten theoretical differences and miss context-dependent nuance. In fields where interpretation, legal reasoning or philosophical argument is central, GenAI literature support requires particular caution. Students must verify all sources, read original publications and evaluate relevance and quality independently. Finally, the student should ask, and be able to answer, whether the GenAI-suggested literature and sources were used.

Theory and concepts (see Section 4.3) are not decoration added after the "real" work is done. They shape how the research problem is understood and how material is interpreted. Selecting a theoretical framework is an intellectual decision that determines the kind of contribution the thesis can make. GenAI can help compare frameworks, clarify definitions and identify tensions between competing concepts, but the student must justify the choice in terms of the specific research question and disciplinary context.

Method and material selection (see Section 4.4) follows from the research question and theoretical framing. The method must fit what is being asked, what material is available and what the discipline considers legitimate. Methods may be quantitative, qualitative, mixed, interpretive, doctrinal, comparative, historical or critical. Ethical reflection is also part of this step: research involving human participants, personal data, sensitive topics or politically charged material may require institutional ethics review. GenAI can help generate preliminary checklists, but it cannot replace supervisor guidance or formal review where required.

The step concludes with a research plan (see Section 4.5) that brings the elements together: topic, research question, theoretical framing, material, method, ethical considerations, expected contribution and timetable. The plan is primarily for the student's own orientation and for supervisor review. GenAI can assist with drafting and structural consistency, but the student must be able to justify every element. Table 9 presents the key tasks and GenAI support as well as requirements for human checks in the thesis foundation stage.

Table 9. Foundation of the thesis with generative AI support.

Foundation Task	Practical Student Task	Possible GenAI Support	Required Human Check
Topic development	Identify a meaningful and manageable topic	Suggest topic alternatives and angles	Relevance, motivation and feasibility
Research question	Narrow the topic into a research question, aim or problem	Compare and refine formulations	Academic value, clarity and scope
Literature positioning	Identify key debates, sources and gaps	Suggest themes, keywords and search directions	Source verification and original reading
Concepts and theory	Define key concepts and theoretical framing	Compare definitions and frameworks	Disciplinary accuracy and source grounding
Material and method	Identify research material and analytical approach	Compare possible methods and risks	Methodological fit and feasibility
Ethics	Identify ethical and data protection issues	Create preliminary ethics checklist	Institutional rules and formal review if needed
Research plan	Bring the elements together into a coherent plan	Structure and revise the plan	Supervisor approval and student ownership

Source: Table by author.

3.4. Second Step in the Academic Thesis Process: Analysis, Interpretation and Research Contribution

The second step (see Chapter 5 and Appendix B) is where the thesis becomes concrete. The student works systematically with the selected material and develops findings, interpretations and an academic contribution. Chapter 5 covers this step in detail.

What "analysis" means depends on the thesis type. In empirical theses, this stage often involves analysing data and producing findings or results (see Sections 5.2–5.4). In quantitative research, it may mean examining relationships between variables or testing hypotheses. In qualitative research, it may mean interpreting meanings, practices or experiences. In mixed-methods research, the student combines quantitative and qualitative approaches to examine the research problem from complementary perspectives. In theoretical work, it may mean comparing frameworks, identifying tensions or developing a more coherent conceptual structure. In legal research, it may mean interpreting legislation, case law or institutional practices. In humanities-oriented theses, analysis may involve close reading, historical interpretation, discourse analysis, philosophical argumentation or critique of cultural and textual materials. In critical research, it may mean revealing assumptions, exclusions or power relations. What these approaches share is that analysis must be systematic and justified: the student must show what the material means, how it relates to the research question and what contribution can be made.

The second step should distinguish between description, evidence, interpretation and contribution (see Sections 5.4 and 5.5). Description explains what the material contains. Evidence identifies the data, text, source, quotation, legal material, figure or observation that supports a claim. Interpretation explains what the evidence means. Contribution explains how the interpretation answers the research question or develops the thesis argument. GenAI can help students practise this distinction, but the intellectual work belongs to the student.

GenAI can support selected parts of this step usefully. It can suggest coding categories, summarise patterns, compare concepts, propose alternative interpretations, create tables and act as a critical sparring partner, for instance, by challenging whether the analysis stays close enough to the research question or whether an interpretation is overextended. It can also help the student distinguish between description, evidence, interpretation and contribution: a four-level hierarchy that is easy to lose track of when writing under pressure. The student should ask, and be able to answer, whether GenAI-suggested categories were accepted or rejected.

What GenAI cannot do is replace the student's knowledge of the material. An LLM has not collected the data, read the texts, attended the interviews or worked through the cases. It may impose categories prematurely, smooth over genuine ambiguity or produce interpretations that sound plausible but are not grounded in what the student found. The risk is not that GenAI produces obviously wrong outputs: it is that it produces coherent-sounding ones that the student accepts without checking. Every analytical suggestion must be tested against the actual material.

The contribution, meaning what the thesis adds to the relevant field, must also be the student's own judgement. It may be empirical, conceptual, theoretical, methodological, legal, interpretive or critical. What matters is that it is justified by the material, method and scholarly context, and that the student can articulate it without relying on AI-generated framing. Table 10 presents the key phases of analysis, interpretation and contribution with generative AI support.

Table 10. Analysis, interpretation and contribution with generative AI support.

Analytical Task	Practical Student Task	Possible GenAI Support	Required Human Check
Method finalisation	Confirm the analytical approach and ethical basis	Compare analytical options and create checklists	Methodological fit and supervisor guidance
Material organisation	Prepare data, texts, sources or cases for analysis	Summarise, classify or organise material	Accuracy and completeness
Initial analysis	Identify patterns, themes, categories, tensions or arguments	Suggest possible categories or interpretations	Grounding in actual material
Deeper interpretation	Explain what the evidence means	Generate alternative interpretations or counterarguments	Plausibility and theoretical fit
Contribution development	Clarify what the thesis adds	Help formulate empirical, conceptual or critical contribution	Avoid overstatement
Presentation of findings	Structure the findings, results or analytical chapter	Suggest chapter organisation and transitions	Coherence and evidence-use

Source: Table by author.

3.5. Third Step in the Academic Thesis Process: Synthesis and Completion

The third step brings the thesis together as a coherent academic work. This stage is discussed in detail in Chapter 6. The student synthesises the research problem, literature, theory, method, material, analysis and contribution into a final manuscript. Writing at this stage is not only reporting. It is a continuation of thinking, interpretation and argumentation.

The discussion (see Section 6.1) interprets findings in relation to the literature and theory established in Step 1. It should not simply repeat the results; it should explain what they mean and why they matter. The conclusion (see Section 6.2) answers the research question directly, acknowledges limitations and, where appropriate, suggests directions for future research. GenAI can support synthesis (see Section 6.7) by checking the alignment between research questions and conclusions, identifying transitions that are weak or missing and flagging claims that need stronger support. It cannot, however, determine what the findings mean or how significant the contribution is.

Transparency and source integrity are especially important at this stage. All claims must be grounded in actual material and appropriate analysis. References (see Section 6.6) must be verified in original sources, preferably with DOIs, and not accepted directly from AI-generated suggestions, which may contain fabricated or inaccurate bibliographic details. GenAI use must be disclosed according to institutional guidelines, particularly where it has influenced content, analysis, argumentation or presentation. Where no specific guideline exists, the general research ethics principles discussed in Chapter 9 apply.

The final thesis quality assurance check (see Section 6.8) covers the full manuscript systematically: title, abstract, research questions, literature review, theoretical framework, methodology, analysis, discussion, conclusion, references, figures, tables, appendices and disclosure statement. GenAI can generate and apply checklists, but it cannot certify that the thesis is ready. That judgement belongs to the student, supervisor and examiner. However, a thesis is not ready for submission if the student cannot explain and defend it without GenAI.

Table 11 maps the key completion tasks. Table 12 provides an indicative timeline across all three steps. The timeline is not a fixed schedule as thesis duration varies by discipline, degree level, available material, supervision arrangements and student circumstances. Before starting the thesis process, and again at the close of each step, students should review the ethical checklist in Table 13. It can be adapted to local institutional guidelines.

Table 11. Synthesis and completion with generative AI support.

Completion Task	Practical Student Task	Possible GenAI Support	Required Human Check
Discussion	Interpret findings or arguments in relation to literature and theory	Suggest structure and alternative interpretations	Accuracy, nuance and contribution
Conclusion	Answer the research question, aim or problem	Check alignment between questions and conclusion	No new unsupported claims
Introduction finalisation	Ensure that introduction matches the completed thesis	Compare introduction with final argument	Coherence and accuracy
Abstract and keywords	Summarise the thesis clearly	Draft or revise concise versions	Faithfulness to the thesis
References	Check citation consistency	Identify possible mismatches or missing entries	Manual verification of all bibliographic details
Final manuscript	Improve readability and structure	Suggest transitions, headings and checklists	Student authorship and institutional requirements
Submission	Prepare final checklist and disclosure	Create task list from guidelines	Official submission rules

Source: Table by author.

Table 12. Indicative three-step thesis process timeline.

Step 1: Foundation of the Thesis			
Phase	**Task**	**Standard Track (Lasting Months)**	**Compressed Track (Lasting Weeks)**
1.1	Research question and positioning	W1	D1–2
1.2	Literature review	W1–2	D2–4
1.3	Concepts and theory	W1–2	D2–5
1.4	Material and methods design	W2	D3–6
1.5	Research plan	W2	D5–6
1.6	Thesis structure	W2	D6
1.7	Material collection (start)	W3–4	D5–7
1.8	Material collection (completion)	W5–8	D8–9
Step 2: Analysis and Results			
Phase	**Task**	**Standard Track (Lasting Months)**	**Compressed Track (Lasting Weeks)**
2.1	Methods and ethics finalisation	W6	D10
2.2	Analysis (draft)	W8	D11
2.3	Analysis (completion)	W9–10	D12–14
2.4	Results (draft)	W10–11	D11–12
2.5	Results (finalisation)	W12	D12–14
2.6	Introduction (finalised)	W12–13	D15
Step 3: Synthesis and Completion			
Phase	**Task**	**Standard Track (Lasting Months)**	**Compressed Track (Lasting Weeks)**
3.1	Discussion	W12–13	D15–16
3.2	Conclusion	W12–13	D16–17
3.3	Abstract and keywords	W12–13	D16–17
3.4	Figures and tables	W13	D18–20
3.5	References	W13	D19–20
3.6	Manuscript finalisation	W13–14	D19–20
3.7	Final quality assurance	W13–14	D21
3.8	Thesis submission	W13–14	D21
Supervision and feedback		throughout	throughout
Ethics and transparency		throughout	throughout

W = week; D = day. Source: Table by author.

Table 13. Ethical aspects of generative AI use in the thesis process.

Area	Checklist Item
Academic integrity and authorship	I understand and can defend every claim, interpretation and conclusion in the thesis.
	The thesis is based on my own thinking, decision-making and academic responsibility.
	GenAI is used as a support tool, not as an independent author.
Transparency and disclosure	I report GenAI use according to institutional guidelines.
	I explain how GenAI was used, for example for brainstorming, outlining, language editing, coding support, feedback or revision.
	I do not present AI-generated text as independent human research.
Sources and accuracy	I verify all sources manually through reliable academic databases or original publications.
	I check DOI numbers, bibliographic details and quotations where relevant.
	I remove fabricated, incomplete or unverifiable references.
Data ethics and data protection	I do not upload sensitive, identifiable or confidential material to AI systems unless permitted.
	I follow consent, anonymisation and material-protection practices.
	I clearly indicate any synthetic data and do not present it as real-world data.
Final scientific quality	I ground empirical claims in material and appropriate analysis.
	I critically evaluate AI outputs and do not accept them automatically.
	I ensure that the thesis meets disciplinary standards and is academically defensible.

Source: Table by author.

3.6.1. Implications for Supervisors

GenAI makes supervision more important, not less. When students can produce fluent text, generate outlines and receive instant structural feedback from LLMs, the quality of the thinking behind the text becomes harder to see and easier to overlook. Supervisors need to look past the surface. The central questions remain: Is the research question intellectually significant? Is the literature engaged critically? Does the method fit the question? Is the analysis grounded in the material? Can the student explain and defend the work?

The most practical change supervisors can make is to begin the conversation about GenAI use at the first supervision meeting, not after problems arise. This conversation should establish what is permitted, what requires disclosure, what kinds of material must not enter AI systems and what documentation the student is expected to keep. Students should maintain a running log of their GenAI use throughout the process: what they used it for, what it produced and what they accepted, rejected or modified, not retrospectively.

The three-step model provides a ready-made structure for supervision conversations. In Step 1, supervisors can ask how the research question was arrived at, which sources have been read in the original, how the method was selected and what the research plan shows about the student's understanding of the design. In Step 2, they can ask how the student analysed the material, what AI suggestions were tested and rejected, and how the contribution was formulated. In Step 3, they can ask how the student verified references, documented GenAI use and prepared the final manuscript. These questions make GenAI use visible as part of the learning process rather than concealed as background activity.

Supervisors who use GenAI to support their own feedback, by preparing questions, comparing a draft with assessment criteria, generating revision suggestions, must apply the same principle: AI output is a starting point for professional judgement, not a substitute for it, thus scaffolding is relevant. Assessment decisions, misconduct rulings and final evaluations require human responsibility, institutional authority and disciplinary expertise. When GenAI is used to support thesis assessment, institutional regulations apply (see Chapters 7 and 9).

Fairness is an institutional concern that supervisors should raise. Students differ substantially in their access to paid AI models, high-quality internet connectivity, language support and AI literacy. If GenAI use advantages some students over others without institutional guidance, existing inequalities widen. Blanket prohibition is unlikely to be the answer as it tends to push use underground rather than eliminate it. Shared, explicit and realistic guidance accessible to all students is more effective.

3.6.2. Implications for Institutions

Institutions bear responsibility for creating the conditions in which responsible GenAI use is possible. This means providing clear policies on what is permitted at each thesis level and discipline, examples of acceptable disclosure language, guidance on data protection and sensitive material, and practical training for both supervisors and students. Policies should be specific enough to be actionable, distinguishing low-risk support from high-risk delegation, rather than relying on general ethical principles that leave students and supervisors uncertain about borderline cases.

The three-step model can support institutional policy development by providing a shared vocabulary and a task-level framework for defining acceptable use. It also supports quality assurance: if students are expected to document their GenAI use at each step, institutions have a basis for reviewing that use as part of the thesis examination process.

3.7. Conclusions

The three-step model gives students, supervisors and institutions a shared framework for integrating GenAI into thesis work without losing academic integrity. Its value is not that it tells students how to use AI, but that it shows where the student's judgement is irreplaceable at each stage and therefore where supervision should focus.

GenAI can reduce cognitive load, accelerate routine tasks and provide feedback at moments when human support is unavailable. These are genuine benefits. The risk is not the technology itself but passive use: accepting AI outputs without evaluation, allowing AI-generated framing to determine the research question or contribution, and producing fluent work that the student cannot explain or defend. The three-step model addresses that risk by keeping the student's decision-making visible and documentable throughout.

Used within these boundaries, GenAI becomes part of a structured and reflective thesis process rather than an unexamined shortcut. Authorship, judgement and responsibility remain where the educational purpose of the thesis requires them to be: with the student, guided by supervisors and governed by institutions.

Part II: Conducting Thesis Work with Generative AI

4. Designing the Thesis with Generative AI: Step 1

This chapter covers Step 1 of the thesis process: designing the thesis. The student's task at this stage is to transform a broad interest or preliminary idea into a focused, feasible and academically justified research plan. The main tasks are to define the topic, formulate the research question, position the thesis in relation to the existing literature, clarify the conceptual or theoretical framework, identify research material, select a method or analytical approach, and prepare a realistic research plan and thesis structure.

This chapter applies the three-step model introduced in Chapter 3. Step 1 is the foundation that prepares the student for Step 2, where material is collected, organised, analysed and interpreted, and for Step 3, where the thesis is written and finalised. Some overlap between chapters is unavoidable because research design and material collection are connected, but the purpose of this chapter is to ensure the student is ready to proceed to analysis with a clear and defensible plan.

GenAI can support Step 1 by helping students explore alternatives, narrow topics, compare research questions, organise literature, clarify concepts, test methodological alignment and prepare research plans. Prompting is the most accessible form of support; skill-based operations can make repeated tasks more systematic; MCP-connected systems may provide access to institutional guidelines, library resources or approved databases. In all cases, the student remains responsible for academic decisions, source verification, ethical reflection and the final research design. GenAI outputs are suggestions to be evaluated, not decisions to be accepted. Extended prompt versions are in Appendix A; skill-based operations in Appendix D; MCP-oriented workflows in Appendix E.

Step 1 unfolds over different timelines depending on the thesis level, available preparation and institutional requirements (Figure 5). The timeline indicators in each section show approximate durations for a standard thesis process (months) and an intensive course with some preparation (weeks). The timeline also indicates a narrower coursework or minor thesis with an already well-prepared project (intensive days). The latter version is only for already prepared projects with approved topic, available material, confirmed method and supervisor clearance. The most intensive track is *not* appropriate for a full Bachelor's or Master's thesis and applies only to course-based minor theses or already-approved projects. In all cases, speed should not be confused with quality: a compressed timeline is only realistic when the topic, material, supervision and institutional context are already substantially clear. Table 14 presents the workflow structure for the use of generative AI in the thesis process.

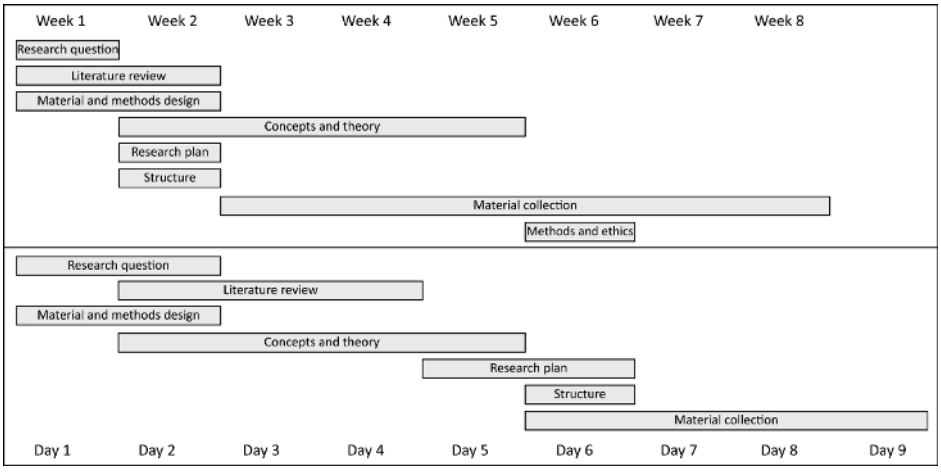

Figure 5. Step 1 of the thesis process across different timelines. Source: Figure by author.

Table 14. Workflow structure for the use of generative AI in the thesis process.

Stage	Student Action
1. Prepare	Define the task, thesis level, discipline, material type and data sensitivity.
2. Protect	Remove personal, confidential, copyrighted or restricted material unless institutional rules permit use.
3. Prompt	Ask for alternatives, critique, structure or checks but not final academic truth.
4. Evaluate	Compare the output with sources, data, method, supervisor advice and thesis requirements.
5. Decide	Accept, reject or revise suggestions based on student judgement.
6. Document	Record significant GenAI use in the thesis log.
7. Disclose	Report use according to institutional rules.

Source: Table by author.

4.1. From Topic to Research Question

Task: Move from a broad topic to a researchable question, aim, problem or hypothesis. A topic identifies the area of interest; a research question defines what the thesis will examine. A research aim or problem may be more appropriate in theoretical, legal, interpretive, design-oriented or applied work. A hypothesis may be used in quantitative or experimental studies.

A good research question is focused, feasible, relevant and connected to available material and methods. It should not be too broad for the thesis level and should be meaningful in relation to the existing literature, concepts or practical problems (Table 15). The student must consider constraints including time, access to material, language, ethics, methodological complexity and degree-level expectations. At

the Bachelor's level, the question is often descriptive, comparative, interpretive or based on a limited set of material. At the Master's level, it should be more theoretically grounded and support a clearer academic contribution: empirical, conceptual, theoretical, legal, interpretive, methodological or critical, depending on the discipline.

Table 15. Examples of weak and improved research questions.

Broad Thesis Topic	Weak Research Question	Improved Research Question	Why Better
Remote work	How has remote work changed employees?	How do early-career employees in German software firms describe the effect of hybrid work on professional identity?	Narrower group, context, material and analytical focus
AI in education	Is AI useful for students?	How do Master's students use GenAI to revise thesis drafts, and what risks do supervisors identify in this process?	Researchable, material-based, thesis-level appropriate

Source: Table by author.

How GenAI can help: GenAI is most useful at this stage for generating alternatives and testing feasibility. It can produce multiple formulations of a research question from a broad topic description, compare the strengths and weaknesses of each, identify scope problems (too broad, too vague, poorly connected to available material), and help the student prepare alternative versions to discuss with a supervisor. The key value is in seeing options side by side, not in accepting any single formulation. GenAI cannot judge whether a question is intellectually significant for the field: that requires reading, disciplinary knowledge and supervision.

Timeline: months: week 1; weeks: days 1–2; intensive: day 1 (morning)

Prompt: Below are short example prompts. Extended versions are provided in Appendix A, prompts A.4.1.1–4.

4.1.1. Prompt from Topic to Research Question: Undergraduate Level

Based on the following topic: [paste topic]

Generate 2–3 clear and feasible Bachelor's-level research questions. The questions should be specific, realistic and suitable for a limited thesis project. They may be

empirical, conceptual, interpretive, comparative or based on accessible material, depending on the topic.

For each question, briefly explain: what the question focuses on; what kind of material, data, sources or texts could be used; why the question is feasible at Bachelor's level; what the main limitation or risk might be.

Do not make the topic broader than necessary.

4.1.2. Prompt from Topic to Research Question: Postgraduate Level

Based on the following topic and theoretical orientation: [paste topic and orientation]

Generate 2–3 analytically strong Master's-level research questions. The questions should be theoretically grounded and suitable for a focused academic contribution. They may involve empirical analysis, conceptual development, theoretical comparison, legal interpretation, textual analysis, policy analysis or critical inquiry, depending on the field.

For each question, briefly explain: its connection to theory, concepts or scholarly debate; the possible material, data, sources or texts needed; the suitable methodological or analytical approach; the likely academic contribution; the main feasibility or ethical risk.

Do not invent sources or assume that material is available unless this is stated.

Expected output: Several alternative research questions, each with a short explanation of focus, material, feasibility and possible contribution. The output should make differences between options visible, not just provide polished wording. It should identify risks such as overly broad scope, inaccessible material or weak theoretical grounding.

Evaluation checklist. The student should evaluate the output by asking:

- Is the question clear and answerable?
- Is it narrow enough for the thesis level?
- Can relevant material or sources realistically be accessed?
- Does the question connect to the academic literature or disciplinary debate?
- Is the suggested method or analytical approach realistic?
- Can I explain why this question matters?
- Does the question support learning rather than only fast text production?

Warning signs in the GenAI output:

- The questions are all variations of the same broad formulation and genuine alternatives are missing;
- The question presupposes material the student does not have access to;
- The model has invented a theoretical tradition or field of study that does not exist;
- The question is phrased fluently but the student cannot explain what 'answering' it would require;
- All options are at the same level of abstraction with no guidance on how to choose between them.

4.2. Positioning the Thesis in the Literature

Task: Situate the thesis within existing scholarship by identifying key concepts, debates, findings, disagreements and gaps relevant to the research question. The

purpose is not to collect as many sources as possible, but to build a structured understanding of what is already known and how the thesis relates to that knowledge.

At this stage, the student moves from topic interest to scholarly positioning by identifying which academic conversation the thesis contributes to. This may concern empirical findings, concepts, theory, law, policy, historical interpretation, textual analysis, philosophical argument or critical debate. At the Bachelor's level, the literature review should be focused: it should show understanding of the main concepts and a selected set of verified sources. At the Master's level, the literature review should be broader, more analytical and more explicit about tensions, gaps and contribution.

The basic workflow is to search academic databases, export source metadata, read abstracts and key texts, build a source matrix, use GenAI to organise only verified sources, and verify every claimed research gap against the literature. A research gap suggested by GenAI is not a proper gap until the student can indicate which verified sources support this claim. Record whether GenAI helped group sources, suggest themes, identify gaps, or check references. Record also which GenAI suggestions were rejected.

In multilingual research, students should search the literature in relevant languages and translate search terms, not only final prose. Key concepts, legal terminology and interview quotations must be checked against disciplinary and contextual meanings. Students should decide whether to present both original and translated quotations and document material use of machine translation. Particular caution is needed in lower-resource languages, where model performance may be weaker, and with English-language theoretical or geographical bias.

Systematic and scoping reviews require a documented protocol, clear research question, databases, complete search strings, search dates, inclusion and exclusion criteria, deduplication, human screening, data extraction, quality appraisal and, where appropriate, PRISMA-style reporting.

How GenAI can help: GenAI is useful here for organising what the student has already gathered, not for generating the literature itself. It can group verified sources into themes, map relationships between debates, help the student distinguish between descriptive summary and analytical synthesis, and draft a literature matrix. GenAI may assist with screening, extraction or organisation, but it must not alter the criteria or determine inclusion without human verification. Any material AI assistance should be documented, including the tool, task, outputs checked and final human decisions.

Tools that answer only from an uploaded corpus, such as NotebookLM, suit this stage particularly well, since fabrication risk is reduced when the model cannot introduce sources the student has not supplied. Verification of the uploaded sources themselves remains necessary.

Skill-based operations are well suited to this stage because the same analytical template (research question, theory, method, findings, limitations, relevance) recurs across many sources. The critical risk is source fabrication: LLMs produce plausible-looking but non-existent references. Every author, title, journal, year, and DOI must be independently verified. The source-verification prompt below addresses this specifically.

Timeline: months: weeks 1–2; weeks: days 2–4; intensive: day 1 (late morning)

Prompt: Below are short example prompts. Extended versions are provided in Appendix A, prompts A.4.2.1–10.

4.2.1. Prompt for Literature Search Strategy: Undergraduate Level

Based on my research question, aim or problem: [paste]
and these sources, notes or materials: [paste]

Help me structure a Bachelor's-level literature review. Identify the key concepts, group the literature into 3–4 clear themes, and explain how each theme relates to my research question.

Suggest one realistic research gap, unresolved issue or analytical focus that would be suitable for a Bachelor's thesis.

Do not invent sources. Mark any uncertain claims clearly.

4.2.2. Prompt for Literature Search Strategy: Postgraduate Level

Based on my research question, aim or problem: [paste]
and these key sources, concepts or theories: [paste]

Help me build a Master's-level literature review and theoretical or conceptual positioning. Identify the key concepts, organise the literature into debates or schools of thought, compare perspectives, and explain their strengths and limitations.

Suggest a focused research gap, theoretical tension, conceptual problem, legal issue, interpretive question or empirical gap that could support a Master's-level contribution.

Do not invent sources. Clearly separate source-based claims from your own suggestions.

4.2.3. Prompt for Source Verification

Review the following sources: [paste list]

Identify which sources appear real and traceable, which references have missing or incomplete metadata, and which sources require further verification.

Check whether each source needs author names, publication year, title, journal or book title, publisher, volume, issue, page range, DOI, URL or access information.

Do not invent missing bibliographic details. Mark uncertain items and suggest how I should verify them, for example through DOI records, publisher websites, university library catalogues, Google Scholar, Crossref, Scopus, Web of Science or another reliable database.

Expected output: The literature, grouped into meaningful themes or debates, connected to the research question, with possible gaps or tensions identified. The output should distinguish between what the sources say and what the model suggests as interpretation. It should flag which sources require independent verification.

Evaluation checklist. The student should ask the following questions:

- Are all sources real and traceable to original publications?
- Have I read the original sources, not only AI-generated summaries?
- Are the themes grounded in the literature rather than in generic categories?
- Does the literature review support the specific research question?
- Does the output identify disagreement, uncertainty or debate rather than presenting consensus?
- Are key authors, theories or regional contexts missing?
- Is the proposed research gap realistic and supported by the literature?

Warning signs in the GenAI output:

- Sources appear in the correct citation format but cannot be found in any database, which is a fabrication risk;
- All sources are described as broadly agreeing so that genuine disciplinary debate is absent.
- The themes are generic categories (e.g., 'advantages', 'challenges', 'future directions') that could apply to any topic;
- The suggested research gap is so broad it could justify any thesis, not specifically this one;
- The output cites sources the student provided but attributes claims to them that do not appear in the originals.

4.3. Building the Conceptual or Theoretical Framework

Task: Clarify the key concepts, assumptions and perspectives that will guide the thesis. The framework explains how the research problem is understood and how material will later be analysed or interpreted. Theory is not a decorative background section as it shapes the logic of the entire thesis.

In empirical theses, theory guides the interpretation of findings. In conceptual, theoretical, legal, humanities-oriented or critical theses, theory or concepts may be the primary material of analysis. A strong framework defines key terms, distinguishes related concepts, justifies the chosen perspective and connects theory to the research question. At the Bachelor's level, the framework may consist of a clear conceptual background and a small number of well-defined key concepts. At the Master's level, it should show awareness of theoretical debates, conceptual tensions or alternative perspectives.

How GenAI can help: GenAI is useful for clarifying and comparing definitions of the same concept across sources, identifying related or easily confused terms, summarising a theoretical tradition in plain language, and checking whether concepts are used consistently across a draft. It is less reliable for determining which theoretical framework is most appropriate for a specific research question, because that judgement requires disciplinary knowledge the model may not have at the required depth. The specific risk at this stage is theoretical flattening: the model may present contested or evolving concepts as settled, combine frameworks from incompatible traditions without flagging the tension, or generate definitions that sound authoritative but are not grounded in the sources the student is using.

Timeline: months: weeks 1–2; weeks: days 2–5; intensive: day 1 (afternoon)

Prompt: Below are short example prompts. Extended versions are provided in Appendix A, prompts A.4.3.1–7.

4.3.1. Prompt for Mapping Concept Definitions: Undergraduate Level

Based on my research question, aim or problem: [paste]

and these key concepts, sources or materials: [paste]

Help me strengthen the conceptual section of my Bachelor's thesis. Define the key concepts clearly, distinguish related or easily confused concepts, and explain how they support the analysis, interpretation or argument.

Indicate which concepts are central and which are secondary. Keep the explanation realistic for an undergraduate thesis.

Do not invent sources or definitions. Mark uncertain claims clearly.

4.3.2. Prompt for Mapping Concept Definitions: Postgraduate Level

Based on my research question, aim or problem: [paste]
and these key theories, concepts or sources: [paste]

Help me develop a coherent theoretical or conceptual framework for my Master's thesis. Compare relevant approaches, explain their strengths and limitations, justify the most suitable framework, and show how it supports the analysis, interpretation or argument.

Explain how the framework can help produce an empirical, conceptual, theoretical, legal, interpretive or critical contribution, depending on the thesis topic.

Clearly separate source-based claims from your own suggestions.

4.3.3. Prompt for Diagnosing a Draft Conceptual Section

Review my draft conceptual or theoretical section: [paste]

Identify unclear concepts, weak definitions, missing distinctions, weak links to the research question, and places where the section is descriptive rather than analytical.

Suggest concrete improvements. Indicate whether the concepts and theories are used consistently and whether they clearly support the thesis analysis, interpretation or argument.

Expected output: Clarified key concepts, distinguished related terms and an explanation of how the framework supports the research question. At Master's level, the output should also identify theoretical alternatives, tensions or limitations and how the chosen framework relates to them. The output should help the student understand how theory will guide analysis, not just describe it.

Evaluation checklist. The student should ask the following questions:

- Are the key concepts defined using real scholarly sources, not AI-generated definitions?
- Are related concepts clearly distinguished from one another?
- Does the framework support the research question and anticipated method?
- Does the section explain why this framework is appropriate rather than just describing it?
- Are alternative perspectives acknowledged where disciplinarily relevant?
- Can I explain how the framework will guide analysis in concrete terms?

Warning signs in the GenAI output:

- The model combines theoretical frameworks from different traditions without explaining the tension or justifying the combination;
- Definitions are presented with authority but do not match the sources the student has read;
- The framework section reads as a general textbook overview with no connection to the specific research question;
- Key contested or evolving concepts are presented as settled and unambiguous;
- The model generates definitions that are not attributed to any source and cannot be verified.

4.4. Designing Research Material and Method

Task: Design the relationship between research question, material and method. Identify what kind of material, sources, data, texts, cases, legal documents, concepts or theories are needed, and select an appropriate method or analytical approach.

A strong design is coherent: the research question should require the chosen material, the material should be suitable for the question, and the method should allow the student to analyse or interpret the material meaningfully. In empirical theses, this may involve planning interviews, surveys, observations, experiments, statistical material or document analysis. In conceptual, theoretical, legal or humanities-oriented theses, it may involve selecting texts, cases, legal sources, policy materials, concepts, theories or debates for comparison, interpretation, critique or conceptual development. The student also identifies ethical, legal and practical constraints: consent, privacy, data protection, copyright, access, language limitations, sensitive topics or institutional ethics review requirements.

How GenAI can help: GenAI is most useful here for alignment checking: examining whether the research question, material and method are logically connected, or whether there are mismatches that need to be resolved before work begins. It can compare method options, identify when a proposed design is too ambitious for the thesis level, and flag practical constraints the student may not have considered. Skills-based alignment-check workflows are well suited to this task because students often need to return to this check after revising their research question or switching material. The important limit is that GenAI does not know whether specific datasets, archives, interview participants or institutional records are accessible to the student. Feasibility judgements must come from the student and supervisor.

Timeline: months: week 2; weeks: days 3–6; intensive: day 1 (midday)

Prompt: Below are short example prompts. Extended versions are provided in Appendix A, prompts A.4.4.1–6.

4.4.1. Prompt for Identifying Suitable Research Material: Undergraduate Level

Based on the following research question, aim or problem: [paste]

Suggest realistic and accessible research material for a Bachelor's thesis. This may include empirical data, documents, texts, legal sources, cases, policy materials, concepts, theories or scholarly debates, depending on the topic.

Recommend one manageable method or analytical approach. Explain why it fits the research question and material.

Identify the main practical, ethical, legal or data protection risks that the student should consider.

4.4.2. Prompt for Identifying Suitable Research Material: Postgraduate Level

Based on the following research question, aim or problem: [paste]

Propose a feasible research strategy for a Master's thesis. Suggest appropriate research material, which may include empirical data, texts, documents, legal sources, cases, theoretical literature, concepts or other relevant sources.

Recommend suitable methods or analytical approaches and explain how they connect to the research question, theory and expected contribution.

Identify the main feasibility, ethical, legal and data protection issues.

4.4.3. Prompt for Alignment Check

Evaluate whether my research question, theory, research material and method or analytical approach are logically aligned: [paste summary]

Identify any mismatch or weak link between the question, concepts, theory, material, data, sources, method and expected contribution.

Suggest how the research design could be improved while keeping it realistic for the thesis level.

Expected output: An explanation of what material is suitable and why, which method or analytical approach is realistic, what risks and mismatches exist, and how the research design holds together as a connected whole. The best outputs help the student see the design as a system, not as a list of separate choices.

Evaluation checklist. The student should ask the following questions:

- Does the material allow me to answer the research question?
- Is the material accessible within the available time and with the student's resources?
- Is the method appropriate for the material and the research question?
- Is the design realistic for the thesis level?
- Are ethical, legal and data protection issues identified concretely, not just mentioned?
- Does the method connect to the theoretical framework?
- Can I justify this design to my supervisor without relying on AI-generated explanations?

Warning signs in the GenAI output:

- The model suggests specialised datasets, restricted archives or proprietary databases the student cannot access;
- The proposed method is technically sophisticated (e.g., network analysis, machine learning) without acknowledging the skills required;
- Ethical risks are mentioned in a single generic sentence without practical guidance;
- The design sounds internally coherent but the research question has shifted slightly from what the student asked about;
- The model suggests 'mixed methods' as a default without explaining why both approaches are necessary for this specific question.

While considering and deciding on the use of empirical material in GenAI systems, students need to pay specific attention to the possibilities and risks of inserting the material into an LLM. Approval requirements and potentially safer alternatives are presented in Table 16. Before inserting, verify the institutional regulations of your educational institution. Institutional approval is normally granted per data class rather than per tool, so the same approved tool may be permitted for one type of material and prohibited for another. Students should consult their institution's own data classification, which typically distinguishes public, internal, personal and special-category data.

Table 16. Risks and safer alternatives for inserting data into generative AI systems.

Material Type	Public GenAI Tool	Approved Institutional GenAI	Safer Alternative
Student's own non-sensitive outline	Usually yes	Yes	Keep version history
Published abstract or bibliographic metadata	Usually yes	Yes	Verify in original source
Full copyrighted article PDF	Usually no/depends on licence	Depends on licence	Use notes, citation metadata, short excerpts where permitted
Interview transcript with personal data	No	Only if approved	Use anonymised summaries or local approved tools
Confidential company document	No	Only with permission	Describe structure without content
Ethics application or consent form	Caution	Yes if approved	Ask supervisor/institution first
Unpublished thesis draft	Caution	Yes if approved	Use excerpts or summaries

Source: Table by author.

4.5. Writing the Research Plan

Task: Bring the thesis design together into a clear, justified and feasible research plan. The plan includes the research question, literature background, conceptual or theoretical framework, research material, method or analytical approach, ethical considerations and timetable.

The research plan is not primarily an administrative document. It helps the student clarify what the thesis will do, how it will be done and why the project is realistic. It also gives the supervisor a basis for structured feedback. A good research plan makes weaknesses visible early, when they can still be corrected. At the Bachelor's level, the plan should show that the thesis is focused, manageable and based on relevant sources and material. At the Master's level, it should include stronger theoretical grounding, clearer methodological justification and a more explicit contribution.

How GenAI can help: GenAI is well suited to checking completeness and coherence: it can identify which elements of the plan are missing, weak or inconsistently connected, and suggest how to fill the gaps. It can generate different

versions of the plan for different purposes, such as a supervision meeting, a seminar presentation or an ethics review submission, without changing the substance. The critical boundary is that the plan must reflect the student's own reading, decisions and understanding. A polished AI-generated plan that the student cannot explain in their own words is not a research plan; it is a generated text that will cause problems in supervision and examination.

Timeline: months: week 2; weeks: days 5–6; intensive: day 1 (midday)

Prompt: Below are short example prompts. Extended versions are provided in Appendix A, prompts A.4.5.1–2.

4.5.1. Prompt for Writing the Research Plan: Undergraduate Level

Based on the following topic or preliminary idea: [paste]

Help me design a realistic Bachelor's-level research plan. Include: a clear research question, aim or problem; a short literature background; the main concepts or theoretical perspective; suitable research material, such as data, texts, documents, legal sources, cases, theories or scholarly debates; one manageable method or analytical approach; the main ethical, legal or data protection issues; a feasible timetable.

Explain why the plan is realistic for a Bachelor's thesis.

4.5.2. Prompt for Writing the Research Plan: Postgraduate Level

Help me design a Master's-level research plan with clear theoretical grounding, methodological or analytical justification and a realistic timetable.

Include: the research question, aim or problem; the key literature and scholarly debate; the theoretical or conceptual framework; appropriate research material, such as empirical data, texts, documents, legal sources, cases, concepts, theories or policy materials; suitable methods or analytical approaches; ethical, legal or data protection considerations; the expected scholarly contribution.

Explain how the plan is feasible and how it could contribute to the field.

4.5.3. Prompt for Review of Research Plan

Review the following research plan summary: [paste]

Assess whether the topic, research question or aim, literature background, theory, research material, method or analytical approach, ethics and timetable form a coherent and feasible whole.

Identify any weak links, mismatches or unrealistic elements. Suggest concrete improvements while keeping the plan appropriate for the thesis level.

Expected output: A coherent research plan or a structured review of an existing plan, showing how the research question, literature, theory, material and method fit together. The output should identify gaps, unrealistic elements and ethical issues, and not only confirm that the plan is fine.

Evaluation checklist. The student should ask the following questions:

- Is the research question clear and appropriately scoped?
- Is the literature background sufficient for this stage of the thesis?
- Are the concepts and theory connected to the research question?
- Is the material available and appropriate?
- Is the method realistic and justified?

- Are ethical and data protection issues addressed concretely?
- Is the timetable feasible for the degree level?
- Can I explain every part of the plan in my own words without relying on AI wording?

Warning signs in the GenAI output:

- The plan is well-structured but the student cannot explain the rationale for key choices;
- The timetable assumes data collection will be completed before ethical approval has been sought;
- The contribution is described in vague terms ('filling a gap', 'adding to the literature') without specifying what exactly will be added;
- The plan reads as internally consistent but the research question has been subtly reframed from what the student intended;
- Sources listed in the literature background include references that cannot be verified.

4.6. Designing the Thesis Structure

Task: Design a clear and logical chapter structure that supports the progression from research question to the literature, theory, material, method, analysis, interpretation, discussion and conclusion. Each chapter or section should have a clear function in the argument.

Thesis structures vary by discipline and thesis type. An empirical thesis may follow a conventional sequence: introduction, literature review, theory, material and methods, results, discussion, conclusion. A theoretical, legal, humanities-oriented or conceptual thesis may use a more argument-based structure organised around central claims or interpretive problems. Institutional requirements must be followed and should be consulted before the structure is finalised.

How GenAI can help: GenAI is most useful at this stage for students who have a clear research question and plan but are uncertain how to organise the thesis as a document. It can suggest chapter outlines, compare alternative structures, explain the function of each section and check whether the sequence logically supports the research question. It can also adapt a generic institutional template to the specific thesis type. The important check is whether the proposed structure fits the research question. A generic structure that looks conventional may fail to support the specific argument the thesis needs to make.

Timeline: months: week 2; weeks: day 6; intensive: day 1 (late afternoon)

Prompt: Below are short example prompts. Extended versions are provided in Appendix A, prompts A.4.6.1–4.

4.6.1. Prompt for Designing the Thesis Structure: Undergraduate Level

Propose a clear Bachelor's-level thesis structure for the following research question, aim or problem: [paste]

Include chapter titles and 2–3 bullet points describing the content and function of each chapter.

Make sure the structure is realistic for a Bachelor's thesis and supports a coherent progression from introduction to concepts, material, method or analytical approach, analysis, discussion and conclusions.

4.6.2. Prompt for Designing the Thesis Structure: Postgraduate Level

Propose a Master's-level thesis structure for the following research question, aim or problem: [paste]

Ensure that the structure supports theoretical depth, methodological or analytical transparency and clear argumentative progression.

Include chapter titles and 2–3 bullet points describing the content and function of each chapter.

Explain how each chapter contributes to the overall academic contribution of the thesis.

4.6.3. Prompt for Institutional Guideline Adaptation

Use the following institutional guideline: [paste]

Adapt it to this research question, aim or problem and research design: [paste]

Suggest a coherent thesis structure and explain the function of each chapter. Take into account the type of thesis, such as empirical, conceptual, theoretical, legal, interpretive, critical or humanities-oriented work.

Identify any sections required by the institution and any sections that may need adaptation for this specific thesis.

Expected output: A clear chapter structure with the function of each section explained, showing how the thesis moves logically from research problem to contribution. The output should also identify where institutional requirements must be followed and flag any structural choices that may need supervisor approval.

Evaluation checklist. The student should ask the following questions:

- Does each chapter have a clear and distinct function?
- Does the structure support answering the research question?
- Is there unnecessary overlap or repetition between chapters?
- Does the structure fit the thesis type (empirical, theoretical, legal, etc.)?
- Are institutional requirements followed?
- Does the structure provide space for analysis and argumentation, not only description?
- Is the structure realistic for the thesis length and level?

Warning signs in the GenAI output:

- The structure is a generic template (introduction → literature → methods → results → discussion) applied without adaptation to the specific thesis type or research question;
- The model adds chapters that are conventional in some disciplines but not required or appropriate for this thesis;
- The theory chapter and the literature review are separate but serve essentially the same function, creating overlap;
- The structure does not include a chapter or section where the actual analysis or argument is developed;
- The chapter functions are described in generic terms that could apply to any thesis, not this one.

4.7. Preparing Material Collection and Ethical Review

Task: Prepare for the transition from thesis design to research implementation. Ensure that research material can be collected, selected or delimited in a systematic and ethically appropriate way before Step 2 begins.

Depending on the thesis, material may include interviews, survey responses, observations, documents, texts, legal sources, policy materials, archival sources, cases, theoretical literature, concepts or scholarly debates. In empirical research, preparation involves interview guides, survey questions, sampling logic, consent procedures and data protection plans. In non-empirical theses, it involves source-selection criteria, legal or textual corpus delimitation, case selection, archive access protocols or criteria for theoretical comparison. The actual collection, organisation, analysis and interpretation of material are covered in Chapter 5. This section focuses on preparation.

How GenAI can help: GenAI is useful for drafting preliminary research instruments and source-selection criteria, identifying feasibility issues, and preparing ethics checklists for supervisor review. For interview-based theses, it can help formulate neutral, open-ended questions that are aligned with key concepts. For document or text-based theses, it can help articulate selection criteria and identify corpus boundaries. Skill-based operations can support repeated review of interview guides or source-selection criteria against the research question. The hard limit: GenAI must not be used to process sensitive or identifiable material in unapproved systems. Ethical and legal decisions must follow institutional requirements and, where required, formal ethics committee review.

Timeline: months: weeks 3–4; weeks: days 5–7; intensive: day 1 (late afternoon)

Prompt: Below are short example prompts. Extended versions are provided in Appendix A, prompts A.4.7.1–6.

4.7.1. Prompt for Material Collection or Selection Strategy

Based on my research question, aim or problem: [paste]

Suggest a realistic strategy for collecting or selecting research material. Depending on the thesis, this may include empirical data, documents, texts, legal sources, cases, policy materials, archival materials, theoretical texts or scholarly debates.

Recommend a feasible sampling or selection approach and identify the main ethical, legal, practical or data protection issues I should consider.

4.7.2. Prompt for Designing Research Instruments

Based on the following research question, aim or problem: [paste]

Help me design suitable research instruments or source-selection criteria.

If the thesis is empirical, suggest interview questions, survey items or observation points that are clear, neutral and aligned with the key concepts of the study.

If the thesis is non-empirical, suggest criteria for selecting relevant texts, legal materials, cases, policy documents, theories or scholarly debates.

Do not assume that material is available unless I state this.

4.7.3. Prompt for Ethics and Feasibility

Identify the main ethical and feasibility issues in the following material or data collection design: [paste]

Explain the main risks and suggest practical ways to address them. Consider access, consent, privacy, data protection, sensitivity of the topic, reliability of sources, copyright, institutional requirements and the suitability of the material for the research question.

Expected output: Realistic material or source-selection procedures, possible instruments or criteria, and identified ethical and practical risks. The output should help the student prepare for collection without overstating what has already been completed. Ethical risks should be specific and actionable, not generic.

Evaluation checklist. The student should ask the following questions:

- Is the proposed material or source base accessible to the student?
- Are source-selection or sampling criteria clear and connected to the research question?
- Are interview or survey questions neutral, open-ended and aligned with key concepts?
- Are ethical and data protection issues identified specifically rather than generically?
- Is formal ethics review needed, and if so, has the process been initiated?
- Does the plan fit institutional requirements for material handling and documentation?
- Does the consent form mention GenAI-supported processing, if relevant?
- Will any data be uploaded to external systems?
- Is the GenAI tool approved by the institution?
- Where are prompts and outputs stored?
- Are data transferred outside the institution or jurisdiction?
- Can the student use anonymised summaries instead of raw material?
- Does copyright allow the relevant text to be processed by the tool?

Warning signs in the GenAI output:

- Interview questions are leading or closed, producing yes/no responses that cannot generate meaningful data;
- The model suggests accessing sensitive populations (minors, vulnerable groups, health data) without flagging the ethics requirements;
- Source-selection criteria are so broad that almost any document would qualify.
- The ethics commentary consists of one generic sentence about confidentiality without addressing the specific risks of this study;
- The model assumes the student can access a specific institutional database, archive or participant group that has not been confirmed.

4.8. Readiness Checkpoint Before Step 2

Before moving from design to research and analysis, the student should check whether the thesis is ready at this stage. This checkpoint prevents entering Step 2 with an unclear research question, weak theoretical grounding, inaccessible material or an unrealistic method. It can be used independently, in supervision or in a thesis seminar. GenAI may help apply the checklist, but the decision to proceed should involve the student's own judgement and, where relevant, supervisor approval.

Timeline: months: week 4; weeks: day 7; intensive: day 1 (evening)

Prompt: Below are short example prompts. Extended versions are provided in Appendix A, prompt A.4.8.1.

Prompt for Readiness Review

Review the following summary of my thesis design: [paste]

Assess whether I am ready to move from Step 1, designing the thesis, to Step 2, conducting research and analysis.

Check the following: research question, aim or problem; literature positioning; concepts and theoretical framework; research material or source-selection plan; method or analytical approach; ethical, legal and data protection issues; thesis structure; timetable; possible risks.

Identify weak links, missing elements and priorities for revision. Do not rewrite the thesis for me. Provide a readiness assessment and a short action list.

Expected output: A structured readiness assessment that identifies specific weaknesses and prioritises what must be addressed before Step 2 begins (Tables 17 and 18). The output should not simply confirm that the plan is adequate. A useful readiness assessment is critical and concrete.

Table 17. Readiness checklist before moving to Step 2.

Area	Checkpoint Question
Topic and research question	Is the topic narrowed into a clear research question, aim or problem?
Feasibility	Can the thesis be completed with available time, skills and resources?
Literature positioning	Have key sources and debates been identified and verified?
Concepts and theory	Are key concepts defined and linked to the research question?
Material	Is the research material, data, source base or textual corpus realistic and accessible?
Method or analytical approach	Does the method fit the question, material and thesis level?

Table 17. *Cont.*

Area	Checkpoint Question
Ethics and data protection	Have ethical, legal, copyright and data protection issues been identified?
Research plan	Does the plan form a coherent whole?
Thesis structure	Does the chapter structure support the research question and argument?
GenAI use	Is GenAI use documented where it has influenced planning, sources, wording or decisions?
Supervisor discussion	Have uncertain issues been discussed with the supervisor where relevant?

Source: Table by author.

Table 18. Common risks in Step 1 and how to address them.

Risk	Symptom	Checkpoint Question	Recommended Action
Research question too broad	The question is meaningful but cannot be answered with available material or time.	Can I answer this question within the thesis scope?	Narrow the scope by location, group, period, material, case or concept.
Superficial contribution	The topic is general and does not clearly add anything to existing discussion.	What does this thesis clarify, compare, interpret or contribute?	Specify the contribution in relation to literature, theory, material or context.
Conceptual inconsistency	Key concepts are used inconsistently or remain undefined.	Are the main concepts clearly defined and used consistently?	Define concepts early and link them to the research question and analysis.
Weak literature grounding	The thesis relies on too few sources or only general summaries.	Have I read and verified the key sources?	Build a focused, source-based literature review.

Table 18. *Cont.*

Risk	Symptom	Checkpoint Question	Recommended Action
Fabricated or unverified sources	Sources appear relevant but cannot be found or verified.	Can I trace every source to a real publication?	Verify sources through DOI records, library systems, Scopus, Web of Science, Crossref, Google Scholar or publisher pages.
Method mismatch	The method does not fit the question or material.	Can this method produce the kind of answer I need?	Revise the question, material or method so they align.
Unrealistic material	The proposed data, texts or sources are not accessible.	Do I have access to the material?	Select more realistic material or revise the scope.
Ethical risk	Consent, privacy, copyright or sensitive material issues are unclear.	Do I need formal guidance or approval before proceeding?	Consult institutional rules, supervisor guidance and ethics procedures.
Overreliance on GenAI	The student cannot explain the design without AI wording.	Can I justify all choices independently?	Rewrite in the student's own words and discuss the design with the supervisor.

Source: Table by author.

4.9. Conclusions

By the end of Step 1, the student should have a clear research question, verified scholarly sources, a coherent conceptual or theoretical framework, a realistic material and method design, a research plan, a preliminary thesis structure and an understanding of the relevant ethical and data protection issues. When these elements are in place and have been reviewed by the supervisor, the student is ready to move to Step 2: collecting, organising, analysing and interpreting research material. The focus shifts from design to implementation, from possible research directions to actual analysis and contribution.

5. Conducting Research and Analysis with Generative AI: Step 2

This chapter covers Step 2 of the thesis process: conducting research and analysis. Chapter 4 focused on designing the thesis: formulating the research question, positioning the study, building the theoretical framework, planning material and method, and preparing the research plan. This chapter moves from design to implementation. The student now collects, selects or organises research material, finalises the analytical approach, conducts analysis, develops interpretation and begins to formulate the thesis contribution.

The central task is the same across all thesis types: work systematically with selected material and show how the analysis answers the research question. In empirical theses, the student works with interviews, surveys, observations, documents, statistics, digital traces or other empirical material. In theoretical, legal, humanities-oriented or conceptual theses, the student works with texts, legal sources, cases, policy documents, theories, concepts, scholarly debates, archival material or philosophical arguments. The timeline is presented in Figure 6.

GenAI can support Step 2 by helping organise material, clarify analytical categories, compare patterns, check alignment and structure findings. Its role here is more constrained than in Step 1 because Step 2 is closer to the intellectual core of the thesis. The model can help the student inspect and question the analysis: it must not replace engagement with the material, methodological reasoning or interpretive judgement. The student remains responsible for all analytical choices, evidence, interpretation and claims. Extended prompts are in Appendix B; skill-based operations in Appendix D; MCP-oriented workflows in Appendix E.

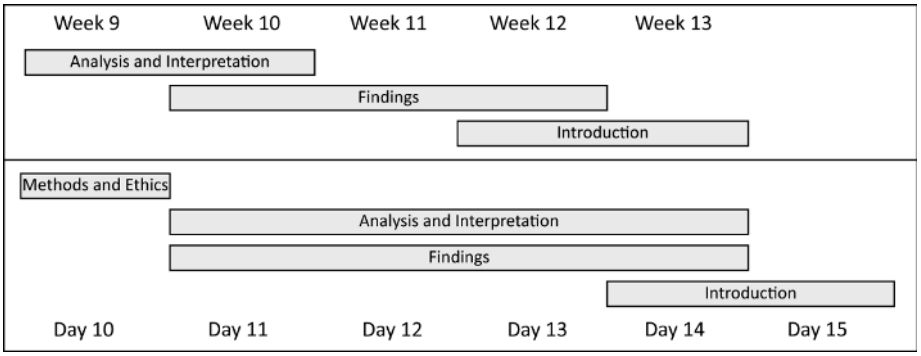

Figure 6. Step 2 of the thesis process across different timelines. Source: Figure by author.

5.1. Collecting, Selecting and Organising Research Material

Task: Move from a planned research design to actual research material. The material may be collected, selected, delimited or organised depending on the thesis type. In empirical research, this involves collecting interview data, survey responses, observations, documents, statistical data or other empirical material. In non-empirical

research, it involves selecting legal sources, texts, cases, policy documents, archival sources, theoretical literature, concepts or scholarly debates.

The purpose is not simply to gather material, but to gather or select material that fits the research question and planned analytical approach. The student must be able to explain why the material is relevant, how it was selected, what it includes and excludes, and how it supports the later analysis.

How GenAI can help: GenAI is most useful here for documentation and preparation, not for selecting the material itself. It can help draft material logs, documentation checklists, file-naming conventions and organisation structures. It can review whether selection criteria are clearly formulated and consistently applied. For non-empirical theses, it can help compare source-selection criteria or organise an existing corpus of texts, cases or legal materials into a workable structure. The critical limit at this stage is data protection: if the material includes personal data, confidential documents, unpublished material or sensitive information, the model must not process it. GenAI should work with anonymised summaries, non-sensitive descriptions, or documentation about the material, and not the material itself.

GenAI can also be used to generate synthetic material (see Jauhiainen et al., 2026b). It may be used for workflow testing, data augmentation or as an object of research, but it must be clearly labelled and separated from observed evidence. Nevertheless, simulated respondents or personas cannot ordinarily replace empirical participants. GenAI-generated images, audio or video must be justified and documented; presenting generated material as real evidence constitutes fabrication.

Timeline: months: weeks 5–8; weeks: days 8–9; intensive: day 2 (morning)

Prompt: Below are short example prompts. Extended versions are provided in Appendix B, prompts B.5.1.1–4.

5.1.1. Prompt for Collecting, Selecting and Organising Research Material: Undergraduate Level

Based on my research question, aim or problem: [paste]

and my planned material or sources: [paste]

Help me create a realistic plan for collecting, selecting and organising the material for a Bachelor's thesis. Depending on the thesis type, this may include empirical data, documents, texts, legal sources, cases, policy materials, theoretical literature or scholarly debates.

Please include: what material should be collected or selected; why this material fits the research question; how the material can be documented; what ethical, legal, copyright or data protection issues should be checked; what should be ready before analysis begins.

Do not assume that material is available unless I have stated this.

5.1.2. Prompt for Collecting, Selecting and Organising Research Material: Postgraduate Level

Based on my research question, theoretical framework, method and planned material: [paste]

Help me refine the material collection, selection and organisation strategy for a Master's thesis. Consider empirical data, texts, documents, legal sources, policy

materials, cases, archival sources, theoretical literature, concepts or scholarly debates, depending on the thesis type.

Please assess: whether the material fits the research question and theoretical framework; whether the selection or sampling strategy is justified; whether the material is sufficient for analysis; what ethical, legal, copyright or data protection issues require attention; how the material should be documented before analysis.

Clearly distinguish practical suggestions from issues that require supervisor or institutional guidance.

5.1.3. Prompt for Material Documentation Checklist

Based on the following description of my research material: [paste]

Create a documentation checklist for organising this material before analysis. Include relevant points for empirical data, textual or documentary material, legal sources, theoretical literature or other sources where appropriate.

Consider naming files, recording dates, source metadata, consent information, anonymisation, storage, version control, source-selection criteria and notes on exclusions.

Expected output: Systematic organisation of the material with practical and ethical issues identified before analysis begins. The output should clarify what material is included, why it is relevant, how it should be documented, and which uncertainties require supervisor or institutional guidance.

Evaluation checklist. The student should ask the following questions:

- Does the material directly relate to the research question?
- Is the material sufficient for analysis but not so broad as to be unmanageable?
- Is the selection or sampling strategy clearly formulated and consistently applied?
- Have all sources, files or cases been documented with relevant metadata?
- Are consent, privacy, copyright or data protection issues identified and addressed?
- Is sensitive material protected according to institutional rules?
- Is the material ready for analysis to begin?

Warning signs in the GenAI output:

- The model generates selection criteria that are too broad or too vague to distinguish included from excluded material;
- The documentation checklist is generic and does not reflect the specific material type (e.g., applies interview protocols to a document analysis thesis);
- The model treats material as ready for analysis before ethical or consent issues have been resolved;
- The suggested organisation structure separates material in a way that does not match the planned analytical approach;
- The model assumes access to databases, archives or participant groups that the student has not confirmed.

5.2. Finalising the Method, Analytical Approach and Ethical Foundations

Task: Before analysis begins in full, finalise the method or analytical approach. This means explaining what material is used, how it was collected, selected or delimited, how it will be analysed or interpreted, and why these choices are appropriate for the research question.

A strong methods or analytical section explains both what was done and why. In empirical theses, this includes material collection, sampling, analysis and ethical procedures. In theoretical, legal, humanities-oriented or conceptual theses, it includes source selection, textual interpretation, doctrinal analysis, conceptual comparison, theoretical reconstruction, critical reading or normative argumentation. The section should also acknowledge limitations: no method is perfect, and a good thesis explains what the chosen approach can and cannot show and how limitations affect interpretation.

How GenAI can help: GenAI is most useful here for improving clarity and identifying missing justifications but not for generating the methodological rationale itself. It can check whether the methods section describes the actual procedures used (or planned), identifies alignment gaps between the research question, theory and method, and flags where ethical considerations are handled superficially. The specific risk at this stage is fabrication: the model may add procedures, approvals, sampling strategies or ethical protections that the student did not use. Every suggestion must be checked against what the student did. The methods section must describe real decisions, not AI-generated ideals.

Timeline: months: week 6; weeks: day 10; intensive: day 2 (morning)

Prompt: Below are short example prompts. Extended versions are provided in Appendix B, prompts B.5.2.1–2.

5.2.1. Prompt for Finalising the Method and Ethical Foundations: Undergraduate Level

Based on my thesis design: [research question, material or data, method or analytical approach]

Help me draft a clear methods or analytical section for a Bachelor's thesis.

Describe: what material, data, sources, texts, cases or concepts are used; how they were collected, selected or delimited; how they will be analysed or interpreted; why the method or analytical approach fits the research question; what ethical issues and limitations should be mentioned.

Do not invent procedures, sources, approvals or data.

5.2.2. Prompt for Finalising the Method and Ethical Foundations: Postgraduate Level

Based on my thesis design: [research question, theory, material or data, method or analytical approach]

Help me refine a theoretically grounded methods or analytical section for a Master's thesis.

Ensure alignment between theory, material, method and analysis. Include critical reflection on limitations, ethical issues, data protection, source selection and the boundaries of interpretation.

Do not add methods or procedures that I have not used.

5.2.3. Prompt for Method Review

Review my methods or analytical section: [paste]

Identify: missing justifications; weak alignment between research question, theory, material and method; unclear procedures; unsupported claims; superficial ethical considerations; limitations that should be acknowledged.

Suggest how the section could better explain what was done, why it was done and how it supports the thesis argument.

Expected output: Improved clarity, coherence and justification in the methods section. The output should identify missing links between research question, material, method and analysis, and flag ethical and practical issues that need clearer treatment.

Evaluation checklist. The student should ask the following questions:

- Does the section describe what was done, not an ideal procedure?
- Is the material or source selection clearly explained and justified?
- Is the method appropriate for the research question and material?
- Is the analytical procedure transparent enough to be reproduced or evaluated?
- Are ethical, legal and data protection issues addressed concretely?
- Are limitations acknowledged and their implications explained?
- Could I explain and defend this approach in supervision or examination without relying on AI wording?

Warning signs in the GenAI output:

- The model adds sampling procedures, ethical approval steps or data protection measures that the student did not use;
- The methods section now describes an ideal study rather than the study the student conducted;
- Limitations are mentioned in a closing sentence but their effect on interpretation is not discussed;
- The alignment between research question and method sounds coherent in the text but the student cannot explain it in their own words;
- Ethics is treated as a checklist of standard phrases rather than as a reflection on the specific risks of this study.

5.3. Initiating Analysis

Task: Begin systematic analysis of the selected material by developing an initial analytical structure by identifying key patterns, themes, categories, variables, relationships, concepts, arguments, tensions or interpretations.

Different thesis types require different analytical practices. In qualitative research, analysis may involve coding, theme development, narrative analysis, discourse analysis or comparison across cases. In quantitative research, it may involve variables, distributions, descriptive statistics, relationships, models or hypothesis testing. In legal, humanities-oriented, theoretical or conceptual work, it may involve identifying legal principles, textual patterns, conceptual distinctions, theoretical positions, interpretive tensions or normative arguments. It is essential throughout to distinguish between description (what the material contains), analysis (how the material is systematically organised) and interpretation (what the analysis means in relation to the research question).

How GenAI can help: GenAI is most useful at this stage for generating alternatives to consider, not for producing the analysis itself. In qualitative work, it can suggest possible coding categories or thematic groupings from anonymised excerpts: the student then checks whether these are visible in the material. In quantitative work, it can help identify which variables are worth examining and suggest descriptive approaches. In legal, theoretical or interpretive work, it can help organise conceptual distinctions or map argumentative positions.

In analysis, GenAI should usually enter after the student has made an initial analytical attempt. Its safest role is to challenge, compare, clarify and stress-test the student's analysis, not to produce the first interpretation. The fundamental rule for all thesis types: the student must be able to trace every suggested category, theme or pattern back to specific evidence in the material. For qualitative work, evidence may be anonymised quotations or coded excerpts. For quantitative work, it may be table numbers, variables, outputs or model results. For legal or textual work, it may be cases, statutes, passages, concepts or doctrinal sources.

If a category cannot be grounded in evidence, it should not be used regardless of how analytically neat it looks.

Timeline: months: week 8; weeks: day 11; intensive: day 2 (midday)

Prompt: Below are short example prompts. Extended versions are provided in Appendix B, prompts B.5.3.1–2.

5.3.1. Prompt for Quantitative Analysis: Undergraduate Level

Based on my dataset: [describe variables or paste non-sensitive summary]

Help me identify key variables, describe basic patterns and suggest relevant descriptive statistics.

Do not interpret results beyond what is directly observable. Indicate what information I still need to check before drawing conclusions.

5.3.2. Prompt for Qualitative Analysis: Undergraduate Level

Based on my qualitative material: [paste anonymised excerpts or non-sensitive summary]

Help me identify key patterns and group them into 3–5 preliminary themes.

Keep description separate from interpretation. Explain what each theme is based on and identify what I should check in the original material.

5.3.3. Prompt for Conceptual, Legal or Textual Analysis: Undergraduate Level

Based on the following texts, legal sources, concepts or scholarly materials: [paste]

Help me identify the main concepts, arguments, distinctions or tensions.

Organise them into a preliminary analytical structure and keep description separate from interpretation. Mark uncertain interpretations clearly.

5.3.4. Prompt for Quantitative Analysis: Postgraduate Level

Based on my dataset and theoretical framework: [describe]

Help me structure the analysis by identifying key variables, possible relationships and suitable statistical approaches.

Distinguish clearly between description, analysis and interpretation. Identify assumptions or limitations that I need to check before presenting results.

5.3.5. Prompt for Qualitative Analysis: Postgraduate Level

Based on my qualitative material and theoretical framework: [paste anonymised excerpts or non-sensitive summary]

Help me develop an initial analytical structure. Identify themes, categories or patterns and explain how they may relate to the theoretical framework without moving into full interpretation.

Identify alternative ways to organise the material and possible risks of over-simplification.

5.3.6. Prompt for Theoretical, Legal or Interpretive Analysis: Postgraduate Level

Based on my research material and theoretical framework: [paste]

Help me develop an initial analytical structure. Identify key concepts, arguments, legal or textual interpretations, theoretical tensions and possible analytical categories.

Distinguish clearly between summary, analysis and interpretation. Identify alternative interpretations or conceptual risks where relevant.

5.3.7. Prompt for Description, Analysis and Interpretation Check

Review my analysis notes: [paste]

Identify what is description, what is analysis and where interpretation appears too early. If relevant, distinguish between thematic patterns, statistical patterns, conceptual distinctions, legal interpretations, textual patterns or theoretical arguments.

Expected output: An initial analytical map identifying possible patterns or categories, explaining what each is based on, and separating description from interpretation. The output should identify uncertainties and areas requiring closer reading, statistical checking or theoretical reflection.

Evaluation checklist. The student should ask the following questions:

- Can I trace each suggested category, theme, variable or concept to specific evidence in the material?
- Have description, analysis and interpretation been kept distinct?
- Are alternative categorisations or interpretations possible?
- Are the categories too broad, too narrow or overlapping?
- Does the emerging analysis connect to the research question?
- Have sensitive or confidential materials been handled appropriately?

Warning signs in the GenAI output:

- The model generates themes with convincing names but the student cannot find corresponding evidence in the material;
- All themes are framed positively (advantages, opportunities, strengths) without corresponding tensions or contradictions;
- The model moves directly from description to interpretation without a distinct analytical stage;
- Quantitative variables are selected based on what sounds theoretically interesting rather than on what the dataset contains;
- The analytical categories are abstract enough to apply to any study on this topic: they are not specific to this material.

5.4. Completing Analysis

Task: Consolidate and refine the initial analytical structure. Preliminary observations, themes, variables, concepts, interpretations or arguments are developed into a coherent whole that directly addresses the research question and supports the emerging thesis contribution.

In qualitative work, this means refining themes, clarifying categories and selecting illustrative evidence. In quantitative work, it means organising findings, checking assumptions, refining tables or figures and avoiding overinterpretation. In legal, humanities-oriented, theoretical or conceptual work, it means refining interpretations, clarifying conceptual distinctions, comparing arguments, developing normative reasoning or strengthening a critical claim. The aim is a systematic, well-grounded analysis and not one built on isolated examples or preliminary impressions.

How GenAI can help: GenAI is useful at this stage for stress-testing the analytical structure by identifying overlaps between categories, gaps in coverage, inconsistencies in concept use and places where a claim outruns the evidence. It can help the student check whether each claim is supported by material and linked to the research question, suggest ways to reorganise the analysis chapter, and identify where interpretation moves beyond what the evidence can support. Skill-based alignment-check workflows are well suited to this stage because the same checks, such as evidence grounding, research question alignment, description vs. interpretation, need to be applied repeatedly as the analysis develops. The limit is the same as in Section 5.3: GenAI cannot verify analysis. It can only help the student inspect and question it.

Timeline: months: weeks 9–10; weeks: days 12–14; intensive: day 2 (early afternoon)

Prompt: Below are short example prompts. Extended versions are provided in Appendix B, prompts B.5.4.1–2.

5.4.1. Prompt for Completing Quantitative Analysis: Undergraduate Level

Based on my results: [paste summary, tables or variables]

Help me organise the key findings clearly. Check that the results are logically structured and directly supported by the data, without overinterpretation.

Identify any results that need clearer explanation or stronger caution.

5.4.2. Prompt for Completing Qualitative Analysis: Undergraduate Level

Based on my current themes: [paste]

Help me refine them into a clear and coherent structure. Check that each theme is distinct, supported by the material and linked to the research question.

Identify overlaps, missing evidence or themes that are too broad.

5.4.3. Prompt for Completing Conceptual, Legal or Textual Analysis: Undergraduate Level

Based on my current concepts, sources, cases or textual material: [paste]

Help me refine the analytical structure. Check that the main concepts, arguments or interpretations are distinct, clearly supported by the material and linked to the research question.

Identify claims that need more precise source support.

5.4.4. Prompt for Completing Quantitative Analysis: Postgraduate Level

Based on my analysis and results: [paste]

Help me refine the structure of my findings and clarify the relationships between variables.

Identify inconsistencies, weakly supported claims, missing analytical steps, assumptions that need checking and places where I may be overinterpreting the results.

5.4.5. Prompt for Completing Qualitative Analysis: Postgraduate Level

Based on my analysis: [paste]

Help me refine the analytical structure and strengthen the link to theory.

Identify overlaps, gaps, weakly supported themes, alternative interpretations and places where the analysis should engage more deeply with the material.

5.4.6. Prompt for Completing Theoretical, Legal or Interpretive Analysis: Postgraduate Level

Based on my analysis and theoretical framework: [paste]

Help me refine the analytical structure and strengthen the link between concepts, sources, interpretations and the research question.

Identify unclear concepts, unsupported claims, alternative interpretations and places where the argument remains descriptive rather than analytical.

5.4.7. Prompt for Research-Question Alignment

Evaluate whether my analysis answers the research question: [paste]

Identify missing links, weak alignment or unsupported claims. If relevant, distinguish between thematic coherence, consistency of statistical findings, conceptual clarity, legal interpretation, textual analysis or theoretical argumentation.

Expected output: A useful output should help refine the analysis into a coherent structure. It should identify overlaps, weak evidence, unclear concepts, overinterpretation and missing links to the research question. It should also help the student see whether the analysis is developing a contribution or only describing material.

Evaluation checklist. The student should ask the following questions:

- Does the analysis answer the research question?
- Is each theme, variable, concept or claim supported by evidence?
- Are analytical categories distinct and clearly defined?
- Are contradictions or tensions in the material addressed rather than ignored?
- Are limitations recognised and their effects on interpretation acknowledged?
- Does the analysis connect to the theoretical framework?
- Does the analysis move beyond description into interpretation?
- Are claims appropriately cautious given the material?

Warning signs in the GenAI output:

- The model removes contradictory evidence to make the analysis sound more coherent;
- Categories that were overlapping in the initial analysis remain overlapping in the refined version, just with different labels;
- The research question has been subtly rephrased in the analysis section to match what the material shows, rather than what was originally asked;
- The model adds theoretical connections that were not in the original analysis and that the student cannot justify;

- Smoothed language makes the argument sound more confident than the evidence warrants.

5.5. Developing Findings, Results or Analytical Contribution

Task: Write the section or chapter in which main findings, results, interpretations or analytical contributions are presented clearly and systematically. This section directly addresses the research question and is organised according to the logic of the analysis: themes, questions, hypotheses, variables, concepts, cases, legal issues, textual categories or argumentative steps.

In many thesis traditions, the findings or results section presents what the analysis produced, while broader interpretation and implications are developed in the discussion. In theoretical, legal or interpretive work, analysis and interpretation may be more closely integrated. The student should follow disciplinary and institutional conventions. Different types of thesis contribution are illustrated in Table 19.

Table 19. Types of thesis contribution.

Contribution Type	Student Question	GenAI-Safe Support
Empirical	What does my material show that matters?	Test whether findings are clearly stated
Conceptual	What distinction, clarification or typology do I offer?	Check conceptual consistency
Theoretical	How does my analysis support, extend or question theory?	Generate counterarguments
Legal	What interpretation or doctrinal clarification is developed?	Check structure, not authority
Methodological	What does my approach show about how to study the issue?	Identify limitations
Critical	What assumption, power relation or problem is revealed?	Suggest rival readings

Source: Table by author.

How GenAI can help: GenAI is most useful at this stage for structure and presentation, and not for generating or adjusting findings. It can suggest how to organise the findings chapter, propose subheadings that reflect the analytical logic, improve transitions between analytical points, and help integrate tables, figures, quotations or source references into the prose. It can also help the student check whether claims are staying within the findings section or drifting toward broader discussion. The hard boundary: the model must not generate, invent or alter findings. It must not create evidence, quotations, statistical results, legal interpretations or textual readings that are not grounded in the material the student provides.

Timeline: months: weeks 10–11; weeks: days 11–14; intensive: day 2 (afternoon)

Prompt: Below are short example prompts. Extended versions are provided in Appendix B, prompts B.5.5.1–3.

5.5.1. Prompt for Developing Findings, Results or Analytical Contribution: Undergraduate Level

Based on my findings, themes, concepts, sources or analytical points: [paste]

Help me structure and write a clear findings or analytical section. Focus on presenting what the analysis shows.

For each main point, indicate: what the finding or analytical point is; what material supports it; how it relates to the research question; whether it belongs in findings/results or later discussion.

Do not invent evidence or move too far into broader conclusions.

5.5.2. Prompt for Developing Findings, Results or Analytical Contribution: Postgraduate Level

Based on my analysis and research material: [paste]

Help me write a structured findings, results or analytical contribution chapter with clear progression and well-integrated evidence.

Ensure that the claims are linked to the research question, theoretical framework and material. Identify where the text should remain descriptive, where analysis is needed and where broader interpretation should be reserved for the discussion.

Do not add claims, sources or evidence that are not present in the material I provide.

5.5.3. Prompt for Findings Review

Review my findings, results or analytical section: [paste]

Identify where the text moves too quickly from presentation into broader interpretation or conclusion.

Check whether each claim is clearly supported by data, sources, texts, cases, concepts or other research material.

Identify unsupported claims, repetition and places where evidence should be added.

Expected output: A clearly organised findings or analytical contribution chapter with main points, their supporting evidence and their connection to the research question identified. The output should also help distinguish findings from broader interpretation where that distinction is required by the thesis type or discipline.

Evaluation checklist. The student should ask the following questions:

- Does each finding or analytical point answer the research question?
- Is each claim supported by material: data, sources, texts, cases, quotations or tables?
- Are tables, figures or examples integrated purposefully rather than decoratively?
- Is the order of findings logical and easy to follow?
- Is interpretation kept within the boundaries appropriate for the findings section?
- Are findings presented with appropriate caution rather than overstated?
- Does this chapter prepare the ground for the discussion in Step 3?

Warning signs in the GenAI output:

- The model generates additional findings or analytical points that are not present in the student's material;
- Quotations appear that the student did not provide; this is a fabrication risk requiring immediate verification;
- The model reframes findings in ways that answer a slightly different question from the original research question;
- Discussion and conclusions are mixed into the findings section, blurring the analytical presentation;
- The chapter presents AI-generated interpretations as if they came from the material, without the student checking whether they are grounded.

5.6. Finalising Findings, Results or Analytical Contribution

Task: Refine the findings, results or analytical contribution chapter into a coherent and well-grounded form. The focus is quality improvement, not adding new analysis. The student checks structure, clarity, evidence, conceptual consistency, links to the research question, and appropriate boundaries between analysis and discussion.

In empirical theses, this means checking that results are accurately presented and supported by data. In theoretical, legal, humanities-oriented or conceptual theses, it means checking that interpretations, arguments, conceptual distinctions or legal claims are clearly supported by selected sources, texts, cases, concepts or other material. This stage prepares the thesis for Step 3.

How GenAI can help: GenAI is useful for targeted editing, identifying repetition, improving transitions and flagging where language is more assertive than the evidence supports. The specific risks at this finalisation stage are different from earlier stages: the model may introduce new claims while improving sentences, raise the confidence level of hedged statements, or homogenise the student's voice in ways that make the text sound polished but less distinctively argued. Every suggested change must be checked against the material and against the student's intended meaning. Finalisation should strengthen existing analytical work, not replace it.

Timeline: months: week 12; weeks: days 12–14; intensive: day 2 (late afternoon)

Prompt: Below are short example prompts. Extended versions are provided in Appendix B, prompts B.5.6.1–3.

5.6.1. Prompt for Finalising Findings, Results or Analytical Contribution: Undergraduate Level

Review my findings, results or analytical section: [paste]

Improve the structure, clarity and precision. Ensure that all claims are grounded in the research material, such as data, sources, texts, cases, legal materials, concepts or theories.

Remove repetition and identify any claims that need stronger support. Do not add new findings or interpretations.

5.6.2. Prompt for Finalising Findings, Results or Analytical Contribution: Postgraduate Level

Critically review my findings, results or analytical contribution chapter: [paste]

Assess coherence, analytical clarity, grounding in the research material and connection to the research question and theoretical framework.

Identify unsupported claims, unclear interpretations, weak argumentation, insufficient evidence, overgeneralisation and places where the language is too confident.

Suggest final improvements before moving to the discussion and conclusion.

5.6.3. Prompt for Priority Revision List

Identify the three most important revisions needed in my analytical chapter: [paste]

Focus on structure, clarity, evidence, conceptual precision, analytical depth and alignment with the research question.

Explain why each revision matters and how it could be improved. Do not rewrite the chapter unless I ask.

Expected output: A focused revision plan identifying the most important weaknesses, not only style corrections. The output should help the student strengthen analytical coherence and evidential grounding before moving to Step 3.

Evaluation checklist. The student should ask the following questions:

- Does the chapter clearly answer the research question?
- Is the analytical structure coherent throughout?
- Are all claims supported by material?
- Are concepts used consistently across the chapter?
- Are results or interpretations presented with appropriate caution?
- Has unnecessary repetition been removed?
- Has any GenAI editing introduced new claims or changed meaning?
- Is the chapter ready to support the discussion and conclusion?

Warning signs in the GenAI output:

- Hedged statements ('this may suggest', 'this could indicate') have been replaced by assertive ones ('this shows', 'this demonstrates') during editing;
- New claims, examples or source references appear in the revised version that were not in the original;
- The chapter is now longer but not clearer, so elaboration has been added without improving coherence;
- The student's own analytical voice has been replaced by generic academic phrasing;
- Repetition has been removed but the remaining text no longer provides sufficient evidence for the claims it makes.

5.7. Readiness Checkpoint Before Step 3

Before moving to Step 3, check that the analysis is complete enough to support synthesis, discussion and conclusion. This checkpoint prevents entering the final writing phase with unclear findings, weak evidence or unresolved methodological problems. GenAI may help apply the checklist, but the decision to proceed should involve the student's own judgement and, where relevant, supervisor approval.

Timeline: months: week 12; weeks: days 14–15; intensive: day 2 (evening)

Prompt: Below are short example prompts.

Prompt for Step 2 Readiness Review

Review the following summary of my Step 2 work: [paste]

Assess whether I am ready to move from Step 2, conducting research and analysis, to Step 3, writing and finalising the thesis.

Check: material collection, selection or organisation; method or analytical approach; ethical and data protection issues; analytical structure; evidence and grounding; connection to the research question; distinction between description, analysis and interpretation; findings, results or analytical contribution; limitations; unresolved risks.

Provide a readiness assessment and a prioritised action list. Do not rewrite the thesis for me.

Expected output: A structured readiness assessment identifying specific weaknesses and prioritising what must be addressed before Step 3 begins (Table 20). A useful readiness assessment is critical and specific but not a general confirmation that the work is adequate (Table 21).

Table 20. Readiness checklist before moving to Step 3.

Area	Checkpoint Question
Material	Has the material been collected, selected, organised and documented?
Ethics and data protection	Have consent, anonymisation, confidentiality, copyright and secure storage been handled where relevant?
Method or analytical approach	Is the method or analytical approach clearly described and justified?
Alignment	Do the research question, material, method and analysis fit together?
Description	Is it clear what the material contains or shows?
Analysis	Are themes, variables, concepts, cases, legal issues, textual patterns or arguments systematically organised?
Interpretation	Are interpretations grounded in the material and not overstated?
Evidence	Is each claim supported by data, sources, texts, cases, quotations, tables, figures or other material?
Contribution	Is it clear what the analysis contributes?
Limitations	Are methodological, material and interpretive limitations recognised?
GenAI use	Is GenAI use documented where it influenced analysis, coding, organisation, wording or revision?
Supervisor discussion	Have uncertain analytical or ethical issues been discussed with the supervisor where relevant?

Source: Table by author.

Table 21. Common risks in Step 2 and how to address them.

Risk	Symptom	Checkpoint Question	Recommended Action
Weak method justification	The method is described but not justified.	Why is this method appropriate for this question and material?	Explain the fit between research question, material, method and thesis level.
Ethical violation	Personal, sensitive or confidential material is handled insecurely or uploaded to unapproved AI systems.	Have I followed institutional and research ethics rules?	Do not use unapproved systems for sensitive material. Check consent, anonymisation and secure storage.
Material mismatch	The analysis feels forced or irrelevant to the research question.	Does the material allow me to answer the question?	Revise the question, refine the material or adjust the analytical approach.
AI-generated analysis without grounding	Interpretations sound plausible but are not linked to material.	Can I show the evidence for each claim?	Link claims to quotations, data, sources, cases, tables, figures or analytical notes.
Premature interpretation	The text moves to conclusions before analysis is complete.	Have I separated description, analysis and interpretation?	Reorganise the chapter and reserve broader implications for discussion where appropriate.
Overgeneralisation	Claims go beyond the material or sample.	What can this material support?	Add caution, acknowledge limits and avoid unsupported general claims.
Conceptual inconsistency	Concepts are used differently across the analysis.	Are key concepts applied consistently?	Revisit definitions and align analytical categories with the framework.
Weak evidence integration	Findings are stated without examples, quotations, data or source support.	What evidence supports this point?	Add appropriate evidence and explain its relevance.

Table 21. *Cont.*

Risk	Symptom	Checkpoint Question	Recommended Action
Repetition	Findings repeat literature review, method or earlier sections.	Does each section add analytical value?	Remove repetition and focus on what the analysis produced.
Loss of student authorship	The chapter becomes polished but the student cannot explain the analysis.	Can I defend the analytical choices and claims?	Rewrite in the student's own understanding and discuss key choices in supervision.

Source: Table by author.

5.8. Conclusions

By the end of Step 2, the student should have collected or selected research material, finalised the method or analytical approach, conducted systematic analysis, developed findings or an analytical contribution, and prepared the analytical chapter for Step 3. When the readiness checkpoint confirms that the analysis is complete and well-grounded, the focus shifts from implementation to synthesis: explaining what the findings or arguments mean, connecting them to literature and theory, writing the discussion and conclusion, and preparing the final manuscript.

6. Writing and Finalising the Thesis with Generative AI: Step 3

This chapter covers Step 3 of the thesis process: writing, synthesising, revising, and finalising the thesis as a coherent academic work. Chapter 4 focused on designing the thesis; Chapter 5 on collecting material, conducting analysis and developing findings. This chapter moves from analysis to synthesis. The student now explains the significance of the findings or arguments, writes the discussion and conclusion, revises the introduction, prepares the abstract and keywords, checks figures, tables and references, finalises the manuscript, and prepares it for submission.

Step 3 is not a technical editing stage. It is where the thesis becomes a unified academic argument. The student must show how the research question has been answered, how the findings or interpretations relate to previous literature and theory, what the thesis contributes, what its limitations are and why the work is academically defensible. The timeline for activities is presented in Figure 7. GenAI can support structure, clarity, coherence, language, revision checklists and chapter alignment, but the student remains responsible for all claims, interpretations, conclusions, references, disclosure statements and final wording. AI-generated suggestions must be critically reviewed. GenAI can make a text more fluent; fluency does not guarantee analytical depth.

It has been noted that heavy reliance on algorithmic editing may gradually homogenise academic writing, or even alter intended meaning, not just voice (Cong & Zhu, 2025; Abdulhai et al., 2026). LLMs tend to favour fluent, conventional and statistically typical phrasing, so extensive use of the same tools can make student texts more uniform in style, and less distinctive in voice. This matters in thesis work, where students are expected not only to write clearly but also to develop an academic voice within their discipline. GenAI-supported revision should therefore be selective: students should accept, reject or adapt suggestions sentence by sentence, preserving disciplinary vocabulary, emphasis and formulations that still sound like their own argument. Furthermore, GenAI suggestions may lead non-native English speakers to adopt Western writing styles, altering not just what is written but also how it is written, thus homogenising writing toward Western norms and diminishing nuances that differentiate cultural expression (Agarwal et al., 2025). In addition, LLM-style words, such as "significant", "underscore" and "while", have been used more frequently in abstracts and published articles (Geng & Trotta, 2024; Kobak et al., 2025).

Prompting can help students preserve their own academic voice. Instead of asking the model simply to "improve" a text, students can provide one or two examples of their earlier unedited writing and instruct the model to correct grammar and clarity while preserving sentence rhythm, vocabulary and tone. A prompt of this kind could be: "Here are two paragraphs I wrote earlier without AI assistance: [paste samples]. Correct the grammar and clarity of the following text, but preserve my sentence structure, characteristic word choices and tone as shown in the samples. Do not standardise phrasing that is already correct, and list every change you make so I can accept or reject each one." They can also ask for changes as a numbered list rather than a full rewrite, limit the task to grammar and punctuation, or request that unusual phrasing be flagged but not changed. Used this way, GenAI acts more like a proofreader within the student's voice than an editor replacing it.

Each section in this chapter explains the task and how GenAI can support it, provides selected prompts and gives an evaluation checklist. Extended prompts are in Appendix C; skill-based operations in Appendix D; MCP-oriented workflows in Appendix E. In a semester-based thesis, synthesis and finalisation may take several weeks. In an intensive project these tasks may be compressed, but only if the analysis is complete and the thesis structure is clear. The final stage should not be rushed: many problems in theses become visible only when the whole manuscript is read as a single argument.

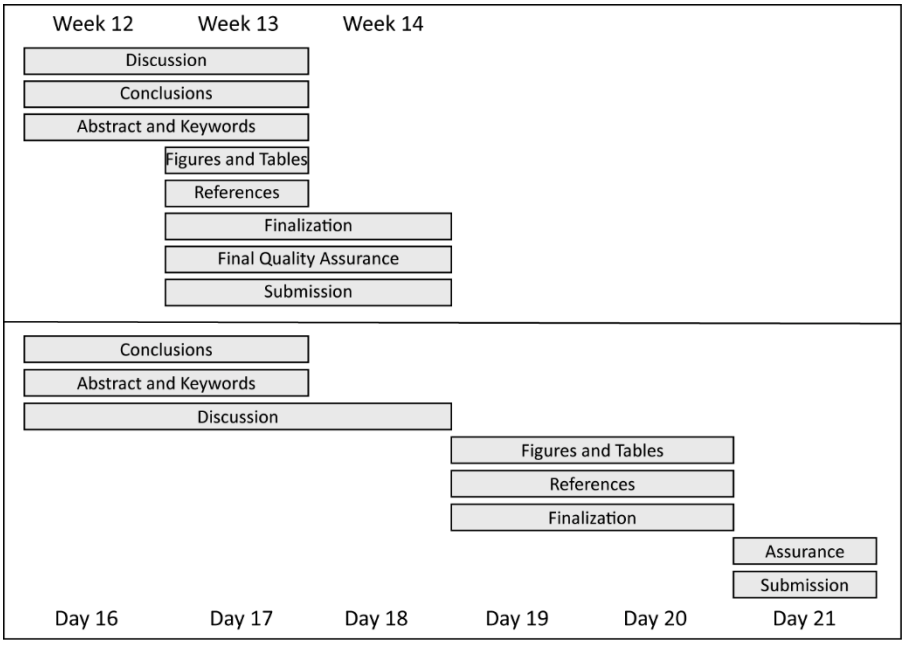

Figure 7. Step 3 of the thesis process across different timelines. Source: Figure by author.

6.1. Writing the Discussion

Task: Interpret the findings, results or analytical contribution and explain their significance. Move beyond presenting what was found to address what the findings mean in relation to the research question, theoretical framework, literature and wider academic debate.

A strong discussion does not repeat the results. It explains why the results matter, how they relate to previous research, what they confirm, challenge or clarify, and what limitations should be recognised. In empirical theses, the discussion interprets findings in relation to the research question and literature. In theoretical, legal, humanities-oriented or conceptual theses, it explains the significance of an interpretation, argument, conceptual distinction, legal analysis, textual reading or theoretical contribution. The student needs to distinguish in the thesis between broader findings, discussion, the meanings of these findings, and overall conclusion of the thesis (Table 22).

Table 22. Findings, discussion and conclusion of the thesis.

Section	Main Question	Should Include	Should Avoid
Findings/ results/analysis	What did the analysis show?	Evidence, patterns, categories, results	Broad implications unsupported by analysis
Discussion	What does it mean?	Interpretation, relation to theory/literature, limitations	New findings
Conclusion	What is the final answer?	Direct answer, contribution, limits, future direction if appropriate	New literature, new evidence, inflated claims

Source: Table by author.

How GenAI can help: GenAI is most useful here for structural support and link-finding, suggesting how to organise the discussion, identifying connections between findings and specific literature, flagging where claims may exceed what the evidence supports and improving transitions between analytical points. The risk specific to this stage is that GenAI-generated interpretations can sound authoritative while being disconnected from the student's actual analysis. The model does not know the material; it works from what the student pastes. Any interpretation it generates must be checked against the findings, the literature and the student's own reasoning before it appears in the thesis.

Timeline: months: weeks 12–13; weeks: days 15–16; intensive: day 3 (afternoon)

Prompt: Below are short example prompts. Extended versions are provided in Appendix C, prompts C.6.1.1–3.

6.1.1. Prompt for Writing the Discussion: Undergraduate Level

Based on my research question, findings or analytical points, and key concepts: [paste]

Help me develop a clear Bachelor's-level discussion section.

Please: Interpret the main findings or analytical points; explain how they answer the research question, aim or problem; briefly relate them to prior research or relevant scholarly debate; identify the main limitation; avoid adding claims that are not supported by my material.

Keep the interpretation proportionate to the thesis level.

6.1.2. Prompt for Writing the Discussion: Postgraduate Level

Based on my research findings, theoretical framework and literature: [paste]

Help me develop a theoretically grounded Master's-level discussion.

Please: Explain how the findings, interpretations or arguments relate to existing research; identify what the thesis contributes empirically, conceptually, theoretically,

legally, interpretively, methodologically or critically; consider alternative explanations or interpretations; identify tensions with previous research or theory; acknowledge limitations; avoid overstating the contribution.

6.1.3. Prompt for Discussion Quality Check

Review my discussion chapter: [paste]

Identify repetition, weak interpretation, unsupported claims, missing links to theory or literature, and places where the discussion is too descriptive.

Check whether the claims are supported by the research material, such as data, sources, texts, cases, legal materials, concepts or theories.

Suggest concrete improvements without inventing new findings or sources.

Expected output: Help the student move from results to interpretation by identifying the main meaning of the findings, connecting them to the research question and literature, and clarifying the contribution. The output should also point out unsupported claims, missing limitations and overstatements.

Evaluation checklist. The student should ask the following questions:

- Does the discussion interpret rather than repeat the results?
- Are claims grounded in the findings or analytical material?
- Is the connection to the research question clear?
- Are links to the literature and theory explicit?
- Are alternative explanations or interpretations considered where relevant?
- Are limitations discussed honestly?
- Is the contribution stated without exaggeration?

Warning signs in the GenAI output:

- The model generates interpretations that sound theoretically connected but go beyond what the student's findings show;
- The discussion now addresses a slightly different question from the original research question: the model has drifted;
- Alternative explanations are acknowledged but immediately dismissed without genuine engagement;
- The contribution is framed as filling a gap in a field the student's analysis does not address;
- Limitations are added as a closing paragraph without explaining how they affect the interpretation.

6.2. Writing the Conclusion

Task: Bring the thesis to a coherent close by answering the research question, synthesising the main findings or arguments and stating the central contribution. The conclusion should be concise, focused and proportionate to the material and analysis.

The purpose of the conclusion is to show what the thesis has demonstrated. It may briefly indicate implications, limitations or directions for future research, depending on institutional and disciplinary conventions. However, every sentence in the conclusion should either answer the research question, synthesise established findings, state the contribution, acknowledge limitations or indicate proportionate future work. If a sentence introduces new evidence, a new concept or a new source, it belongs elsewhere or should be removed.

How GenAI can help: GenAI is well suited to helping the student condense a long argument into a clear, direct answer to the research question. It can identify where the conclusion drifts from the evidence, where claims are overstated and where concision can be improved. The specific risk is that GenAI tends to produce confident, well-structured closing paragraphs, which makes a weak conclusion sound more convincing than it is. The student must check whether the confident framing is justified by the analysis that precedes it.

Timeline: months: weeks 12–13; weeks: days 16–17; intensive: day 3 (midday)

Prompt: Below are short example prompts. Extended versions are provided in Appendix C, prompts C.6.2.1–3.

6.2.1. Prompt for Writing the Conclusion: Undergraduate Level

Based on my research question, aim or problem and main findings or analytical points: [paste]

Help me write a concise Bachelor's-level conclusion.

Please: Answer the research question clearly; summarise the main findings or analytical points; state the main contribution of the thesis; mention one key limitation if appropriate; keep the claims proportionate to the material, data, sources, texts, cases, concepts or theories used.

Do not introduce new findings or new arguments.

6.2.2. Prompt for Writing the Conclusion: Postgraduate Level

Based on my findings, interpretations, argument and discussion: [paste]

Help me synthesise the main contribution of my Master's thesis and write concise conclusions.

Please: Answer the research question or analytical aim; state the contribution clearly; explain whether the contribution is empirical, conceptual, theoretical, legal, interpretive, methodological or critical; identify the main implication or future research direction where appropriate; avoid overstating originality or significance.

Do not introduce new analysis.

6.2.3. Prompt for Conclusion Quality Check

Review my conclusion: [paste]

Check whether the research question, aim or problem is clearly answered.

Assess whether the claims remain proportionate to the evidence, material and analysis.

Identify unsupported generalisations, repetition, new arguments or claims that should not appear for the first time in the conclusion.

Expected output: A focused final answer to the research question that makes the contribution visible without exaggeration. The output should identify whether the conclusion introduces new material, repeats too much detail or claims more than the analysis supports.

Evaluation checklist. The student should ask the following questions:

- Does the conclusion answer the research question?
- Is the central contribution stated clearly?
- Are claims proportionate to the evidence?
- Does the conclusion avoid introducing new analysis or evidence?

- Are limitations or future research mentioned only where appropriate?
- Is the conclusion concise?
- Would a reader understand what the thesis has demonstrated?

Warning signs in the GenAI output:

- The conclusion introduces new claims, examples or literature not discussed in the thesis;
- The contribution is stated more broadly in the conclusion than the analysis supports;
- The model generates a confident closing paragraph that restates the introduction rather than synthesising the analysis;
- Implications for practice or future research are presented with more certainty than the thesis warrants;
- The conclusion is longer than the discussion but adds less, so the model has padded rather than synthesised.

6.3. Finalising the Introduction

Task: Revise the introduction so that it accurately reflects the completed thesis. The introduction is often drafted early and finalised late. Once the findings, discussion and conclusion are clear, it should be checked for alignment: it must not promise a contribution the thesis does not deliver, introduce a scope broader than the actual work or frame the thesis in ways that no longer fit the final analysis.

A strong introduction presents the topic, research problem, research question or aim, relevance, material, method or analytical approach, contribution and structure.

How GenAI can help: GenAI is most useful here for alignment checking by comparing the introduction against the conclusion and findings to identify promises that are not fulfilled, scope that has expanded or contracted, and framing that no longer matches the actual thesis. It can also improve clarity and flow. The risk at this stage is that GenAI may add background claims to fill perceived gaps, such as claims that sound relevant but are not supported by sources the student has verified. Every background statement added during revision must be checked.

Timeline: months: weeks 12–13; weeks: day 15; intensive: day 3 (late afternoon or earlier draft revised)

Prompt: Below are short example prompts. Extended versions are provided in Appendix C, prompts C.6.3.1–3.

6.3.1. Prompt for Finalising the Introduction: Undergraduate Level

Based on my completed thesis: [paste key elements]

Help me revise a clear Bachelor's-level introduction.

Include: topic and short background; research question, aim or problem; material or data; method or analytical approach; thesis structure; a realistic explanation of why the topic matters.

Make sure the introduction reflects the actual thesis and does not overstate its scope.

6.3.2. Prompt for Finalising the Introduction: Postgraduate Level

Based on my completed thesis and theoretical or conceptual framework: [paste]

Help me strengthen the academic positioning and clarity of the introduction.

Clarify: the research problem; theoretical background or scholarly debate; research gap, tension or issue; research question, aim or problem; material and method; expected contribution; thesis structure.

Make sure the introduction fits the actual thesis and does not overstate originality or scope.

6.3.3. Prompt for Introduction Quality Check

Review my introduction: [paste]

Check whether it aligns with the actual thesis.

Identify unclear framing, missing background, weak connection to the research question or aim, unclear material or method, overclaiming, invented or unsupported background claims, and mismatch between the introduction and the rest of the thesis.

Suggest concrete improvements.

Expected output: Alignment between the introduction and the completed thesis. The output should identify promises that are not fulfilled, missing information, unclear framing, and any overstatement of scope or originality. It should improve readability without changing the actual contribution.

Evaluation checklist. The student should ask the following questions:

- Does the introduction reflect the completed thesis, not an earlier plan?
- Is the research question or aim stated clearly?
- Is the relevance of the thesis explained without overclaiming?
- Are material and method introduced accurately?
- Does the introduction match the conclusion?
- Are all background claims supported by sources?

Warning signs in the GenAI output:

- The model adds background claims or context statements that are not supported by sources the student has verified;
- The scope in the revised introduction is broader than what the thesis examines;
- The research gap is framed in terms the student's analysis does not address;
- The contribution stated in the introduction no longer matches the conclusion because revision has drifted without updating the other;
- Generic academic context sentences are added that could introduce any thesis in this broad area.

6.4. Writing the Abstract and Keywords

Task: Write a concise, accurate abstract that independently summarises the completed thesis. The abstract typically presents the research question or aim, material, method or analytical approach, main findings, conclusion and contribution. Keywords support discoverability and should reflect the main topic, concepts, method and field. The abstract should be written last, or at least revised last, because it must represent the completed thesis faithfully.

How GenAI can help: GenAI is well suited to producing a draft abstract from a paste of the key thesis elements, shortening an overlong draft, improving concision and suggesting keywords. The specific risk is that GenAI-generated abstracts tend to sound polished and complete while subtly misrepresenting the thesis by overstating the contribution, omitting the method, or presenting a finding as established when it is tentative. The student must verify every sentence against the actual thesis.

Timeline: months: weeks 12–13; weeks: days 16–17; intensive: day 3 (midday)

Prompt: Below are short example prompts. Extended versions are provided in Appendix C, prompts C.6.4.1–3.

6.4.1. Prompt for Writing the Abstract and Keywords: Undergraduate Level

Based on my thesis: [paste key elements]

Write a concise 150–200 word Bachelor's-level abstract and suggest 4–6 keywords.

The abstract should include: topic; research question or aim; material or data; method or analytical approach; main findings or argument; conclusion.

Keep the language clear and realistic. Do not overstate the contribution.

6.4.2. Prompt for Writing the Abstract and Keywords: Postgraduate Level

Based on my thesis and contribution: [paste]

Write a 200–250 word Master's-level abstract with a clear analytical focus and suggest 4–6 keywords.

The abstract should include: research problem; theoretical or conceptual framework; material or data; method or analytical approach; main findings, interpretation or argument; scholarly contribution.

Keep the contribution precise and avoid overstating originality.

6.4.3. Prompt for Abstract Quality Check

Review my abstract: [paste]

Check clarity, balance and alignment with the thesis.

Assess whether the abstract accurately reflects the research question or aim, material or data, method or analytical approach, findings, argument and conclusion.

Identify missing elements, unsupported claims, overstatement, vague keywords or mismatch with the actual thesis.

Expected output: A concise abstract that accurately represents the thesis without exaggeration, including all required elements, with relevant keywords. These vary by institution; local requirements take precedence over the word counts indicated in the prompts above.

Evaluation checklist. The student should ask the following questions:

- Does the abstract reflect the completed thesis?
- Does it include question or aim, material, method, findings and conclusion?
- Is the contribution stated accurately and proportionately?
- Are the keywords specific and relevant to the thesis?
- Does the abstract avoid unsupported claims?
- Does it follow institutional length and formatting requirements?

Warning signs in the GenAI output:

- The abstract describes the method in more sophisticated terms than the thesis uses;
- The contribution is stated as a definitive finding when the thesis presents it as a tentative interpretation;
- Keywords are generic disciplinary terms rather than specific to this thesis's concepts, method or field;
- The abstract omits the method or material entirely, making the thesis appear purely theoretical when it is not;

- The model generates an abstract that reads as a strong summary of an ideal version of the thesis rather than the actual one.

6.5. Reviewing Tables, Figures and Visual Elements

Task: Check that all figures, tables and other visuals support the thesis argument. Each should have a clear purpose, be referenced in the text, help the reader understand evidence, results, structure or comparison, and meet institutional formatting requirements. The student checks whether visuals are necessary, readable, consistently formatted and correctly numbered, with accurate titles, captions, labels, notes and source information.

How GenAI can help: GenAI is useful for reviewing captions, titles and the consistency of terminology between visuals and the text that refers to them. It can identify where a caption is uninformative, where a visual is not connected to any nearby text, or where two tables use different terminology for the same concept. It cannot evaluate whether the data or values in a table are correct, whether a figure accurately represents the underlying analysis, or whether a visual meets discipline-specific conventions for presenting statistical results. These judgements require the student.

Timeline: months: week 13; weeks: days 18–20; intensive: day 3 (late morning)

Prompt: Below are short example prompts. Extended versions are provided in Appendix C, prompts C.6.5.1–2.

Prompt for Reviewing Tables, Figures and Visual Elements

Review my figures, tables or other visual materials: [paste or describe]

Check whether they are clear, consistent and aligned with the research question, aim or problem.

For each figure or table, assess: whether it has a clear purpose; whether the title and caption are informative; whether labels, categories and units are clear; whether the visual is referenced in the text; whether it supports the thesis argument; whether it contains unnecessary detail; whether source information is needed.

Suggest concrete improvements. Do not change or invent data.

Expected output: Identified unclear or unnecessary visuals, improved captions, and confirmation that figures and tables support the argument. The output should flag missing source notes, inconsistent terminology and missing text references.

Evaluation checklist. The student should ask the following questions:

- Does each visual add value that the text alone does not provide?
- Is each visual referenced explicitly in the text?
- Are titles, captions and labels informative?
- Are units, categories and source information accurate?
- Is visual formatting consistent across the thesis?
- Does the text explain why each visual matters without simply repeating its content?
- Could any table or figure be simplified or moved to an appendix?

Warning signs in the GenAI output:

- The model rewrites a caption in a way that reinterprets what the visual shows;
- Terminology in the revised caption no longer matches the terminology used in the analysis chapter;

- The model suggests removing a figure that the student's argument depends on, without recognising its analytical function;
- Source information is added to a figure without the student verifying that the suggested source is the correct one;
- The model assesses a table as clear when the student has not provided the actual data values, so the review is based on the description, not the visual.

6.6. Reviewing References and Bibliography

Task: Check the reference list and in-text citations for accuracy, completeness and consistency. All in-text citations must appear in the reference list and all reference-list entries must be cited in the text, unless institutional style permits otherwise. Bibliographic details, namely author names, publication years, titles, journals, publishers, page ranges, DOI numbers and URLs, must be correct and citation style must follow institutional requirements. No reference may remain in the thesis unless the student has personally verified that it exists and is relevant.

How GenAI can help: GenAI can help detect inconsistencies, missing fields and mismatches between in-text citations and the reference list. Skill-based operations are well suited to repeated citation checks. MCP-connected systems are particularly valuable at this stage if they connect to library databases, DOI registries, reference managers or publisher records. The critical warning: ordinary LLMs may invent or complete missing reference details incorrectly. Every uncertain reference must be verified manually using original sources, DOI records, publisher websites, library catalogues, Google Scholar, Crossref, Scopus, Web of Science or other reliable databases.

Timeline: months: week 13; weeks: days 19–20; intensive: day 3 (early afternoon)

Prompt: Below are short example prompts. Extended versions are provided in Appendix C, prompts C.6.6.1–4.

Prompt for Reviewing References and Bibliography

Review my in-text citations and reference list: [paste]

Identify inconsistencies, missing information, formatting problems and possible mismatches between in-text citations and the reference list.

Check whether author names, publication years, titles, journal or book information, volume and issue numbers, page ranges, DOIs and URLs are presented consistently according to the required citation style: [insert style, e.g., APA, Chicago, Harvard, national or institutional style].

Suggest corrections, but do not invent missing bibliographic information.

Mark any incomplete or uncertain references that I need to verify from the original source, DOI record, publisher website or library database.

Expected output: Identified citation mismatches, incomplete references and formatting inconsistencies, with uncertain items clearly marked rather than filled in. Reference accuracy cannot be delegated to a language model; the student must verify.

Evaluation checklist. The student should ask the following questions:

- Does every in-text citation have a corresponding reference-list entry?
- Is every reference-list entry cited in the thesis where required?
- Are author names, years and titles accurate?
- Are DOI numbers and URLs correct?
- Is the citation style consistent throughout?
- Have AI-suggested references been independently verified?

- Are all quotations and page references accurate?

Warning signs in the GenAI output:

- The model fills in missing DOI numbers or publication details that the student has not verified, so these may be fabricated;
- Author names are silently corrected in ways that change which author is being cited;
- The model normalises an incorrectly cited source rather than flagging it as unverified;
- Items marked as uncertain by the model are described in ways that make them sound verifiable without the student checking;
- The model adds references to the list that the student did not provide and did not ask for.

6.7. Finalising the Full Thesis Manuscript

Task: Revise the full thesis manuscript as a coherent whole. The focus is on structure, argumentation, clarity, consistency, academic tone and readability. Check whether the thesis progresses logically from introduction to the literature, theory, material, method, analysis, discussion and conclusion. Finalisation involves more than proofreading and editing: it requires checking whether the argument is coherent, whether terminology is consistent, whether chapters connect to each other and whether the thesis answers its research question.

A suitable workflow for GenAI-assisted editing consists of logical stages: 1. Keep the original draft; 2. Ask GenAI for comments before asking for rewritten text; 3. Request a change log: what was changed and why; 4. Accept changes selectively, 5. Check hedging, claims, terminology and references, 6. Re-read the revised paragraph aloud or explain it in your own words, 7. Reject any revision that changes meaning or adds unsupported claims. GenAI is often used to support language revision, especially among non-native English speakers. Table 23 indicates the risk level of GenAI-based language support.

Table 23. Generative AI support for thesis language revision.

GenAI Language Support	Risk Level	Safeguard
Grammar correction	Low	Check meaning unchanged
Sentence clarity	Low–medium	Preserve key terms
Paragraph restructuring	Medium	Check argument order
Academic tone polishing	Medium	Avoid inflated claims
Rewriting argumentation	High	Student must retain authorship and meaning
Adding content	Very high	Requires source and evidence verification

Source: Table by author.

How GenAI can help: GenAI is most useful at this stage for identifying repetition, weak transitions, unclear paragraph logic and inconsistent terminology across chapters. The risks at this stage are distinct from earlier editing: when reviewing a full manuscript, GenAI tends to introduce subtle meaning changes sentence by sentence, raise the confidence level of hedged statements, and flatten the student's analytical voice into generic academic prose. These changes may individually appear as improvements but cumulatively weaken the thesis. Every suggested revision must be checked against the student's intended meaning, and the original version should be kept until the student is certain the change is an improvement.

Timeline: months: weeks 13–14; weeks: days 19–20; intensive: day 3 (afternoon)

Prompt: Below are short example prompts. Extended versions are provided in Appendix C, prompts C.6.7.1–4.

Prompt for Finalising the Full Thesis Manuscript

Review the following thesis section or chapter or the full thesis: [paste]

Identify: repetition; weak transitions; unclear paragraph logic; inconsistent terminology; unsupported claims; unclear links to the research question; places where the academic tone is too informal or too inflated.

Suggest revisions that improve clarity and coherence without changing the meaning or adding new claims.

Prompt: Whole-manuscript coherence review

Based on the following summaries of my thesis chapters: [paste]

Check whether the thesis progresses coherently from the research question, aim or problem to literature, theory, method, analysis, discussion and conclusion.

Identify: missing links between chapters; repeated content; inconsistent concepts; parts that promise more than the thesis delivers; sections that should be shortened, moved or clarified.

Do not rewrite the thesis. Provide a prioritised revision list.

Expected output: A clear revision plan identifying structural and conceptual problems, not only language issues. The output should help the student improve coherence while preserving the thesis argument and voice.

Evaluation checklist. The student should ask the following questions:

- Does the thesis read as one coherent argument?
- Are key concepts used consistently?
- Do chapters connect logically?
- Is there unnecessary repetition?
- Are all claims supported?
- Has GenAI changed meaning or weakened the student's voice?
- Does the thesis meet institutional formatting requirements?

Warning signs in the GenAI output:

- Hedged statements ('this may suggest', 'this could indicate') have been replaced by assertive ones ('this shows', 'this demonstrates') across multiple sentences;
- The student's analytical voice has been replaced by uniform academic phrasing that could describe any thesis;
- New claims or connections between chapters appear in the revised version that were not in the original;
- Repetition has been removed but the remaining text no longer adequately supports the claims it makes;
- The revision is longer than the original because elaboration has been added rather than weak content removed.

6.8. Final Quality Assurance Before Submission

Task: Conduct a final independent review of the thesis before submission. Check that the thesis is coherent, complete, ethically transparent and ready for assessment. This stage includes both technical checks (formatting, references, declarations) and academic checks (coherence, argumentation, alignment). Supervisor feedback should also be addressed before submission where relevant. Table 24 illustrates the key aspects of ethical and academic assurance before submission and Table 25 presents example statements for reporting generative AI use in thesis work.

How GenAI can help: GenAI is well suited to generating a customised submission checklist from a paste of the key thesis elements and institutional requirements. It can help the student organise the remaining tasks by priority and identify categories of check that are easy to overlook under submission pressure, including disclosure statements, ethics declarations, appendix labelling, and file format requirements. It cannot certify that the thesis is ready. The final quality assurance decision belongs to the student and, where appropriate, to the supervisor or institution.

Timeline: months: weeks 13–14; weeks: day 21; intensive: day 3 (late afternoon)

Prompt: Below are short example prompts. Extended versions are provided in Appendix C, prompts C.6.8.1–4.

Prompt for Final Submission Checklist

Create a final submission checklist for my thesis based on this summary: [paste]

Focus on: coherence; research question alignment; argumentation; evidence; references; figures and tables; ethics; GenAI disclosure; formatting; institutional requirements; completeness.

Organise the checklist into "must fix before submission," "should improve if time allows" and "final technical checks."

Expected output: A practical prioritised checklist identifying remaining tasks and distinguishing what must be fixed from what would be beneficial. The output should help the student work efficiently under submission pressure without overlooking any requirement.

Table 24. Ethical and academic assurance before submission.

Area	Checklist Item
Academic integrity and authorship	I understand and can defend every claim, interpretation and conclusion presented in the thesis.
	The thesis is based on my own thinking and decision-making, not automated text generation.
	Language models have been used as supportive tools, not as independent authors.
Transparency and disclosure	I have reported GenAI use according to my institution's guidelines.
	I can clearly explain how AI was used, for example for language editing, outlining, coding support, feedback or revision.
	No part of the thesis presents AI-generated text as independent human research.
Sources and references	All sources have been verified manually through reliable databases or original publications.
	DOI numbers and bibliographic details are accurate where relevant.
	The text contains no fabricated or unverifiable references.
Material ethics and data protection	Sensitive, identifiable or confidential material has not been uploaded to unapproved AI systems.
	Consent, anonymisation and data protection practices have been implemented and reported where relevant.
	Any synthetic or illustrative data is clearly indicated and not presented as real-world empirical evidence.
Final scientific quality	Empirical claims are based on material and appropriate analysis.
	Conceptual, theoretical, legal or interpretive claims are grounded in relevant sources and justified reasoning.
	The thesis meets disciplinary standards, follows good scientific practice and is academically defensible.

Source: Table by author.

Table 25. Example statements for reporting generative AI use.

Type of Use	Example Statement
Limited language editing	I acknowledge the use of GenAI tools [tool, version] to support language editing and clarity. All substantive content, interpretation, analysis and conclusions are my own.
Planning and writing support	I used [tool/model, date range] to support [brainstorming/outlining/language editing/feedback/coding suggestions/revision]. I did not use GenAI to generate data, invent sources or produce unverified analysis. No sensitive or confidential material was entered into unapproved AI systems. All AI outputs were reviewed critically, and all sources and claims were verified by me against original material and institutional requirements.
Broader workflow support	I used GenAI tools [tool, version/system] during selected stages of the thesis process, including [state purposes]. All outputs were critically reviewed. All references were verified through academic databases or original publications, and no AI-suggested sources were used without verification. Sensitive or confidential material was not shared with unapproved AI systems.
Short institutional version	I acknowledge the use of GenAI tools [tool, version] to support [state use] in accordance with the guidelines of [educational institution].

Source: Table by author.

Evaluation checklist. The student should ask the following questions:

- Does the thesis answer the research question?
- Are the discussion and conclusion aligned with findings?
- Are all references complete and verified?
- Are figures and tables correct and consistently formatted?
- Has GenAI use been disclosed according to institutional rules?
- Are ethical and data protection requirements satisfied?
- Have all required forms, declarations or formatting rules been followed?
- Is the thesis ready to be defended academically?

Warning signs in the GenAI output:

- The model generates a reassuring quality assessment without having seen the actual thesis;

- The checklist does not include the institution's specific requirements because the student did not paste them into the prompt;
- Items are marked as 'complete' based on the student's summary rather than on the model examining the actual thesis sections;
- The model omits ethics disclosure or data-protection requirements from the checklist;
- The student accepts the AI-generated checklist as comprehensive without verifying it against the official submission instructions.

Disclosure statements should always be adapted to institutional requirements. Some institutions require a separate declaration; others require discussion in the methods section, appendix or submission form.

6.9. Submitting the Thesis

Task: Complete the final administrative and academic steps for submission. Check that the title, author name, date, degree programme, supervisor information, declarations, appendices, file format and submission platform requirements are all correct. If a signature or AI-use statement is required, it must be included. Submit according to official institutional instructions.

Submission does not require extensive GenAI use. GenAI can support the creation of a final administrative checklist, but the student should rely on official institutional instructions for the actual submission process. Furthermore, GenAI can be used to prepare most likely examiner questions about the research question, literature, method, analysis, contribution, limitations and GenAI use. However, it is important that the student drafts their own answers rather than relying on GenAI to produce them.

Timeline: thesis in months: weeks 13–14; thesis in weeks: day 21; intensive: day 3 (evening)

Prompt for Submission-Readiness Checklist

Create a short final submission checklist based on these institutional instructions: [paste]

Include only practical checks related to title page, author information, file format, appendices, signatures, declarations, GenAI disclosure, reference list, abstract, keywords and submission platform requirements.

Do not add requirements that are not included in the instructions.

Expected output: A short administrative checklist that follows the institution's actual instructions without adding invented requirements.

A useful output should provide a short administrative checklist that follows the institution's instructions. It should not invent submission rules.

Evaluation checklist. The student should ask the following questions:

- Is the title page correct?
- Are author name, date, degree programme and supervisor details correct?
- Are all required declarations included?
- Is the GenAI-use statement included where required?
- Are appendices included and labelled correctly?
- Is the file format correct?
- Has the thesis been submitted through the correct platform or channel?

6.10. Readiness Checkpoint at the End of Step 3

Table 26 provides the final readiness checklist for Step 3. Table 27 lists the most common risks at this stage and how to address them. Table 24 earlier gave the ethical and academic assurance checklist for submission. Table 25 provided example disclosure statements for different types of GenAI use.

Table 26. Readiness checklist at the end of Step 3.

Area	Checkpoint Question
Discussion	Does the discussion interpret the findings rather than repeat them?
Conclusion	Does the conclusion clearly answer the research question?
Introduction	Does the introduction match the completed thesis?
Abstract and keywords	Do they accurately summarise the thesis and support discoverability?
Figures and tables	Are all visuals clear, numbered, titled, referenced and necessary?
References	Are all citations and references complete, accurate and verified?
Coherence	Does the thesis read as one coherent academic argument?
Contribution	Is the contribution visible and proportionate?
Limitations	Are limitations acknowledged appropriately?
GenAI disclosure	Is GenAI use disclosed according to institutional rules?
Ethics and data protection	Are ethical and data-protection requirements satisfied?
Submission requirements	Are all institutional submission instructions followed?

Source: Table by author.

Table 27. Common risks in Step 3 and how to address them.

Risk	Symptom	Checkpoint Question	Recommended Action
Polished but superficial text	The thesis is fluent but lacks academic depth.	Does the text show interpretation, contribution and student judgement?	Strengthen argumentation, clarify contribution and remove generic phrasing.
Discussion repeats results	The discussion does not add interpretation.	What do the findings mean and why do they matter?	Connect findings to literature, theory, limitations and contribution.
Overstated conclusion	The conclusion claims more than the material supports.	What can this thesis demonstrate?	Make claims more proportionate and acknowledge limitations.
Misaligned introduction	The introduction promises more than the thesis delivers.	Does the introduction match the final thesis?	Revise the introduction after the conclusion is complete.
Weak abstract	The abstract is vague or inaccurate.	Does the abstract reflect the actual thesis?	Rewrite it using the completed thesis as the source.
Unclear authorship or disclosure	GenAI use is not properly reported.	Have I followed institutional disclosure rules?	Add or revise the GenAI-use statement.
Reference errors	Citations, DOIs or reference list entries are incomplete or inconsistent.	Can every source be traced and verified?	Check references manually using reliable databases and original sources.
Visual inconsistency	Figures or tables are unclear, unreferenced or unnecessary.	Does each visual add value?	Revise, simplify, move or remove visuals.
Over-editing by GenAI	AI revision changes meaning or weakens the student's voice.	Does the final text still express my argument?	Compare revisions with the original and keep only changes that preserve meaning.
Missed institutional requirement	Required forms, formatting or declarations are absent.	Have I followed the official submission instructions?	Check institutional guidelines before submission.

Source: Table by author.

6.11. Conclusions

A completed thesis is not merely a polished document. It is evidence of the student's ability to conduct, interpret and present academic work responsibly. Step 3 is where that evidence becomes visible: in the discussion that moves from findings to meaning, in the conclusion that answers the research question without overstating the contribution, in the references that have been verified rather than generated, and in the disclosure statement that makes the role of GenAI transparent. When GenAI is used critically and transparently at this stage, it can strengthen clarity, coherence and structure. When it is used uncritically, it hides weak reasoning behind fluent language. The final responsibility for argument, evidence, authorship and integrity remains with the student.

Part III: Assessment, Agents, Governance and Ethics with Generative AI

7. Assessment and Feedback with Generative AI

This chapter examines how generative artificial intelligence (GenAI) and large language models (LLMs) can support assessment and feedback in educational settings. One principle is foundational and applies throughout: final evaluation and pedagogical responsibility remain with qualified teachers, supervisors, examiners and educational institutions. GenAI outputs are diagnostic and advisory as inputs to human judgement, not substitutes for it. This is stated once here and assumed throughout the rest of the chapter.

It is important to distinguish between assessment and feedback. Assessment refers to judging student performance against defined criteria. It may be formative, supporting learning during the process, or summative, contributing to a final grade or decision. Feedback refers to information given to students about strengths, weaknesses and possible improvements in their work. Assessment asks how well the student has met the criteria; feedback helps the student understand how to improve (Hattie & Timperley, 2007; Henderson et al., 2019). The two processes are related but distinct, and GenAI raises somewhat different considerations for each.

Earlier automated essay scoring systems, developed since the 1960s, relied on surface features such as length, vocabulary and sentence structure. LLMs have expanded this by engaging with meaning, argument and context more flexibly, providing both preliminary scoring and qualitative feedback (Barrot, 2024). Long texts remain difficult, however: assessment requires interpretation, disciplinary judgement and contextual understanding that current models cannot fully replicate. Models have had limitations on the length of text they can process adequately, though the effective context window continues to expand.

Students' texts to be assessed may include short answers, open-ended responses, essays, reports and thesis drafts. So far, LLMs have been used mostly in formative, low-stakes and structured contexts, but as models advance they are being applied to higher-stakes settings (Jauhiainen & Garagorry Guerra, 2026a). Evidence from short structured responses does not establish that LLMs can reliably assess full theses. A thesis requires evaluation of originality, disciplinary positioning, methodological fit, evidence, interpretation, contribution, authorship and defence. Fully automated evaluation of an entire thesis is not sufficiently reliable and should not replace human assessment. A more appropriate use is structured and partial diagnostic review, checking argument flow, methodology alignment, citation consistency or coherence between research questions and conclusions, understood as advisory support, not final evaluation. Before using GenAI-supported assessment across courses or thesis processes, institutions should pilot and validate it.

LLM performance in assessment and feedback depends on many factors, including training data, model settings, prompt quality, task type, assessment criteria and process design. Structured prompts, discipline-specific criteria, staged guidance, RAG methods, low-randomness settings and repeated evaluation can improve reliability (Bewersdorff et al., 2023; Hackl et al., 2023; Jauhiainen & Garagorry Guerra, 2024a, 2026a; Jukiewicz, 2024; C. Zhai et al., 2024; P. Wang et al., 2024; Z. Li et al., 2025). Nevertheless, GenAI-supported assessment remains limited by validity, reliability, fairness and transparency challenges.

Reusable skill-based operations can support repeated thesis review by standardising the rubric, review sequence, feedback structure and quality checks. MCP-based integrations may add reliability by giving the model controlled access

to approved institutional rubrics, thesis guidelines, AI-use policies and assessment criteria. Even then, GenAI-supported thesis review should remain advisory: final academic judgement belongs to qualified supervisors, examiners and institutions.

7.1. Generative AI-Supported Assessment: Overview and Framework

Providing consistent, individualised and high-quality assessment is difficult at scale. Evaluating written work requires sustained attention to content, argumentation, structure, evidence, language, originality and disciplinary expectations. LLMs can process large volumes of student writing quickly and generate structured comments based on defined criteria. This does not change the fundamental principles of assessment, but it changes how assessment can be supported, documented and scaled. Assessment becomes a socio-technical process in which teacher expertise, clear criteria and AI-based tools interact (Xia et al., 2024; Jauhiainen & Garagorry Guerra, 2026a; Jauhiainen et al., 2026a).

A systematic GenAI-supported assessment process moves through three phases (Figure 8). In the preparation phase, the teacher defines the assessment object, learning objectives, criteria, materials and ethical safeguards, and selects the LLM. In the assessment phase, GenAI supports the application of criteria, identification of strengths and weaknesses, and production of preliminary scores or diagnostic observations. In the feedback phase, GenAI helps generate formative comments that guide student learning and revision (Jauhiainen, 2026b; Jauhiainen & Garagorry Guerra, 2026a). Each phase requires careful planning; the technical detail is described in Sections 7.2–7.4.

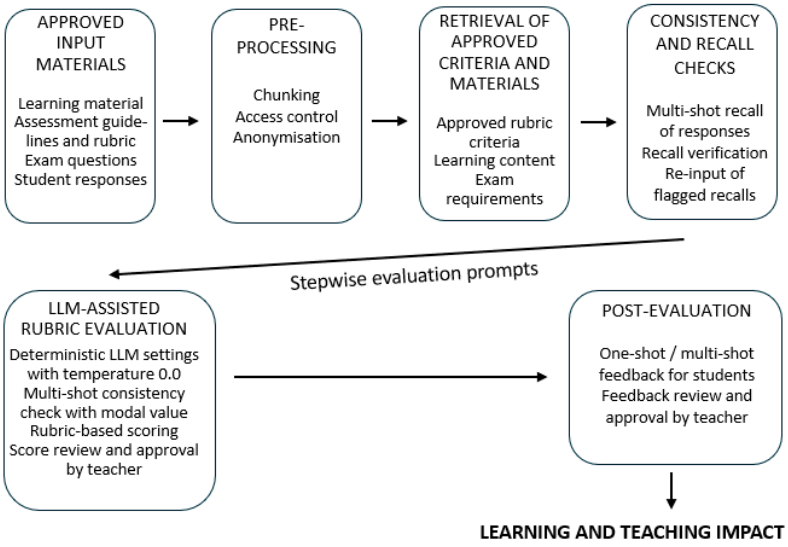

Figure 8. LLM-supported pre-assessment, assessment and post-assessment of students' written works. Source: Figure by author.

Skill-based operations and MCP-enabled connections can strengthen assessment workflows by providing reusable rubrics and controlled access to course materials, institutional guidelines or approved databases. Table 28 sets out the operational principles that should govern any use of GenAI in assessment or feedback.

One practical consequence of GenAI assessment systems is worth noting early: students may adapt their writing practices to perform well within them, optimising for features the model rewards rather than demonstrating deeper learning. This is a systems-level risk that institutions and teachers need to monitor alongside the more obvious risks of model error and bias.

Table 28. Key principles for generative AI-supported assessment of written work.

Principle	What It Means in Practice
Define the assessment purpose first	Decide whether the task is formative assessment, diagnostic review, preliminary scoring or summative assessment support before selecting a model or writing a prompt. The purpose determines which risks matter most.
Provide explicit criteria	Give the model learning objectives, assignment instructions and a rubric. Instruct it to evaluate each criterion separately. Vague prompts produce vague or inconsistent outputs.
Protect students	Remove identifying information where possible and use secure, institutionally approved tools.
Structure the prompt	Ask the model to proceed criterion by criterion, justify each observation by reference to the student text, and flag uncertainty. This makes outputs reviewable and correctable.
Use low-random settings	Where configurable, use low-randomness or consistency-oriented generation settings for assessment-support tasks. Test repeated outputs rather than assuming that a setting guarantees reproducibility.
Check input validity	Verify that the model is evaluating the student's actual text, not a paraphrased or altered version. When exact wording matters, check reproduced text against the original before assessment proceeds.
Run repeated evaluations	Use assessment repetition to detect problems, not to generate a distribution. Three to five repetitions can identify instability.
Review before sharing	All model-generated assessment and feedback should be reviewed by the teacher before it reaches students. Probabilistic outputs vary across runs; a single unreviewed output may mislead.
Document the process	Record the model used, the prompt, the criteria, the settings and any corrections made. This supports transparency, enables review and protects the teacher if outputs are later questioned.

Source: Table by author.

7.2. Preparing Generative AI-Supported Assessment

Preparation is the foundation of reliable GenAI-supported assessment. The teacher must define the assessment object, learning objectives, instructions and evaluation criteria before any AI tool is used, and must follow institutional guidelines on data protection and copyright. The LLM to be used is then selected.

When GenAI is used, the model should receive the relevant task materials, learning objectives and grading instructions. This ensures assessment focuses on the intended student competence rather than on the model's general knowledge. If students are expected to answer based on specific course readings, the model should evaluate against those materials, not against general internet knowledge.

The use of LLMs in assessment requires careful planning, precise prompts, low-randomness settings where available, and systematic verification of outputs. These measures can improve consistency, but they cannot remove all risks. Structured stepwise prompting guides the model more reliably than a single open-ended instruction (Chen et al., 2023; Wei et al., 2023; Cain, 2024; G. Lee et al., 2024). The model can be instructed to identify the main content of the student response, compare it with the assignment material, evaluate it criterion by criterion and provide a justified preliminary judgement. This should be understood as a structured assessment procedure, not access to the model's internal reasoning. The generated explanation is itself an output that must be evaluated.

In longer or material-specific assessments, retrieval-augmented generation (RAG) can anchor evaluation in relevant documents rather than in the model's general training. The system retrieves institutional evaluation guidelines and course materials and uses them as context for assessment. RAG improves grounding, reduces some types of error and usually decreases token costs. It does not, however, eliminate hallucinations or misinterpretations (Glass et al., 2022; Yu et al., 2024; Jauhiainen & Garagorry Guerra, 2026a).

A basic but important issue is whether the model evaluates the student's actual text. LLMs process text generatively and may omit, alter or reinterpret parts of the original text. When spelling, grammar, exact wording or language use is part of the assessment, this generative behaviour must be managed carefully. Input fidelity checks comparing the model's reproduction of the student text against the original before assessment proceeds are a practical safeguard.

One study (Jauhiainen & Garagorry Guerra, 2025a) examined how accurately ChatGPT-4o reproduced 54 student open-ended responses ranging from 24 to 256 words. The model was instructed to reproduce each response verbatim. In a single run, reproduced word counts matched originals exactly in 87.0 percent of cases; in a 10-shot repeated process, 88.2 percent. Differences of four or more words were rare (3.7% and 2.8% respectively). The model frequently made minor linguistic corrections that did not change meaning. In one case, however, it produced a substantially different response creating a risk that would have compromised any assessment based on that version. Three to five repetitions appear sufficient to detect instability; ten repetitions increased cost without proportionate benefit.

Local language models, SLMs and FLMs may be useful in assessment contexts where privacy, institutional control, local language support or cultural adaptation are important. Their assessment performance may not reach the levels of larger LLMs, and their use still requires careful validation and teacher oversight.

7.3. Structured Generative AI-Supported Assessment

The central quality dimensions in GenAI-supported assessment are validity, reliability, fairness, transparency and accountability.

Validity concerns whether the assessment measures the intended competence. If the objective is conceptual understanding, the assessment must not reward fluent

writing that lacks substance. If the objective is argumentation, the assessment must examine the structure and justification of the argument, not merely the presence of relevant keywords.

Reliability concerns consistency across repeated evaluations, evaluators or conditions. Because LLMs are probabilistic, the same response may receive slightly different scores across runs. Clear rubrics, scoring anchors, low-randomness settings, repeated evaluation and teacher review can each improve reliability (Xia et al., 2024; Jauhiainen & Garagorry Guerra, 2026a).

Fairness concerns equitable treatment of students. LLMs may respond differently to language, style, cultural references, non-standard phrasing or disciplinary conventions. Training data biases affect assessment outcomes (Bender et al., 2021; Miao & Holmes, 2023; Tao et al., 2024; Jauhiainen et al., 2025). Models generally perform better in English than in lower-resource languages, making language inequality a significant practical concern (Jauhiainen & Garagorry Guerra, 2026a).

Transparency concerns whether the process can be understood, documented and reviewed. Teachers and students should know when GenAI is used, what criteria are applied, how outputs are checked and who makes the final decision.

Accountability concerns who bears responsibility for decisions. Final decisions about grades, progression, thesis approval or academic misconduct must remain with qualified humans and institutions, regardless of how GenAI was used in preparing them.

In practice, LLM-supported assessment improves when the model evaluates specific components separately, such as content knowledge, argument quality, structure, source use, methodology, language, rather than generating a holistic impression. Criterion-by-criterion evaluation reduces reliance on general patterns and makes outputs easier to review and correct (Jauhiainen & Garagorry Guerra, 2026b).

For thesis assessment, GenAI functions best as a diagnostic and advisory tool. It can review individual components: clarity of the research question; alignment between question, method and analysis; structure of the literature review; conceptual consistency; methodological transparency; strength of argumentation; evidence use; citation risks; coherence between findings and conclusions; language clarity; and compliance with formatting requirements. These forms of review are useful before final submission. The model should not provide the thesis grade or replace the examiner. When assessing a thesis draft with GenAI, institutional regulations must be followed. Table 29 provides an example prompt structure for diagnostic thesis review.

Research evidence shows both promise and real limitations in the use of LLMs for assessment. On repeated evaluation (10-shot, 54 responses, 26–240 words), 96.1 percent of repeated results remained the same or differed by one grade point on a 0–5 scale (Jauhiainen & Garagorry Guerra, 2025b; Jauhiainen et al., 2026a). This suggests useful stability, but consistency does not imply correctness: a model may repeat the same error across runs.

In one high-stakes study, GPT-4o assessed 1,016 open-ended responses (typically 100–300 words) in the Finnish matriculation examination. Model scores correlated strongly with official human scores ($r = 0.85$–0.87). In Finnish, 75 percent of model scores fell within two points of official scores on a 0–15 scale; in English, 85 percent. Large deviations were present but rare (below 3%) (Jauhiainen & Garagorry Guerra, 2026a). A separate study comparing multiple LLMs and human expert graders on the same material found typical deviations from official grading

of around 10–15 percent. Models tended to score slightly higher; human experts slightly lower than official grades (Jauhiainen et al., 2026a). Discrepancies between LLM and human grading arise partly because human evaluators recognise correct content expressed in varied or unconventional ways, and detect answers that are superficially plausible but conceptually wrong. LLMs may apply keywords and surface patterns more mechanically, missing the distinction between deep understanding and fluent phrasing.

Table 29. Example prompt for diagnostic thesis review.

Prompt Component	Example Wording
Task	Review this thesis section based on the assessment criteria provided.
Scope	Focus only on the attached section and the listed criteria. Do not evaluate other sections.
Criteria	Assess each criterion separately.
Evidence	Justify observations by referring to specific passages in the thesis section.
Boundary	Do not introduce criteria not listed here. Do not invent content that is missing.
Output	For each criterion: state the criterion; quote or cite the relevant passage; give your diagnostic observation; suggest a revision priority (high/medium/low).
Status	This is diagnostic feedback only. Do not assign a final grade.

Source: Table by author.

7.4. Generative AI-Supported Feedback for Learning

Assessment and feedback are related but distinct. Assessment judges performance; feedback communicates that judgement in ways that help the student improve. The quality principles discussed in Section 7.3 apply to both, but feedback raises additional considerations about pedagogical targeting, tone and timing.

Feedback is a core part of learning. Effective feedback clarifies learning goals, current performance and the next steps required (Hattie & Timperley, 2007). It also supports self-regulation and the student's capacity to evaluate their own work (Nicol & Macfarlane-Dick, 2006; Henderson et al., 2019). Providing detailed, individualised feedback is demanding and time-consuming; in large student groups it is often difficult to provide consistently. Human feedback also varies due to subjectivity, time pressure and differences between evaluators (Mizumoto & Eguchi, 2023; L. Wang et al., 2024a). LLMs can generate structured, criteria-based feedback at scale and speed that would be difficult for an individual teacher.

When carefully guided, GenAI can identify strengths, point to weaknesses and suggest improvements in student writing (Dai et al., 2024; Jukiewicz, 2024; Meyer et al., 2024; Jauhiainen & Garagorry Guerra, 2026b; OECD, 2026). It can provide feedback immediately after submission, while the student still remembers the writing process. For some students, receiving initial feedback from a system rather than directly from a teacher reduces anxiety and lowers the barrier to engaging with it. These are genuine benefits. They do not, however, make GenAI feedback automatically appropriate: the teacher must verify that feedback is accurate, constructive, relevant and aligned with learning objectives before it reaches students.

The workflow for GenAI-supported feedback consists of several stages (Table 30). However, GenAI-generated feedback should not be sent directly to students in assessed thesis work unless it has been reviewed and approved by a qualified teacher, supervisor or examiner.

Table 30. Workflow for generative AI-supported feedback.

Define assignment, criteria and feedback purpose.
Remove identifying or sensitive information where possible.
Use approved institutional tools only.
Provide criteria, assignment instructions and student text.
Ask the model to cite specific passages.
Review accuracy, tone, relevance and proportionality.
Remove incorrect or excessive comments.
Add teacher judgement.

Source: Table by author.

The quality of feedback depends directly on the quality of the prompt and context. A model given only a student text and a vague instruction produces vague feedback. A model given the assignment, learning objectives, assessment criteria and the student's text, and instructed to cite specific passages, produces feedback that is specific and actionable. Feedback that is excessively long, excessively brief, or pitched at the wrong level of generality or detail reduces usefulness (Hawkins et al., 2025). A practical structure of strengths, areas for improvement, one key development suggestion, one concrete revision example keeps feedback manageable and actionable (Table 31).

A practical feedback structure can include four parts: strengths of the response; areas for improvement; one key development suggestion; and one concrete example of possible revision (Table 32). This structure keeps feedback manageable and helps students act on it. Skill-based operations can standardise the feedback sequence, rubric and level of detail across many student texts or thesis chapters. MCP-based integrations may add reliability where the model can access approved assessment criteria, course learning objectives, thesis guidelines or institutional feedback policies. Even in these cases, GenAI-generated feedback should remain formative and advisory unless reviewed and approved by a teacher, supervisor or examiner.

Research on LLM-generated feedback shows it can be clear, specific and useful. Expert teachers remain stronger at evaluating conceptual depth, disciplinary accuracy and pedagogical targeting (Dai et al., 2024; L. Wang et al., 2024a; OECD, 2026). Long-term evidence on learning effects is limited: GenAI-supported feedback may improve writing performance without producing deeper understanding. Students

need to read, interpret and actively use feedback for it to work. For example, they could compare feedback with the rubric; identify which comments are evidence-based; decide what to revise and why; ask the supervisor about unclear or contradictory feedback; do not revise mechanically just because the feedback sounds confident; and keep a revision note explaining what was changed.

Table 31. Example prompt for generative AI-supported feedback.

Prompt Component	Example Wording
Task	Provide formative feedback on this student response based on the assessment criteria below and attachment [add attachment].
Tone	Be constructive, precise and supportive. Avoid vague praise or ungrounded criticism.
Evidence	Refer to specific passages in the student's text to support each observation.
Boundary	Do not invent content that is absent. Do not give a final grade.
Output	Structure the feedback as: Strengths; Areas for improvement; One key development suggestion; One concrete example of how the student could revise a specific passage.
Attachments/context	Assessment criteria, assignment instructions and student text [attach].

Source: Table by author.

One study in a secure digital environment examined ChatGPT-4o feedback on Master's-level students' written responses to course readings (Table 32). The model produced short, neutral and structured comments. In 70.4 percent of cases, feedback included improvement suggestions, particularly for lower-graded responses (Jauhiainen & Garagorry Guerra, 2026b). Feedback content remains somewhat probabilistic and may vary across runs; it should be monitored and reviewed before distribution to students.

GenAI feedback works best as part of a broader pedagogical system. It can accelerate feedback cycles and increase access, but the goal remains student learning. In a hybrid model, GenAI produces an initial structured response; the teacher reviews, adjusts and decides what to share. Students should be guided to compare feedback with the assessment criteria, decide what to revise and reflect on how their work develops over time (Steiss et al., 2024).

Table 32. Example of LLM-generated feedback given to a student.

Element	Example
Teacher's question	What were the key challenges that COVID-19 brought to organise innovation events?
Student's response based on learning material	During the COVID-19 pandemic it was not allowed to organise any meetings because the stakeholders were scared tha [sic] the virus would spread in crowds. People were not allowed to travel to different cities or countries for example. There still was a need to organise innovation events because new ways to adjust to the situation was needed. That's why the innovation events were organised virtually.
LLM feedback	The answer correctly identifies **challenges caused by the COVID-19 pandemic for organising innovation events, such as prohibition of physical meetings and travel restrictions**. The response also correctly points out **the necessity of continuing innovation events and their adaptation to virtual formats**. However, it would be improved by *elaborating on specific challenges of virtual event organisation, like technical issues, participant engagements, and the difference in experience compared to in-person events*.

LLM's identification of the response's challenges in bold, and suggestions for improvement in italics. Source: Table adapted from Jauhiainen and Garagorry Guerra (2026b).

7.5. Practical Guidance on Generative AI-Supported Assessment and Feedback for Teachers, Supervisors and Institutions

Table 28 sets out the operational principles of GenAI-supported assessment for practitioners; Table 33 addresses the governance-level responsibilities that fall to institutions and academic leaders. Together, they cover the most important practical and structural requirements for responsible GenAI use in assessment and feedback. Three points deserve particular emphasis here because they are commonly underestimated in practice.

First, the documentation requirement is not a bureaucratic formality. When a student or parent queries an assessment outcome, or when an academic misconduct case arises, the institution needs to be able to show what role GenAI played, how outputs were reviewed and who made the final decision. Undocumented GenAI-supported assessment creates institutional risk alongside individual teacher risk.

Second, bias monitoring requires active effort. It is not sufficient to assume that because a model scored a group of students consistently, it scored them fairly. Systematic bias, for example, against students writing in a second language, or from cultural contexts underrepresented in the model's training data, may be consistent and invisible without deliberate comparison. Sample comparison with human assessment at regular intervals is the practical tool for detecting this.

Third, staff training cannot be limited to ethics briefings. Teachers need practical guidance: how to write an assessment prompt, how to set temperature, how to check input fidelity, how to read a model output critically, how to document the process. Institutions that invest only in policy and not in training will find that policy is not followed, not because teachers are unwilling but because they lack the practical knowledge to implement it.

Table 33. Assessment and feedback with generative AI: governance perspectives for supervisors and institutions.

Governance Issue	Practical Implication for Supervisors and Institutions
Policy on high-stakes use	Institutions must specify where GenAI may and may not be used in assessment. Final grades, thesis approval and misconduct rulings require human judgement and institutional procedures. No automated system makes these decisions.
Approved tools and environments	Institutions should specify which GenAI tools are approved for assessment and feedback, and under what conditions. Student texts must be handled in secure, institutionally approved environments.
Data protection requirements	Identifying information should be removed from student work before it enters AI systems where possible. Sensitive or confidential material must not enter unapproved systems without explicit permission.
Disclosure to students	Students should be informed when and how GenAI is used in their assessment or feedback; whether their work was processed by GenAI; which type of tool or approved environment was used; whether the output influenced feedback or grading; who made the final decision; and how they can ask for review or clarification. Lack of transparency undermines trust in the assessment process.
Equity monitoring	Institutions should monitor whether language, cultural background, disciplinary conventions or accessibility needs are producing systematically different outcomes in GenAI-supported assessment. Bias in training data affects all models.
Verification of authorship	Verification of genuine thesis authorship can be supported by oral examination and process documentation, not by GenAI detection tools.
Enforcement and accountability	Assessment processes using GenAI should be documentable and auditable. Institutions should be able to explain, on request, how any GenAI-supported assessment decision was reached and reviewed.

Source: Table by author.

7.6. Conclusions

GenAI can meaningfully support assessment and feedback, but only within clearly defined boundaries. The evidence reviewed in this chapter shows that LLMs can achieve strong correlation with human scores in structured, criterion-based tasks, that they can generate useful formative feedback quickly, and that they can help teachers manage large student numbers more effectively. It also shows that models produce errors, reflect biases, vary across runs and cannot replicate the disciplinary judgement that expert teachers bring to complex or high-stakes evaluation.

The practical implication is a clear division of labour between GenAI and human assessors. GenAI belongs in assessment preparation (structuring criteria, organising rubrics), in formative and diagnostic review (identifying weaknesses, suggesting improvements), and in consistency checking (repeated evaluation of short responses). It does not belong in final grading decisions, thesis approval or misconduct rulings, all of which require human responsibility and institutional authority.

Making this division work in practice requires more than good intentions. It requires explicit criteria, structured prompts, input fidelity checks, documentation, student disclosure, and regular human review. It also requires institutional policy that is specific enough to guide teachers and students in borderline cases, and staff training that equips teachers to implement that policy. The tables and prompts in this chapter are designed as practical tools for both.

8. AI Agents and Agentic Workflows in the Thesis Process

This chapter examines AI agents, agentic AI and their possible roles in research and thesis work. It focuses on how agentic systems may support students and researchers in organising complex tasks, retrieving information, structuring analysis, revising text and managing multi-step workflows. At the same time, it is explicit about what these systems cannot do: they have no academic agency, scholarly judgement or ethical responsibility. The student remains responsible for every intellectual decision the thesis contains: the research question, source selection, method, analysis, interpretation, writing and conclusions. This principle is not restated in every subsequent section; it is the assumed foundation of everything that follows.

In this chapter, an AI agent is an AI-supported system or workflow that can pursue a defined task through several steps, using tools, memory, structured instructions or external resources. Agentic AI refers more broadly to systems that display technical goal-directed behaviour across tasks or stages of a process. Multi-agent systems involve several agents working in coordination, often with distinct specialised roles. These are technical descriptions. They do not imply consciousness, intention or moral responsibility on the part of the system.

The development of GenAI has moved from single-turn language-model interaction toward broader systems that combine language generation with planning, tool use, memory and structured workflows. Connection layers such as MCP can allow AI systems to interact with approved tools, databases, files, institutional guidelines or digital research environments. These developments may make thesis and research workflows more efficient and better organised, but they also increase the need for transparency, verification and human oversight.

LLMs, SLMs and local models can all serve as the AI component within agentic systems. Contemporary agents are often LLM-based because of their broad language capacity, but SLMs offer advantages in privacy, cost and institutional control, particularly in low-resource or data-sensitive settings (F. Wang et al., 2024; Corradini et al., 2025). Hybrid systems are likely to become more common. Some local models can run on personal devices without internet connectivity, making them relevant in contexts where commercial models are unavailable. However, more advanced agentic systems typically require external tools, regular updates and reliable infrastructure.

Some experimental systems already automate parts of the scientific process, including literature review, hypothesis generation, experimentation and manuscript drafting (Jauhiainen & Toppari, 2025; C. Lu et al., 2026; Krammer, 2026). Multi-agent approaches have also been explored in scientific discovery more broadly, including biological design and astrobiological reasoning (Guellec & Vincent-Lancrin, 2026; Penadés et al., 2025; Swanson et al., 2025; Biever, 2025). In addition, in August 2026, four senior Google and DeepMind researchers—Jeff Dean, Sanjay Ghemawat, Oriol Vinyals and Quoc Le—founded Discovery Loop, a public benefit corporation whose stated aim is to automate the scientific and engineering research cycle by generating hypotheses, running experiments and evaluating results across thousands of parallel iterations (Discovery Loop, 2026). At the time of writing the company had published a mission statement and a recruitment call but no system, and its claims remain untested.

GenAI- and AI agent-supported research offers significant possibilities, particularly in computationally intensive fields. This should not, however, be taken as evidence that agentic systems can replace human scholarship across academic disciplines. In interpretive, theoretical, legal and critical traditions, scholarly contribution depends on meaning, context, ethical judgement and argumentation in ways that current systems cannot reliably replicate. Automated science is an emerging and contested development, not a settled future.

The chapter argues that AI agents should be understood as components of a socio-technical research process. They can assist with selected tasks; they cannot establish scientific validity, determine originality, guarantee ethical acceptability or take responsibility for academic claims. Section 8.1 explains agent types and the assistance/delegation/substitution distinction that is the chapter's central practical contribution. Section 8.2 describes how agentic workflows function in the thesis process. Section 8.3 addresses risks and responsible use. Section 8.4 sets out practical principles for institutional and supervisory implications before ending with conclusions in Section 8.5.

8.1. AI Agents and Agentic Systems in the Thesis Process

AI agents differ from ordinary prompt-based interaction in how they organise tasks across time. A basic LLM responds to one prompt. An agentic system breaks a task into subtasks, calls tools, stores intermediate outputs, retrieves information, produces drafts and passes outputs between stages. These capacities are enabled by advances in deep learning, reinforcement learning, foundation models, tool integration and workflow design (L. Wang et al., 2024b; Sapkota et al., 2026).

Deployable AI systems often combine a language model with tools, memory, deterministic controls and workflow structures. Agentic AI has been discussed in relation to autonomous decision-making, resource optimisation, human–AI collaboration and self-improving systems (Nisa et al., 2026). These developments are significant, but they should be described cautiously in academic contexts. Many systems remain experimental, and their performance depends strongly on task type, tool access, data quality, model limitations and human oversight.

Agents can be categorised by their operational logic: simple reflex agents follow predefined rules; model-based agents maintain internal states; goal-based agents direct actions toward objectives; utility-based agents weigh trade-offs; learning agents improve through feedback. For thesis work, however, the more useful classification is by academic function. Table 34 maps agent types to thesis tasks and identifies the key risk and the human checkpoint each requires.

Table 34. Thesis-relevant types of AI agents.

Agent Type	Thesis Function	Main Risk	Required Checkpoint
Search and retrieval checker	Develops search terms, identifies databases and retrieves possible sources	May miss relevant literature or privilege highly cited sources over better-fitting ones	Has the student checked sources in verified databases and read the originals?
Source and metadata checker	DOI checks, bibliographic metadata and reference consistency	May fail to detect fabricated or inaccurate references	Every reference verified manually before inclusion
Literature organiser	Groups verified sources by theme, theory, method, finding or debate	May oversimplify complex debates or flatten genuine evolving theoretical differences	Has the student read the grouped sources and tested the groupings?
Theory and concept organiser	Clarify definitions, compare frameworks, map conceptual relations	May treat contested concepts as settled	Are concepts grounded in scholarly sources appropriate to the discipline?
Methods and ethics reviewer	Compare method options, flag ethical considerations	May suggest methods without disciplinary understanding of fit	Does the method genuinely fit the research question and available material?
Material analysis assistant	Coding, pattern recognition, visualisation, classification	May impose categories before the student has read the material closely	Are interpretations grounded in the actual material, not in AI-generated categories?
Writing and revision assistant	Structure transitions, language and clarity	May homogenise style and weaken the student's voice	Does the revised text still reflect the student's own argument?
Quality assurance checker	Coherence checks, missing elements, disclosure, submission requirements	May produce false confidence if the review is superficial	Has the student independently verified every item the checker flags as complete?
Workflow coordinator	Sequence tasks, prepare handoffs between steps or agents	May create the appearance of coherence without intellectual depth	Can the student explain every decision the workflow reflects?

Source: Table by author.

The conceptual point is that a conversational LLM normally produces an answer, whereas an agentic environment may also inspect files, modify them, run commands, execute scripts, test outputs and complete a multi-step workflow. For this purpose, several tools have been designed principally for software development and technical work. For example, Codex can operate across ChatGPT, an application, editors and the terminal. Codex is an example of a specialised agentic environment designed primarily for software development and other technical workflows. Unlike an ordinary conversational use of an LLM, it can work with files, run commands and scripts, modify code and check the results of its actions. Such environments can also use skills containing reusable instructions, resources and executable procedures. For thesis work, their relevance extends beyond software engineering to reproducible data processing, document conversion, visualisation, file management and quality-assurance workflows. Their use requires appropriate technical competence, human review, secure handling of research material and compliance with institutional rules.

The most important ethical and pedagogical distinction in agentic thesis work is the difference between assistance, delegation and substitution (Table 35). This distinction helps students and supervisors decide whether AI-agent use supports learning or undermines it.

Multi-agent architectures add further complexity. In a unified multi-agent system, a single interface coordinates all thesis-related tasks. In a modular multi-agent system, tasks are distributed among specialised agents, which increases transparency but requires more coordination (Xi et al., 2023). In a hybrid multi-agent system, a central interface integrates multiple agents and logs their activity, improving traceability but also increasing the risk that errors in early stages propagate unnoticed into later ones.

The most important distinction for students and supervisors is not between agent types but between three levels of AI involvement in thesis work (Table 35). Assistance means the agent supports a bounded task while the student controls all substantive decisions. Suggesting search terms, improving a transition, flagging an inconsistency in a reference list are assistance. The student's intellectual ownership is intact.

Delegation means the agent performs a more substantial task that the student then checks, modifies and takes responsibility for. Drafting a preliminary literature matrix, generating coding categories for the student to evaluate, comparing method options: these are delegation. Delegation requires documentation, critical review and normally supervisor guidance. It is not inherently wrong, but it is higher-risk.

Substitution means the agent determines the intellectual core of the thesis, such as the research question, the central analysis, the main argument, in ways the student cannot independently explain or justify. Substitution is not acceptable in thesis work regardless of how it is disclosed, because it makes genuine learning impossible and undermines the thesis as a demonstration of the student's competence.

This distinction matters especially because agentic systems make delegation feel effortless. The smoother the workflow, the easier it is to lose track of where decisions were made. Documentation is therefore not only an ethical requirement; it is a practical tool for keeping the student intellectually in charge of the process.

Table 35. Assistance, delegation and substitution in agentic thesis work.

Level	What It Means in Practice	When Is It Acceptable?
Assistance	The agent supports a bounded task by suggesting search terms, improving a transition, preparing a checklist, while the student controls all substantive decisions	Usually acceptable when permitted by institutional rules, critically reviewed and disclosed where required
Delegation	The agent performs a more substantial task by drafting a literature matrix, generating coding categories, comparing method options that the student then checks, modifies and takes responsibility for	May be acceptable in some contexts; requires documentation, verification and normally supervisor guidance before proceeding
Substitution	The agent determines the research question, produces the central analysis, generates the main argument, or writes core sections in ways the student cannot independently explain or justify	Not acceptable in thesis work: it undermines authorship, makes learning impossible and violates academic integrity regardless of disclosure

Source: Table by author.

8.2. Agentic Workflow in the Thesis Process

An agentic workflow is a loop. The process begins with goal formulation: specifying the task. The system then retrieves relevant information, processes options, plans actions, executes a step, evaluates the output and adapts before beginning again. In practice, this loop can support thesis tasks such as source organisation, outline preparation, consistency checking and revision suggestion. Each pass through the loop, however, may introduce errors, omissions or biases. Human checkpoints are not optional: they are what prevents cumulative error from compounding across stages.

Workflows vary in scope. A task-specific workflow supports one defined task, such as checking whether a methodology section is internally consistent. A process-specific workflow supports a broader phase, such as the literature review. An end-to-end workflow coordinates multiple phases. The broader the workflow, the more consequential each checkpoint becomes, and the more important supervisor involvement is.

A simple workflow operates as follows: the user gives one concrete task to a task coordinator agent. The coordinator narrows the task, identifies the appropriate specialised agent and hands off. The specialised agent completes the task, provides a summary, marks uncertainties and, if further work is needed, suggests a handoff prompt for the next agent.

An example of a handoff prompt could be:

> "Use the Literature Organiser. I have selected the following five verified sources for my thesis. Please organise them by theme, identify agreements and tensions, and suggest how they could support a short literature review section. Do not invent sources. Mark uncertain interpretations clearly."

Two rules govern every step. First, all important claims, sources and methodological suggestions must be verified by the student against original materials before use. Second, agent use that influences the thesis must be documented: which agents were used, for what purpose, and how their outputs were evaluated and either used or rejected.

A set of custom AI agents can be organised to support a thesis, academic internship or research project. Such a system may be created in a ChatGPT environment with custom GPTs, or in other LLM environments with similar functionality. More advanced versions may use web search, data analysis tools, APIs, MCP-connected resources or institutional systems. However, programming is not always required: a basic version can be created through clear instructions, defined roles and careful human verification.

Skill-based operations and MCP-enabled connections can strengthen an agent system by providing reusable rubrics and controlled access to approved resources such as academic databases, reference managers, institutional guidelines or project files. Neither is required for a basic version. Their use does, however, require stronger governance, access control and data-protection arrangements. The purpose of such a system should not be to automate the thesis. A safer and more educationally meaningful principle is to work on one academic task at a time. The user gives one concrete task, selects the most suitable agent and verifies the result before moving to the next step. If another agent is more suitable, the current agent should provide a handoff prompt rather than continuing outside its role. Table 36 maps agent support to thesis phases and identifies the checkpoint question at each stage. Table 37 describes the components of a simple example agent system.

A central risk in any multi-step agentic system is cumulative error. If an agent introduces a flawed assumption or biased framing early in the process, subsequent stages build on that flaw. The result may appear coherent while resting on a weak foundation. LLMs in particular can become locked into earlier framings and continue along an incorrect trajectory without signalling that anything has gone wrong (Laban et al., 2025). Planned checkpoints at key decision points, and not only at the end of the process, are the main defence against this risk.

Table 36. AI agents across the thesis process.

Thesis Phase	Possible Agent Support	Required Human Checkpoint
Topic development	Suggest topic alternatives and refine scope	Is the topic meaningful, feasible and academically relevant?
Research question	Compare formulations and identify possible sub-questions	Can the student justify the question and its contribution?
Literature review	Organise verified sources and map debates	Have original sources been read and checked?
Theory and concepts	Compare definitions and conceptual relations	Are concepts used accurately and critically?

Table 36. *Cont.*

Thesis Phase	Possible Agent Support	Required Human Checkpoint
Research design	Compare methods, materials and ethical issues	Does the method fit the research question and material?
Material collection	Support planning, documentation or organisation	Are consent, data protection and ethics properly handled?
Analysis	Assist coding, grouping, visualisation or pattern identification	Are interpretations grounded in actual material?
Writing and revision	Suggest structure, transitions and clarity improvements	Does the text reflect the student's own argument?
Final review	Check coherence, references, disclosure and submission requirements	Can the student defend the thesis as a whole?

Source: Table by author.

Table 37. Example agent system for a thesis or research project.

Component	Function
Project workspace	Stores thesis context, files, notes, logs, drafts and project-level instructions. This is not itself an agent.
Task coordinator	Defines one academic task, identifies expected output, notes risks and recommends the next agent.
Source search and metadata checker	Supports search terms, database selection, DOI checks and bibliographic verification.
Literature organiser	Organises verified sources by theme, theory, method, finding, debate and uncertainty.
Theory and concept organiser	Clarifies concepts, definitions, theoretical relations and conceptual frameworks.
Methods and ethics reviewer	Reviews method fit, material, research ethics, transparency and responsible GenAI use.
Material analysis assistant	Supports coding, grouping, table preparation, pattern identification and interpretation of provided material.
Writing and revision assistant	Supports chapter structure, transitions, language clarity and revision plans.
Quality assurance checker	Checks coherence, missing elements, reference consistency, disclosure and submission requirements.

Source: Table by author.

8.3. Risks and Responsible Use of Agentic Workflows in Thesis Work

Agentic systems offer genuine benefits for thesis work: reduced cognitive load on routine tasks, easier interdisciplinary source organisation, and lower barriers to using advanced tools such as coding assistants or visualisation environments. These benefits are real. They become educationally valuable, however, only when the time and energy freed up are spent on the tasks that require genuine thinking such as reading, reflection, methodological justification, interpretation and argumentation.

The risks are also real. Overreliance weakens academic agency: students who delegate too much to agents may produce a coherent-looking thesis without developing the competence the thesis is supposed to demonstrate. Biases in training data and retrieval systems may narrow the perspectives the student encounters and reinforce dominant research paradigms (Tao et al., 2024). Agentic systems can make thin research appear well-organised by generating fluent summaries and polished structures that conceal weak analysis. Data protection risks increase when material moves across multiple tools, platforms or MCP-connected environments.

A more subtle risk is epistemic dependence. Hosseini et al. (2026) argue that extensive outsourcing of research tasks to agents may reduce the student's willingness to challenge AI-generated knowledge and weaken the capacity for independent expert judgement. Agents produce confident outputs even when evidence is thin, and they do not reliably flag their own limitations (Sapkota et al., 2026). Students who use agent outputs without checking the underlying sources or logic are not just risking errors but are training themselves to accept outputs rather than evaluate them.

Research on educational AI agents shows that the design and mode of use matter as much as technical capability. Agents that ask critical questions or prompt reflection may support higher-order thinking (Córdova-Esparza, 2025). Agents that respond Socratically by questioning, prompting, and withholding answers may deepen student engagement, because the student must do the reasoning the agent declines to do. Agents that simply supply answers encourage passive acceptance (Degen & Asanov, 2025; Fan et al., 2025). Guidance, evaluation and research-support agents may enhance workflows by integrating retrieval, summarisation and synthesis effectively (Zhang & Zhang, 2025). The educational value of any agent therefore depends on how it is designed and how the student uses it, not on its technical specification alone.

Disciplinary context shapes acceptable use significantly. In computational, quantitative or data-intensive research, agents may support many tasks effectively and with manageable risks. In theory-heavy, interpretive, philosophical, legal or critical traditions, the risks of flattening nuance, standardising conceptual vocabulary and narrowing analytical perspective are greater. Acceptable use must be evaluated in relation to the thesis type, disciplinary norms and the specific learning objectives the thesis is meant to demonstrate.

Responsible use requires planned human checkpoints throughout the process. Table 38 sets out the key checkpoints, the question each addresses and the practical action the student should take.

Table 38. Human-in-the-loop checkpoints in agentic thesis work.

Checkpoint	Key Question	Practical Action
After topic formulation	Is the topic meaningful, feasible and academically relevant?	Discuss the topic with the supervisor and record why it was chosen.
After research-question development	Can the student justify the research question or aim?	Compare alternatives and explain the final choice.
After literature retrieval	Are the sources real, relevant and sufficiently diverse?	Verify sources in academic databases and read original publications.
Before method finalisation	Does the method fit the research question and material?	Check methodological alignment and ethical requirements.
During analysis	Are findings or interpretations grounded in actual material?	Compare AI suggestions with data, texts, sources or cases.
Before writing conclusions	Do conclusions follow from the evidence and analysis?	Check that claims are not overstated.
Before submission	Is GenAI use documented and disclosed?	Prepare disclosure, verify references and review academic integrity.
After submission	Has learning been internalised despite the GenAI use?	Prepare oral examination and GenAI use explanation.

Source: Table by author.

Documentation and reflexivity are the two practices that make checkpoints meaningful. Documentation records which agents were used, at which stages, for what purposes, with what prompts, and which outputs were accepted, modified or rejected. Reflexivity means treating those records as objects of analysis: How did agent outputs shape the research question? Which framing did the student accept and why? What was rejected, and what does that reveal about the student's own judgement? Documenting rejected AI suggestions is at least as important as documenting accepted ones. It demonstrates that the student was leading the process rather than following it.

8.4. Practical Principles of AI Agent Uses for Supervisors and Institutions

Table 39 summarises the governance implications of agentic AI for supervisors and academic leaders. The discussion that follows develops the most important of these.

Table 39. AI agents and agentic AI: perspectives for supervisors and academic leaders.

Principle	Practical Implication
Define the role of the agent	Each agent should have one clear task and should not expand the scope without user approval.
Preserve student authorship	The student must understand, justify and take responsibility for all research choices and claims following the responsibility rule.
Use checkpoints	Human review is required after key stages such as topic selection, literature review, method choice, analysis and final submission.
Document use	Students should record which systems were used, for what purposes and how outputs were verified.
Verify sources and claims	All AI-suggested sources, interpretations and methodological advice must be checked against original materials.
Avoid substitution	Agents should not determine the research question, method, analysis or contribution in ways the student cannot explain.
Protect data	Sensitive, confidential or identifiable material should not be entered into unapproved systems.
Consider disciplinary context	Acceptable use varies across fields, thesis types and methodological traditions.
Support equity	Institutions should provide shared guidance so that agentic AI does not widen inequalities between students.
Keep assessment human-led	Supervisors and examiners should evaluate the student's reasoning process, not only the polished final text.

Source: Table by author.

For supervisors, the most significant change agentic AI brings is a shift in what supervision must examine. A final thesis that was substantially shaped by agent outputs may read well and be formally complete. The supervisory questions that matter are not about the text's surface quality but about the process behind it: How was the research question developed? What alternatives were considered? Which agent suggestions were rejected, and why? How were sources verified? How were interpretations developed from the actual material rather than from agent summaries?

These questions are best asked throughout the supervision process, not only at submission. Students should maintain a running log of their agent use not as a bureaucratic requirement but as a tool for reflection and for making the supervision conversation more substantive. Oral examination, process documentation and AI-use

statements may become increasingly central to thesis assessment as agentic workflows become more capable.

For institutions, the key challenge is specificity. General policies that prohibit "inappropriate" AI use without defining what that means leave both students and supervisors uncertain. Effective institutional guidance distinguishes concretely between assistance, delegation and substitution; specifies which tools are approved and under what conditions; provides disclosure templates and examples; ensures that data protection requirements are clear; and supports supervisors with practical training rather than only ethical principles.

Institutions should also monitor equity. Students with access to paid models, high-quality connectivity and experienced AI-literate supervisors have significant advantages over those without. If agentic AI use is left ungoverned, it is likely to widen existing inequalities in learning and research rather than reduce them.

8.5. Conclusions

AI agents will increasingly be part of the research and thesis environment. The question this chapter has addressed is not whether they will be used, but how to use them in ways that strengthen rather than undermine the educational purpose of the thesis.

The assistance/delegation/substitution framework is the practical core of the answer. Assistance keeps the student in intellectual control and is generally acceptable. Delegation can be appropriate when it is documented, verified and understood by the student, but it requires active supervision and carries higher risk. Substitution, where agents determine the research question, analysis or argument in ways the student cannot explain, is incompatible with the thesis as a demonstration of academic competence, regardless of how it is disclosed.

What makes the difference between acceptable and unacceptable use is not the agent type or the task it performs, but the quality of the student's engagement with the output. Planned checkpoints, documentation of accepted and rejected suggestions, and reflexive analysis of how agent use shaped the research process are the practical tools that keep that engagement genuine. A thesis produced with agentic support should be one the student understands more deeply for having used it and not one they understand less.

9. Ethics, Transparency and Responsible Use of Generative AI

This chapter outlines ethical principles and practical guidance for the responsible use of generative artificial intelligence (GenAI) and large language models (LLMs) in learning, research and thesis work. Earlier chapters have addressed GenAI in relation to learning, creativity, prompting, thesis work, assessment, feedback and AI agents. This chapter brings those threads together through the lens of ethics, transparency and governance.

GenAI and LLMs are now part of learning environments from schools to universities. Students increasingly use GenAI in producing written outputs; teachers use LLMs to support assessment and feedback. Evidence suggests that GenAI can scale personalised learning support, automate selected parts of assessment and enhance feedback processes (Jauhiainen & Garagorry Guerra, 2023, 2024b; Barrot, 2024; Abdallah et al., 2025; Jauhiainen, 2026c; OECD, 2026; Papadakis, 2026).

These developments raise important questions about fairness, transparency, reliability, data protection and academic integrity. These questions concern not only student essays and theses, but also academic manuscripts and research more broadly (Khraisha et al., 2024; Kooli & Yusuf, 2024; Bui & Barrot, 2025; Narreddy et al., 2025; Q. Huang et al., 2026). The ethical issues raised by GenAI in academic work extend well beyond plagiarism and disclosure. They concern how knowledge is produced, justified, evaluated and communicated, and who bears responsibility for each of these things. The foundational answer, which this chapter elaborates and applies, is that GenAI may support academic work but does not transfer responsibility for it, as already indicated in the responsibility rule in Chapter 1. Supervisors and teachers remain responsible for guidance, assessment and pedagogical judgement. Institutions remain responsible for clear rules, secure infrastructure, equitable access and appropriate training.

The chapter is organised as follows. Section 9.1 covers governance: the legal and institutional frameworks that shape GenAI use in education. Section 9.2 examines responsibility: who is accountable for what, and the ethical framework that follows from that. Section 9.3 addresses the core ethical challenges in practice: data protection, cognitive outsourcing, bias, hallucinations, and societal and environmental impact. Section 9.4 covers documentation, disclosure and practical safeguards. Section 9.5 concludes.

9.1. Governance and Institutional Guidelines for Generative AI Use

The governance of GenAI use in education refers to the laws, policies, guidelines, infrastructures and everyday practices that shape how these systems may be used. It operates across several levels: international recommendations, European Union and national legislation, institutional policies, disciplinary norms and course-level instructions.

At the international level, UNESCO has called for governance of GenAI involving governments, technology providers, educational institutions and individual users, with particular attention to transparency, equity, privacy, critical thinking and human oversight (Miao & Holmes, 2023). These principles provide a broad ethical foundation, but institutions must translate them into practical rules suited to their legal, educational and disciplinary contexts.

In the European Union, the AI Act entered into force on 1 August 2024, but its provisions apply in stages. Prohibited practices and AI-literacy measures applied from February 2025, followed by governance and general-purpose AI obligations in August 2025. As of 2026, the Digital Omnibus postponed the main requirements for Annex III high-risk systems to December 2027 and for regulated-product systems to August 2028. Article 50 establishes differentiated transparency obligations for providers and deployers. These include machine-readable marking of synthetic outputs and clear labelling of deepfakes and certain AI-generated or manipulated text published to inform the public on matters of public interest. The precise obligation depends on the actor, content and use case (European Union, 2024, 2026). The parallel data-protection Digital Omnibus amending the GDPR is a separate file and was in 2026 still under negotiation.

Not every educational use of AI is high-risk. Classification depends on the system's purpose. Admission, progression, consequential assessment and examination monitoring may qualify, whereas brainstorming, language revision, note organisation and formative feedback generally do not. Other data-protection, copyright, transparency and institutional requirements may nevertheless apply.

Providers and deployers must support AI literacy among relevant users, but they are not required to guarantee a specified level for every individual. As legal guidance and technologies change, institutions should consult current sources and obtain legal, data-protection and research ethics advice for specific deployments.

A university licence confirms institutional access, not permission to process all thesis data. Before uploading personal or sensitive material, students should verify permitted data categories and processing arrangements through institutional guidance, research services, or the data protection officer.

Countries and educational systems have adopted different approaches to GenAI governance. Some rely primarily on national policy, others on institutional initiatives, and many combine the two (Jauhiainen, 2026b). Regardless of the model, educational institutions have a central role. Important policy areas include data privacy and security, responsible use, equitable access, academic integrity, human oversight, AI literacy, curriculum integration and regular governance review (Crompton et al., 2026). Effective implementation also requires participation by students, teachers, supervisors, administrators, libraries, information-technology services, data-protection specialists and research ethics bodies.

Institutional guidelines must translate general principles into concrete instructions. In addition, disciplinary or programme-level guidance is needed beneath institution-wide policy (see Section 3.2). Students and supervisors need to know which uses are permitted, restricted or prohibited; what material may be entered into different systems; which tools are approved; and how significant GenAI use should be documented and disclosed. Language editing, brainstorming, outlining and formative feedback may be permitted under defined conditions. Fabricating sources or results, presenting unverified AI-generated analysis as research, or submitting work that the student cannot explain and defend should not be acceptable.

Governance should not only rely on individual responsibility. Institutions should provide approved tools where possible, disclosure templates, practical examples, equitable access, training and clear procedures for handling uncertainty or suspected misuse. Policies should be regularly reviewed: rules that are too vague provide little guidance, while rules tied too closely to individual products may quickly become outdated.

Institutions should obtain legal and data-protection guidance before deploying AI systems that process personal or sensitive data, connect to institutional information systems, monitor students, influence admission or progression, or contribute to consequential assessment decisions. Classification under the AI Act depends on the system's purpose, operation and context; it should not be determined merely by describing a system as educational or by assuming that human involvement automatically removes legal risk. The European Commission's high-risk classification guidance was still being finalised in August 2026, further supporting a cautious, case-specific approach.

When GenAI supports assessment and feedback, as discussed in Chapter 7, additional safeguards are needed. Students should know when AI is involved, what function it performs and who makes the final decision. AI-supported assessment should be aligned with learning objectives, tested for validity and bias, documented, and reviewed by qualified teachers or examiners. Systems used only for formative assistance differ from systems that determine grades, admission, progression or access to education, and institutional governance should reflect that distinction.

9.2. Responsibility and the Ethical Framework for Generative AI Use

Responsible GenAI use requires a clear understanding of who is responsible for what. Responsibility is distributed across students, supervisors, teachers, institutions and technology providers, but it is not dissolved among them. Each actor has specific obligations, as summarised in Table 40.

Table 40. Levels of responsibility in generative AI-supported thesis work.

Actor	Main Responsibility	Practical Implication
Student	Authorship, understanding, source verification, disclosure and final content	Must be able to explain and defend all claims, methods, interpretations and conclusions independently of any AI involvement.
Supervisor or teacher	Guidance, pedagogical judgement and assessment support	Discuss acceptable GenAI use early, ask students to justify choices and check that learning is not replaced by automation.
Examiner	Academic evaluation and quality assurance	Evaluate the thesis as evidence of student competence, not only as a polished text. Fluency is not a proxy for understanding.
Institution	Policy, infrastructure, equity, training and oversight	Provide clear guidelines, approved secure tools, disclosure templates, training and procedures for handling misuse.
Technology provider	System design, privacy, security and documentation of limitations	Support responsible use through privacy safeguards, transparency about limitations and clear documentation of how systems work.

Source: Table by author.

This distribution matters because GenAI use can blur boundaries in ways that obscure accountability. A student may receive suggestions from an LLM, process a chapter through a skill-based workflow and draw on an MCP-connected system that

retrieves institutional guidelines, and all this within a single work session. None of these systems becomes responsible for the thesis. The student remains accountable for the academic content; supervisors and institutions remain responsible for ensuring that academic standards and ethical rules are upheld.

Ethical GenAI use in thesis work rests on five core principles (Table 41): responsibility for academic decisions, verification of all outputs, transparency about AI involvement, fairness in how GenAI use affects different students, and protection of sensitive material. These principles are not new additions to academic ethics: they are applications of the principles of good scientific practice (honesty, accuracy, transparency, accountability, respect for sources and research participants) to a new technological context.

Table 41. Ethical framework for generative AI-supported thesis work.

Principle	What It Means	What It Requires in Thesis Work
Responsibility	The student is accountable for every intellectual decision in the thesis, regardless of AI involvement	Be able to explain and defend all claims, sources, methods, interpretations and conclusions without relying on AI-generated explanations to do so
Verification	AI outputs must be checked against reliable independent sources before use	Verify all sources in academic databases or original publications; check DOIs, quotations and factual claims; remove fabricated or unverifiable references
Transparency	GenAI use must be disclosed in ways that allow others to evaluate its influence on the work	Follow institutional disclosure guidelines; specify which tools were used, for what purposes and how outputs were reviewed
Fairness	GenAI use must not create hidden advantages or systematically disadvantage students	Institutions must provide shared guidance and access; students must not present AI-generated work as independent scholarship without disclosure
Protection	Personal, sensitive, confidential and copyrighted material must be protected	Do not enter such material into general-purpose or unapproved AI systems; follow consent, anonymisation and data-protection requirements

Source: Table by author.

The key ethical distinction in applying these principles is between support and substitution. Support means GenAI helps the student think, organise, revise or check work while the student remains in intellectual control. Substitution occurs when GenAI effectively performs the core intellectual work in ways the student cannot independently explain, verify or justify. Table 42 maps this distinction to concrete examples and their ethical status.

Table 42. Generative AI support, high-risk use and substitution in thesis work.

GenAI Involvement	Examples	Ethical Status and Requirements
Lower-risk support	Brainstorming, outlining, language editing, formatting, revision checklists, feedback on clarity and structure	Usually acceptable when permitted by institutional rules, critically reviewed and disclosed where required
Higher-risk support	Literature synthesis, coding assistance, method comparison, interpretation suggestions, argument restructuring	Requires careful verification, documentation, critical review and normally supervisor guidance before proceeding
Unacceptable substitution	Fabricated sources, invented findings, AI-generated analysis the student cannot explain, undisclosed production of core thesis content	Not acceptable: undermines authorship, prevents learning and violates academic integrity regardless of disclosure

Source: Table by author.

GenAI is a tool, not an independent researcher, and must not be listed as an author of a thesis or research publication. It can generate text, suggest sources, compare theories, propose methods or flag possible weaknesses, but these outputs require human evaluation and human accountability for their use.

Epistemic responsibility is a dimension of this that deserves emphasis. It is not sufficient for the student to follow rules about disclosure; the student must also be responsible for the quality of knowledge claims. This means knowing where information comes from, whether sources exist and are accurate, how interpretations were developed and whether conclusions genuinely follow from the material. A thesis that is fluent but weakly understood does not meet the educational purpose of thesis work, and GenAI makes this risk more common, not less, because it is easier than ever to produce fluent text without understanding it.

Students using GenAI in thesis research should maintain adequate records of reproducibility and provenance. Reproducibility means that the main stages of the study can be understood, reviewed and, where appropriate, repeated. Provenance concerns the origins and development of research materials, decisions and outputs. GenAI complicates both because results may vary by model, platform version, prompt, settings, uploaded files, connected sources and prior interactions.

Recording every minor use is neither practical nor necessary. Documentation should be proportionate to the task. Routine spelling correction may require only brief disclosure, whereas GenAI-supported coding, statistical analysis, source retrieval or interpretation requires a more detailed record. Confidential prompts or sensitive data should not be copied into logs when this would create additional risks; a secure description of the task and material may be sufficient.

Where appropriate, students should follow established open-science practices. Preregistration or registered reports can document research questions, methods and analytical plans in advance. Data, code and materials may be shared according to FAIR principles—findable, accessible, interoperable and reusable—subject to consent, privacy, copyright and institutional restrictions. Any GenAI-assisted process that materially influenced coding, data processing, analysis or interpretation should be documented and disclosed.

A proportionate GenAI research log may record the date; tool, model and version; task and purpose; effect on the thesis; and whether the output was verified, revised, accepted or rejected. Where model choice is available, students should select and record it deliberately. If the underlying model is undisclosed or cannot be fixed, they should record the tool and date and note this limitation rather than naming an unverified model.

9.3. Core Ethical Challenges in Practice

Ethical use of GenAI in the thesis process and, more broadly, in education and research concerns concrete practices. The key misuses and safeguards in GenAI-supported thesis work are presented in Table 43.

9.3.1. Data Protection, Privacy and Material Security

Personal, sensitive, confidential or unpublished material must not be entered into general-purpose or unapproved AI systems. This includes interview transcripts, survey responses, identifiable personal data, confidential institutional documents, workplace materials, unpublished manuscripts and sensitive fieldwork notes. The key distinction is not between using and not using GenAI, but between approved and unapproved systems, secure and insecure processing, and permitted and non-permitted material.

In some cases, institutionally approved secure systems may allow specific types of material to be processed under defined conditions, subject to data-protection rules, ethics approval, consent conditions and institutional instructions. Students should seek explicit guidance before entering any material that could be sensitive or identifiable.

Copyright and intellectual property must also be considered. Students should not upload copyrighted material into systems in ways that violate licence terms or institutional agreements. They should not present AI-generated or AI-revised content as independent human work without critical review and appropriate disclosure.

MCP-connected systems and AI agents require particular care because they may connect GenAI to external files, databases, tools or institutional resources, sometimes with limited visibility to the user. Such connections can improve workflow integration, but they increase risks related to access rights, data flows, logging, and unintended sharing. Institutions should specify which resources may be connected, who has access rights, how outputs are logged and what categories of material may be processed.

Table 43. Misuses and safeguards in generative AI-supported thesis work.

Risk or Misuse	How It Manifests	Safeguard
Sharing sensitive material	Personal data, confidential documents or identifiable material entered into an unapproved AI system	Do not enter sensitive material into general-purpose systems. Use only institutionally approved secure systems when permitted by ethics and data-protection rules.
Fabricated empirical work	Findings presented without real material, original data or appropriate analysis	Use original material; document the analysis process. AI-generated findings without evidence are not acceptable.
Unclear or absent methods	Results presented without explaining how analysis was conducted or decisions made	Require a clear methodological description including analytical stages, tools used and student decisions at each step.
Fabricated or unverifiable sources	References cannot be located or contain incorrect bibliographic details	Verify every source in a reliable database or original publication before including it.
Cognitive overreliance	Student cannot explain concepts, methods, interpretations or conclusions in their own words	Use oral discussion, supervision checkpoints and process documentation to confirm understanding throughout, not only at submission.
Undisclosed GenAI use	AI has materially influenced the thesis but is not reported according to institutional guidelines	Require disclosure in the format specified by the institution; make clear that non-disclosure is an integrity violation.
Biased or narrow outputs	AI suggestions repeatedly favour dominant perspectives, mainstream sources or English-language literature	Ask explicitly what is missing; compare with diverse sources; verify against disciplinary literature from relevant contexts.
Excessive AI rewriting	Student's own voice, argument or analytical choices are replaced by AI-generated prose	Use GenAI for revision support only; require the student to explain substantive changes; retain student authorship throughout.

Source: Table by author.

9.3.2. Cognitive Outsourcing, Learning and Academic Authorship

GenAI can support learning when it helps students explore alternatives, test ideas, receive structured feedback and reflect critically (Abrahamson, 2026). It can weaken learning when students delegate conceptual reasoning, interpretation or methodological decision-making to AI systems without developing the capacity to evaluate the result. This risk is sometimes called cognitive outsourcing: the transfer of core thinking processes to a tool in ways that prevent the student from understanding or defending what the tool produced.

Cognitive outsourcing may create epistemic dependence in which the student relies on AI-generated explanations, structures or interpretations without being able to judge their quality independently. Research suggests that GenAI supports learning when used critically and reflectively, but may weaken it when used passively (J. Lee et al., 2025; J. Liu et al., 2025; Pallant et al., 2025). AI-generated explanations can also produce an illusion of understanding: the student receives a clear-sounding answer without internalising the reasoning behind it (Miao & Holmes, 2023).

The boundary between support and substitution (Table 42) is the practical tool for navigating this. Students should ask themselves not only 'Did I use GenAI for this?' but 'Could I have produced and defended this without the GenAI output?' If the answer is no, the use has crossed into substitution, regardless of how it is disclosed.

9.3.3. Bias, Inequality and Fairness

GenAI systems are not neutral. They reflect patterns, omissions and biases in their training data, retrieval systems and design choices. They tend to privilege dominant perspectives, mainstream research traditions and widely represented languages, particularly English (Tao et al., 2024; Jauhiainen & Garagorry Guerra, 2026b). This can narrow theoretical diversity and shape what appears relevant, authoritative or normal.

In thesis work, these biases may affect topic selection, literature review, conceptual framing and interpretation. Students may receive suggestions that overrepresent high-citation English-language sources and underrepresent local languages, less digitised scholarly traditions or minority perspectives. Critical evaluation should therefore always include the question: what is missing or distorted in this output, and what would the picture look like from a different disciplinary or geographical position?

In assessment and feedback, bias requires institutional monitoring. If GenAI is used to support assessment, institutions must consider whether model outputs are valid and fair across languages, writing styles and student backgrounds. Automated assessment must not disadvantage students because of linguistic background, cultural expression or non-standard but academically legitimate modes of writing. Final decisions must remain with teachers, supervisors or examiners who can interpret context and exercise disciplinary judgement.

GenAI can assist students with challenges impacting learning such as dyslexia, language-processing difficulties, visual or motor impairments, executive-function challenges, and needs for speech-to-text, text-to-speech or alternative formats. Risks include inaccurate support, inaccessible interfaces, loss of individual voice and unequal access to advanced tools. Institutional accommodations should not depend on a student's ability to purchase a model.

9.3.4. Reliability, Hallucinations and Source Verification

LLMs generate text probabilistically and may produce fluent but incorrect information, including fabricated sources, false claims and misleading interpretations (Gilson et al., 2023; Bjelobaba et al., 2025; Zhang & Zhang, 2025). This risk is serious in academic work because errors may appear credible: a fabricated reference in the correct citation format, an oversimplified summary of a theoretical debate, an interpretation that sounds plausible but goes beyond what the evidence supports.

Verification must be systematic and built into the thesis process, not applied only at submission. Students should check all sources in reliable databases, library systems or original publications. Bibliographic details, DOI numbers, quotations and factual claims must be confirmed against the original source. AI-suggested sources must not be used unless verified. The problem is not only factual error: GenAI may also oversimplify theories, flatten disciplinary debates, overlook minority perspectives, misinterpret legal or conceptual distinctions, or suggest conclusions that exceed the evidence. Verification therefore means checking both accuracy and interpretive appropriateness.

Responsibility for accuracy lies with the student as the principal author of the text. Supervisors can support this by asking how sources were found and checked, and how AI-generated interpretations were evaluated. Institutions can support it by providing guidance on source verification, reference management and responsible use of AI-assisted literature tools.

9.3.5. Societal and Environmental Responsibility

The ethics of GenAI use extend beyond the individual thesis. Large AI systems depend on infrastructures of computation, energy, water, rare-earth mineral extraction, semiconductor production, data centres and global networks whose costs and benefits are distributed very unevenly across the world (Crawford, 2021; d'Orgeval et al., 2026). The environmental impact of a single student's use is small, but cumulative institutional use is not.

Access inequality compounds these concerns. Students differ substantially in access to paid models, reliable internet, high-quality databases, language support, AI-literate supervision and institutional resources. Access to tools does not guarantee the ability to use them effectively or critically. Institutions that treat GenAI as a neutral productivity resource without addressing these disparities risk widening existing inequalities rather than reducing them.

Ethical use therefore includes proportionality: using GenAI purposefully where it adds genuine educational or research value, rather than automatically for every task. Smaller, local or task-specific models may be appropriate in contexts where privacy, cost, infrastructure constraints or environmental considerations matter. The overall impact of GenAI on research quality and educational equity depends on the systems chosen, the scale of use and the governance structures that surround them.

9.4. Documentation, Disclosure and Practical Safeguards

Transparency is a core requirement of responsible GenAI use, and transparency requires documentation throughout the process and not only a disclosure statement at the end. Students should keep a running record of which tools were used, at which stages, for what purposes, which outputs were accepted or modified, and which were rejected and why. Documenting rejected AI suggestions is as important as

documenting accepted ones: it demonstrates that the student was leading the process rather than following it.

Disclosure must be specific enough to be meaningful. A vague statement such as 'AI was used' is not sufficient. Disclosure should state which tools were used, for what purposes and how outputs were reviewed and verified. At the same time, disclosure should not become disproportionately burdensome: the level of detail should reflect the significance of AI involvement in the thesis. Table 44 provides example disclosure statements for different types of GenAI use.

Table 44. Example disclosure statements for generative AI use in a thesis.

Type of Use	Example Disclosure
Language editing only	I used [tool, version] to support language editing and improve clarity. All substantive content, interpretation, analysis and conclusions are my own.
Planning and revision support	I used [tool, version] to support brainstorming, outlining and revision of selected thesis sections. I critically reviewed all outputs and made the final decisions about structure, argument and wording.
Literature organisation	I used [tool, version] to help organise notes from sources I had selected and verified. No AI-suggested source was included without checking the original publication.
Analysis support	I used [tool, version] to support the organisation of provided material and to suggest possible analytical categories. Final coding, interpretation and conclusions were made and verified by me.
Broader workflow support	I used [tool, version/system] during selected stages of the thesis process, including [state purposes]. All outputs were checked against original sources, institutional guidelines and supervisor feedback. Sensitive or confidential material was not entered into unapproved AI systems.

Source: Table by author.

Disclosure should be adapted to institutional requirements. Some institutions require a specific AI-use statement in the thesis; others require documentation in a research log, appendix or methods section. Where no specific rule exists, students should follow the general principles of transparency, accuracy and responsibility, and should seek supervisor guidance when uncertain.

When thesis findings are developed into a journal article, authors must follow the journal's current AI, authorship and disclosure policies. GenAI cannot qualify as an author, and material assistance in writing, analysis or figure preparation should be

disclosed as required. Thesis disclosure should therefore be adapted and not simply copied to meet publisher-specific rules. These rules are also changing as the models and their uses develop.

Ethical safeguards work best when built into the thesis process at each stage rather than applied only at submission. Supervisors play a critical role here. Process-oriented questions during supervision meetings, such as 'How was this source found and verified?', 'What AI suggestions did you reject and why?', or 'How did you move from this AI-generated category to your own interpretation?', are more effective than retrospective checks on the final text. The ethical checklist in Table 45 can support this throughout the process.

Table 45. Ethical checklist for generative AI use in the thesis process.

Area	Checklist Item
Academic integrity and authorship	I can explain and defend every claim, interpretation and conclusion in the thesis. The thesis reflects my own thinking and decision-making. GenAI has been used as a support tool, not as an independent author.
Transparency and disclosure	I have disclosed GenAI use according to institutional guidelines, specifying purpose and scope. I can explain how GenAI was used (e.g., brainstorming, outlining, language editing, coding, feedback, revision). I have not presented AI-generated text as independent human research.
Sources and references	I have verified all sources manually through reliable databases or original publications. DOI numbers, bibliographic details and quotations are correct where relevant. The thesis contains no fabricated or unverifiable references.
Data ethics and protection	I have not uploaded sensitive, identifiable or confidential material to unapproved AI systems. Consent, anonymisation and data-protection requirements have been properly implemented and reported. Any synthetic or illustrative data are clearly marked and not presented as real empirical evidence.
Method and analysis	Empirical claims are based on real material and appropriate analysis. Conceptual, theoretical, legal or interpretive claims are grounded in relevant sources and justified reasoning. All AI outputs have been critically evaluated before use.
Final scientific quality	The thesis meets disciplinary standards and is academically defensible. The final text is coherent, transparent and consistent with institutional requirements. I am prepared to discuss and defend the thesis, including any AI-supported stages, in an oral examination.

Source: Table by author.

The line between proper use and misuse of GenAI is often not very clear. Section 2.2 showed that AI detectors produce false results and disproportionately misclassify non-native English writing. Students may therefore be suspected of undisclosed GenAI use in work they wrote themselves or where they used GenAI only

for language polishing. The best protection is prior process evidence: timestamped drafts and version history, a brief log of significant GenAI use, and working materials such as reading notes, analytical memos and supervision records.

When undisclosed or prohibited GenAI use is suspected, institutions should follow their formal procedures. Detector scores should never be treated as sufficient evidence. Students should have an opportunity to explain and document how GenAI was used by presenting relevant drafts, version histories, notes, research records, prompt logs or supervision correspondence. Institutions should consider multiple forms of evidence and should not require students to prove their innocence.

If concerns arise, students should request the basis of the allegation, identify the passages questioned and present this evidence. A detector score alone is not proof of misconduct. Students should also know the institution's procedures, standard of proof and appeal route.

Supervisors and institutions should investigate the writing process, not begin with accusations. Discussion may test whether the student can explain the research question, methods and findings, but it should assess understanding rather than fluency so that second-language speakers are not disadvantaged (Vlachopoulos & Makri, 2024; Nallaya et al., 2024).

9.5. Conclusions

The ethical challenges raised by GenAI in thesis work are real, but they are not fundamentally new. They are applications of longstanding academic values of honesty, accuracy, transparency, accountability, respect for sources and protection of research participants applied to a technological context that makes these values harder to uphold and easier to violate. Understanding that shift is the starting point for responsible use.

Three tensions run through every chapter of this book and come together here. The first is between efficiency and learning: GenAI makes many thesis tasks faster, but speed and educational development are not the same thing. The time saved is only valuable if it is used for deeper engagement with the research. The second is between fluency and competence: LLMs produce text that reads well, but fluent writing is not evidence of understanding. A thesis must demonstrate that the student can think independently, not merely that they can produce fluent text. The third is between individual choice and institutional responsibility: no set of individual ethical commitments can substitute for institutional governance, equitable access and clear policy. Students cannot be expected to resolve questions of data security, assessment bias or copyright alone.

What responsible GenAI use looks like in practice depends on the task, the thesis type, the discipline, the institution and the stage of the research process. This book made that practical specificity visible in the three-step thesis model, in the assessment and feedback guidance, in the agent frameworks and in the governance principles of this chapter. The aim throughout has been the same: to support GenAI use in a way that strengthens learning rather than replacing it, that makes academic work more transparent rather than less, and that keeps responsibility where it belongs—with the student, guided by supervisors and governed by institutions.

Appendices

Appendix A. Prompt Library and Practical Generative AI Workflows for Foundation of the Thesis (Step 1)

Appendix A (Step 1, Chapter 4) discusses the foundation phase of the thesis and provides related prompts regarding the topic, literature, methods and research plan. Appendix B (Step 2, Chapter 5) focuses on the analysis phase: the methods section, analysis and results. Appendix C (Step 3, Chapter 6) covers the completion of the thesis: discussion, conclusions, abstract, references and submission.

Appendix A focuses primarily on prompting as a practical way to support the foundation phase of the thesis process. Some tasks at this stage can also be supported through reusable skill-based operation, meaning that certain prompts can be developed into structured skills (see Appendix D). The prompt examples are provided in English because LLM performance still varies across languages. Users may adapt them to the language, discipline and institutional context of their thesis. Shorter versions appear in Chapters 4–6, while recurring prompts can be developed into reusable skills (Appendix D). Where available, MCP-connected access to external literature databases, institutional resources, datasets, and reference systems can further support this work (see Appendix E). The numbers regarding different topics of the thesis process refer to Chapter 4 of the book, where broader discussion of each topic can be found. As regards the GenAI use, users must follow the regulations and ethical guidelines of their educational institution throughout this process (see Chapter 9).

Appendix A.1. Topic, Research Question, and Positioning the Thesis (See Section 4.1)

Prompt A.4.1.1. From Topic to Research Question (Bachelor's/Undergraduate Level)

Initial topic or area of interest: [insert] Available time: [insert] Material I know I can access: [insert or state "not yet determined"]

Generate 2–3 feasible Bachelor's-level research questions from this topic.

Each question must be specific rather than generic, answerable in the stated time, based on material I can realistically obtain, and appropriate to Bachelor's level—descriptive, comparative, interpretive or small-scale analytical.

For each question, give: the question itself; what it focuses on; what material, data, sources or texts would answer it; one method or analytical approach that would suit it; the main limitation or risk.

Then recommend the most realistic option and explain why in two or three sentences.

Constraints: Do not broaden the topic beyond what I have described. Do not assume access to material I have not confirmed. Do not produce generic textbook questions. Treat all suggestions as options for discussion with my supervisor, not decisions.

Outcome target: Two or three genuinely distinct, feasible questions I can compare and take to supervision.

Prompt A.4.1.2. From Topic to Research Question, Aim or Problem (Master's/ Postgraduate Level)

Topic or area of interest: [insert] Theoretical or conceptual orientation, if known: [insert] Available time: [insert] Material I expect to access: [insert]

Generate 2–3 analytically strong Master's-level research questions, aims or problems. Use whichever form fits my field: a question for empirical work, an aim or problem for theoretical, legal, interpretive or design-oriented work.

For each, give: the formulation itself; its grounding in theory, concepts or scholarly debate; the material that would be needed; a suitable method or analytical approach; the type of contribution it would make—empirical, conceptual, theoretical, legal, interpretive, methodological or critical; the main feasibility or ethical risk.

Then compare the options, recommend the strongest, and explain the choice in terms of both feasibility and contribution.

Constraints: Do not propose designs that are unrealistic at Master's level. Do not invent sources or assume access to material unless I have stated it. Do not produce abstract formulations that could apply to any topic. Ensure theory, material, method and expected contribution are visibly aligned in each option.

Outcome target: Two or three theoretically grounded formulations with an explicit account of what each would contribute and what it would cost.

Prompt A.4.1.3. Diagnosing and Improving a Draft Question (Undergraduate and Postgraduate Levels)

My draft research question, aim or problem: [insert]; Thesis level: [Bachelor's/ Master's]; Available time: [insert]; Material I can access: [insert]

Diagnose this draft against four criteria and report on each separately.

Focus: Is it specific, or too broad, vague or generic? Does it have a clear empirical, conceptual, theoretical, legal, interpretive or critical focus, or is the focus unstated?

Feasibility: Is the scope realistic in the stated time? Is the material available to me? Is the method or analytical approach manageable at this level?

Alignment: Do the question, material and method fit together, or does answering the question require something I do not have?

Risk: Identify the main risks—access, scope, ethics, data protection, source quality, conceptual ambiguity—and say which is most likely to cause difficulty.

Constraints: Do not replace my research interest with a different one. Do not improve the question by narrowing it into triviality. If the draft is already sound, say so rather than revising for the sake of it. Where you cannot judge feasibility from what I have given, say what you would need to know.

Outcome target: A clear diagnosis of what is weak and one improved formulation I can defend, with the reason for each change stated.

Prompt A.4.1.4. Formulating a Hypothesis (Quantitative and Experimental Work)

Research question or aim: [insert] Theoretical basis or expected relationship: [insert] Variables, measures or data available: [insert]

Help me formulate 2–3 testable hypotheses that follow from this question.

For each, give: the hypothesis in a form that specifies the expected relationship and its direction; the theoretical or empirical basis for expecting it; the variables and

how they would be operationalised; what evidence would support it and what would count against it; the main threat to validity.

Then indicate which hypothesis is best supported by existing theory and which is most feasible to test with the data I have described.

Constraints: Do not propose hypotheses that cannot be tested with the data or measures I have described. Do not state expected results as established findings. Do not invent effect sizes, prior studies or statistical relationships. Flag any hypothesis that would require data or sample sizes I have not confirmed.

Outcome target: Testable, theoretically motivated hypotheses with explicit falsification conditions.

Appendix A.2. Positioning the Thesis in the Literature (See Section 4.2)

For each prompt in this section, record in the thesis log the tool and version, the task, which outputs were used, which were rejected and why, and how sources were verified. Rejected suggestions are part of the record, since they show where academic judgement was exercised.

Prompt A.4.2.1. Literature Search Strategy (Undergraduate and Postgraduate Levels)

Research question, aim or problem: [insert] Discipline: [insert] Languages I can read: [insert]

Design a search strategy for this question.

Suggest: core search terms and their synonyms; adjacent or competing terminology used in neighbouring fields; Boolean strings I can paste into a database; the databases, journals, repositories or legal and policy sources most likely to hold relevant work; how to narrow the search if it returns too much and broaden it if too little; and criteria for judging which results are worth reading in full.

If I have listed a language other than English, also give the search terms in that language rather than translating only the final prose, and note where a concept may not map cleanly across the two.

Constraints: Do not supply results, sources or citations—this prompt is for the search strategy only. Where a term is used differently across disciplines, say so rather than choosing one meaning. Note where English-language sources are likely to dominate the results and what that would leave out.

Outcome target: A search strategy I can execute myself in named databases, with terminology that reflects how the field writes about the topic.

Prompt A.4.2.2. Source Verification and Quality Check (Undergraduate and Postgraduate Levels)

Sources to check: [insert list] Research question, aim or problem: [insert]

Assess each source on three points.

Traceability: Does it appear real and locatable? Which metadata are missing or internally inconsistent—author names, year, title, journal or book title, publisher, volume, issue, page range, DOI, URL, access date?

Type: Is it peer-reviewed research, a policy document, a legal source, grey literature, a preprint or something else? Say which, since the weight it can bear differs.

Relevance: How does it relate to my research question—directly, as background, or not clearly at all?

For each source, state how I should verify it: DOI resolution, Crossref, the publisher's site, Scopus, Web of Science, Google Scholar, a library catalogue or an official institutional site.

Constraints: Do not confirm any source as real. You cannot verify existence, and a fabricated reference in correct format is the specific failure mode this check exists to catch. Do not supply missing bibliographic details, even where you can guess them. Mark every uncertain item explicitly. If a source looks plausible but you cannot corroborate it from what I have given, say so.

Outcome target: A verification worklist. Every source ends up in one of three states: confirmed by me against a database, flagged for checking, or discarded.

Prompt A.4.2.3. Building a Source Matrix (Undergraduate and Postgraduate Levels)

Verified sources with my notes or abstracts: [insert] Research question, aim or problem: [insert]

Organise these sources into a matrix with one row per source and these columns: research question or focus; theory or concepts used; method or material; main findings or argument; stated limitations; relevance to my thesis.

Then read across the matrix and identify: which sources answer similar questions with different methods; where findings agree, diverge or contradict; which theoretical positions cluster together; what no source in this set addresses.

Finally, explain what this pattern means for my research question—not what each source says, but what the set as a whole shows about the state of knowledge.

Constraints: Use only the sources I have provided. Do not add sources, findings or limitations that are not in my notes. Where my notes are too thin to fill a cell, leave it empty and list it as something I need to read for, rather than inferring the content. Do not smooth contradictions between sources into false agreement.

Outcome target: A matrix I can extend as I read, and a statement of what the literature collectively establishes and leaves open.

Prompt A.4.2.4. Structuring a Literature Review (Bachelor's/Undergraduate Level)

Research question, aim or problem: [insert] Verified sources, summaries or notes: [insert]

Structure a Bachelor's-level literature review from this material.

Organise the sources into 3–4 themes. For each theme, give: the key concepts it involves; the main arguments or findings across the sources in it; and how the theme connects to my research question.

Then identify one realistic unresolved issue, research gap or analytical focus suitable for a Bachelor's thesis, and name which of my sources support that reading.

Constraints: Use only the sources provided and do not invent claims. Treat sources as preliminary until I have verified them. Keep the framing concrete rather than abstract or heavily theoretical. Keep the scope feasible for a Bachelor's thesis.

Output structure: Thematic structure, key ideas per theme, link to research question, realistic gap or analytical focus.

Outcome target: A defensible organisation of a focused source set, showing I understand the main concepts rather than that I have read widely.

Prompt A.4.2.5. Structuring a Literature Review and Theoretical Positioning (Master's/ Postgraduate Level)

Research question, aim or problem: [insert] Key sources, concepts or theoretical perspectives: [insert]

Build a Master's-level literature review that supports a theoretical or conceptual framework.

Identify: the key concepts and how different authors define them; the central theoretical perspectives; the main debates, tensions or disagreements; how the perspectives relate, differ or conflict; where my research question sits in relation to them; and one specific research gap, theoretical tension, conceptual problem, legal issue, interpretive question or empirical gap that could support a Master's-level contribution.

Organise by debate or perspective rather than by source, so the structure reflects the argument in the field rather than my reading order.

Constraints: Do not oversimplify debates or assume consensus where sources disagree. Do not invent sources or theoretical claims. Keep every section visibly connected to my research question. Mark clearly which statements come from my sources and which are your own inference, so I can verify the first and evaluate the second.

Output structure: Key concepts and theories, debate-based structure, relationships and tensions, positioning of my study, focused gap or contribution.

Outcome target: A review organised around scholarly argument, with my thesis positioned in a specific conversation rather than in the field generally.

Prompt A.4.2.6. Identifying and Verifying a Research Gap (Undergraduate and Postgraduate Levels)

Literature overview or source matrix: [insert] Thesis level: [Bachelor's/Master's]

Identify what is well established in this literature, what remains contested or underexplored, and which concepts, theories, methods, cases, contexts or materials are insufficiently addressed.

Then formulate one precise gap, unresolved issue or analytical focus that is realistic at my level.

For that gap, state explicitly: which of my sources support the claim that it exists; what a source would have to show for the gap to be closed; and what I would need to read to confirm it is genuinely open rather than simply outside the sources I happen to have.

Constraints: Avoid "more research is needed" and comparable formulations that state no gap. Do not claim novelty beyond what my sources support. A gap you cannot tie to specific sources in my list is a hypothesis for me to test, not a finding—label it as such. Absence from my source set is not evidence of absence from the literature.

Outcome target: One stated gap with its evidential basis attached, so I can verify it before building the thesis on it.

Prompt A.4.2.7. Concept Clarification (Undergraduate and Postgraduate Levels)

Concepts to clarify: [insert] Research question, aim or problem: [insert] Discipline: [insert]

For each concept: define it as used in my discipline; explain how it functions in research, not only what it means; distinguish it from related or easily confused concepts; state why it matters for my study; and suggest how it could do work in the analysis, interpretation or argument rather than sit in the background.

Where a concept is contested, give the main competing definitions and say what turns on the choice between them.

Constraints: Do not oversimplify contested concepts into a single settled definition. Do not invent theoretical claims or attribute definitions to authors unless I have supplied the source. Mark uncertainty clearly. Where a concept carries different meanings in different disciplines, say so rather than defaulting to the most common.

Outcome target: Working definitions I can defend, with the disciplinary stakes of each choice made visible.

Prompt A.4.2.8. Diagnosing a Draft Literature Review (Undergraduate and Postgraduate Levels)

Draft literature review: [insert] Research question, aim or problem: [insert]

Diagnose this draft and report on each point separately.

Description versus analysis: Where does the text summarise sources one after another instead of comparing them?

Depth: Where are debates flattened, disagreements smoothed over, or positions attributed without their supporting argument?

Connection: Where are links between sources missing, and where is the link to my research question weak or merely asserted?

Concepts: Which key concepts or theoretical positions are used without being defined or distinguished?

Synthesis: Where does the review fail to say what the literature collectively shows?

Then suggest concrete improvements for the three weakest points, in priority order.

Constraints: Work only from my draft. Do not add sources or claims. Do not rewrite the review—identify what needs to change and why, so the revision remains mine. If a section is already working, say so rather than finding fault for the sake of it.

Outcome target: A prioritised diagnosis I can act on, distinguishing what must be fixed from what could be polished.

Prompt A.4.2.9. Systematic or Scoping Review Protocol (Postgraduate Level, where applicable)

Review question: [insert] Type: [systematic/scoping] Field: [insert] Time and resources available: [insert]

Draft a protocol covering: the review question in answerable form; databases and other sources to be searched; complete search strings per database; the search date; inclusion and exclusion criteria stated so that two people would apply them the same way; the deduplication procedure; the screening process at title, abstract and

full-text stages; the data extraction fields; the quality appraisal method; and how the process will be reported, including PRISMA-style flow reporting where appropriate.

Then identify which stages require human screening and judgement, and which could reasonably be supported by GenAI.

Constraints: GenAI may support screening, extraction or organisation, but must not set or alter the inclusion criteria and must not determine inclusion without my verification. Do not propose a scope that cannot be completed in the stated time. Do not present a scoping review as a systematic review or vice versa. Flag any stage where a second screener would normally be required.

Outcome target: A protocol I can register or submit to my supervisor before the search begins, with the boundary between AI-supported and human-decided stages explicit.

Prompt A.4.2.10. Positioning the Thesis (Undergraduate and Postgraduate Levels)

Research question, aim or problem: [insert] Literature overview or key sources: [insert] Thesis level: [Bachelor's/Master's]

Position the study briefly. Address: what phenomenon, concept, problem, debate or case it examines; why this is academically relevant now; which existing research, theory, legal debate, policy discussion or scholarly tradition it speaks to; and what a realistic, modest contribution would be at this level.

Write it as a short paragraph I could adapt for the introduction, not as a list.

Constraints: Keep the claims proportionate to the thesis level. Do not overstate originality, significance or impact. Do not position the thesis against a field it does not engage. If the positioning cannot be stated clearly from what I have given, say what is missing.

Outcome target: A short, non-inflated positioning statement I can defend in supervision and adapt for the introduction.

Appendix A.3. Building the Conceptual or Theoretical Framework (See Section 4.3)

Students should record which definitions came from their sources and which were suggested by the model, since an ungrounded definition that survives into the framework will distort every later chapter.

Prompt A.4.3.1. Mapping Concept Definitions Across Sources (Undergraduate and Postgraduate Levels)

Key concepts: [insert] Sources with the relevant passages or my notes on them: [insert] Discipline: [insert]

For each concept, map how it is defined across the sources I have supplied.

Set out: how each source defines or operationalises it; where the definitions agree; where they differ, and on what—scope, mechanism, level of analysis, normative content; which definition belongs to which tradition or school; and what would follow analytically from adopting each one.

Where the concept is contested, say so explicitly and identify the axis of disagreement rather than presenting a consensus definition.

Constraints: Work only from the sources I have provided. Do not supply definitions from your general knowledge, and do not attribute a definition to an

author whose text I have not given you. If a source is too thin to establish its definition, say so rather than inferring. Do not resolve disagreements between sources into a single composite definition—the disagreement is the finding.

Outcome target: A definition map showing what my sources say, with contested points visible rather than smoothed over.

Prompt A.4.3.2. Building the Conceptual Framework (Bachelor's/Undergraduate Level)

Research question, aim or problem: [insert] Key concepts and the sources they come from: [insert] Type of thesis: [empirical/conceptual/other—specify]

Help me build a clear conceptual section for a Bachelor's thesis.

Step 1: Define and distinguish. Give a working definition of each concept, grounded in my sources. For each, identify the related or easily confused terms it must be distinguished from, and state the distinction in one sentence.

Step 2: Rank. Say which concepts are central to answering my research question and which are secondary background. Flag any concept that appears to be doing no work and could be cut.

Step 3: Connect. Explain how each central concept will be used later—what it will help me see in the material, and what it will not.

Constraints: Do not invent sources or definitions. Keep the framework proportionate to a Bachelor's thesis: a small number of well-defined concepts, not a survey of a theoretical field. Do not introduce theoretical machinery I have not mentioned. Mark uncertain claims clearly.

Output structure: Working definitions, distinctions from related terms, central versus secondary concepts, how each concept will be used.

Outcome target: A small set of clearly defined concepts I can define, distinguish and justify in an examination.

Prompt A.4.3.3. Comparing and Justifying Theoretical Frameworks (Master's/ Postgraduate Level)

Research question, aim or problem: [insert] Candidate theories, concepts or perspectives with sources: [insert]

Type of thesis: [empirical/conceptual/theoretical/legal/interpretive/critical] Material I expect to work with: [insert]

Compare these candidate frameworks and help me justify a choice.

For each candidate, set out: its core claims and assumptions; the tradition it belongs to; what it makes visible in my material; what it renders invisible or treats as unimportant; its main limitations for my question; and what kind of contribution it would enable—empirical, conceptual, theoretical, legal, interpretive or critical.

Then identify the debates and tensions between the candidates, and state what is at stake in choosing between them.

Finally, set out the strongest case for each option rather than recommending one, and specify what I would need to know about my field or material to decide. Where you do form a view, mark it as your inference and give the reasoning.

Constraints: Do not present a framework as settled if the sources show it is contested. Do not merge frameworks from different traditions without stating

the incompatibility. Do not recommend a framework on the basis of general popularity—the judgement of what fits this question in this discipline requires knowledge you may not have at the required depth, and that limit should be stated rather than concealed. Separate source-based claims from your own suggestions throughout.

Output structure: Framework-by-framework analysis, tensions between candidates, case for each option, what I still need to determine.

Outcome target: A comparison that lets me make and defend the theoretical choice myself, with the reasoning explicit.

Prompt A.4.3.4. Compatibility Check (Undergraduate and Postgraduate Levels)

Concepts, theories or perspectives I intend to combine: [insert] Research question, aim or problem: [insert] Sources: [insert]

Test whether these can be used together coherently.

Examine: the assumptions each makes about what exists and what counts as evidence; whether they operate at the same level of analysis; whether they use the same terms differently; whether they belong to traditions that have argued against each other; and whether combining them requires me to hold positions that conflict.

Report each incompatibility you find, its severity, and what it would take to resolve it—a stated delimitation, a choice of one over the other, or an explicit acknowledgement in the text.

Constraints: Do not manufacture compatibility. If the combination is sound, say so plainly. If it is not, name the conflict rather than proposing a synthesis that dissolves it. Where two traditions have a documented disagreement, report it as a disagreement, not a difference of emphasis. Where you cannot judge compatibility from the sources given, say what you would need.

Outcome target: An explicit statement of whether my intended combination holds, and if not, exactly where it breaks.

Prompt A.4.3.5. Framework as Analytical Instrument (Undergraduate and Postgraduate Levels)

Chosen framework or concepts: [insert] Research question, aim or problem: [insert] Material I will analyse: [insert]

Show how this framework will do work in the analysis.

Specify: what the framework directs me to look for in the material; what analytical categories, distinctions or questions follow from it; how it will shape the interpretation of findings; what it would count as a significant result; and what it would treat as noise or as outside its scope.

Then identify where the framework and the material may not fit—concepts that cannot be operationalised with what I have, or material features the framework has no way to address.

Constraints: Do not describe the framework in the abstract; the output should be usable in Chapter 5. Do not assume access to material I have not described. Do not claim explanatory reach the framework does not have. Where the framework cannot be applied to part of my material, say so rather than proposing a workaround.

Outcome target: A framework stated in operational terms, so that theory guides the analysis rather than sitting in a separate chapter.

Prompt A.4.3.6. Theory or Concepts as Primary Material (Conceptual, Theoretical, Legal, Humanities-Oriented and Critical Theses)

Research question, aim or problem: [insert] Theoretical, conceptual, doctrinal or textual material to be analysed: [insert] Analytical approach: [insert]

In this thesis, theory or concepts are the object of analysis rather than a lens applied to other material. Help me structure that analysis.

Set out: what precisely is being analysed—a concept, an argument, a doctrine, a body of texts, a tradition; what would count as an analytical move rather than a summary; the internal tensions, ambiguities or unresolved problems available for examination; the standards of rigour that apply in this mode of work; and what a contribution would look like—a clarification, distinction, typology, critique, reconstruction or reinterpretation.

Then indicate where my current formulation risks describing the literature instead of analysing it.

Constraints: Do not convert this into an empirical design or propose data collection. Do not treat conceptual analysis as a literature review. Do not paraphrase the positions I have given back to me as if that were analysis. Where a text or doctrine has an established scholarly interpretation, distinguish that interpretation from the source itself.

Outcome target: A structure for analysing concepts or theory in their own right, with the difference between description and analysis made explicit.

Prompt A.4.3.7. Diagnosing a Draft Conceptual or Theoretical Section (Undergraduate and Postgraduate Levels)

Draft section: [insert] Research question, aim or problem: [insert] Sources used: [insert]

Diagnose the draft and report on each point separately.

Definitions: Which concepts are used without definition, defined vaguely, or defined differently in different places?

Distinctions: Which related or easily confused terms are not distinguished?

Grounding: Which claims about theory are not traceable to the sources I have listed?

Consistency: Is each concept used in the same sense throughout? Flag every drift.

Function: Where is the section descriptive—reporting what theorists said—rather than analytical? Where is the link to the research question weak or merely asserted?

Flattening: Where does the draft present a contested concept as settled, or combine positions that do not sit together?

Then give concrete improvements for the three weakest points, in priority order.

Constraints: Work only from my draft and my listed sources. Do not add theory or sources. Do not rewrite the section—identify what needs to change and why, so the revision remains mine. If a part is already sound, say so rather than finding fault for its own sake.

Outcome target: A prioritised diagnosis distinguishing what must be fixed from what could be improved.

Appendix A.4. Designing Research Material and Method (See Section 4.4)

This check recurs throughout Step 1 and Step 2. See Appendix D for converting it into a reusable skill-based operation.

Prompt A.4.4.1. Identifying Suitable Research Material (Undergraduate and Postgraduate Levels)

Research question, aim or problem: [insert] Thesis level: [Bachelor's/Master's] Discipline: [insert] Time available: [insert] Material I already know I can obtain: [insert, or "not yet determined"]

Identify what kind of material this question requires.

Set out 2–3 options. Each may involve empirical data, documents, texts, legal sources, cases, policy materials, archival sources, theoretical literature, concepts or scholarly debates, depending on the question.

For each option, state: what the material is and roughly how much would be needed; what it can show about my question; what it cannot show; how it would typically be obtained; and what would make it unavailable in practice.

Then say which option best matches the question as written, and which would require me to revise the question.

Constraints: Do not assume I have access to any dataset, archive, participant group, institutional record or restricted source. Where an option depends on access, state that as a condition I must verify rather than as a step in the plan. Do not propose material at a scale unrealistic for my level and time. If the question as written does not require any material—if it could be answered from general knowledge—say so, because that indicates a problem with the question rather than with the material.

Outcome target: Two or three concrete material options with their evidential reach stated, and the access conditions I need to confirm.

Prompt A.4.4.2. Comparing Method and Analytical Approach Options (Undergraduate and Postgraduate Levels)

Research question, aim or problem: [insert] Material or sources: [insert] Theoretical or conceptual framework, if settled: [insert] Thesis level: [Bachelor's/Master's] Methods training I have: [insert]

Compare 2–3 methods or analytical approaches that could work with this question and material.

For each: what it would involve in practice, step by step; what kind of claim it would license; its main limitations for my case; the skills, software or training it assumes; and roughly how much time it would take at my level.

The options may be quantitative, qualitative, mixed, doctrinal, comparative, interpretive, historical, conceptual or critical. Include an approach from outside the obvious default for my discipline where one would genuinely work, and say what it would gain.

Then set out the strongest case for each rather than choosing for me, and specify what I would need to know to decide.

Constraints: Do not recommend a method because it is common in the field. Do not propose approaches requiring training, software or sample sizes I have not described as available. Be explicit where a method would be more demanding than

it first appears. If one option is clearly unsuitable, say so and explain why rather than including it for symmetry.

Outcome target: A comparison I can take to supervision, with the practical cost of each approach visible alongside its analytical payoff.

Prompt A.4.4.3. Designing the Research Material and Method (Bachelor's/ Undergraduate Level)

Research question, aim or problem: [insert] Discipline: [insert] Time available: [insert] Access I have confirmed: [insert]

Propose one realistic and manageable research design for a Bachelor's thesis.

Step 1: Material. Specify what material to use, how much, and how it would be selected or delimited. Explain why this material suits the question.

Step 2: Method. Recommend one method or analytical approach, describe the concrete steps it involves, and explain how it connects the material to the question.

Step 3: Constraints. Identify the main practical, ethical, legal and data protection issues: consent, privacy, anonymity, copyright and source-use conditions, access limits, language limits, sensitive topics, and whether institutional ethics review may be required.

Step 4: Simplification. State the single simplest version of this design that would still answer the question, in case time or access proves shorter than planned.

Constraints: Keep the design achievable at Bachelor's level in the stated time. Do not propose multiple methods where one suffices. Do not assume access I have not confirmed. Do not treat ethical review as a formality—where it may be required, say so and mark it as something to raise with my supervisor before work begins.

Output structure: Material, method and steps, practical and ethical constraints, minimum viable version.

Outcome target: One coherent design I can execute and defend, with a fallback if conditions change.

Prompt A.4.4.4. Designing the Research Strategy (Master's/Postgraduate Level)

Research question, aim or problem: [insert] Theoretical or conceptual framework: [insert] Expected contribution: [insert] Discipline: [insert] Time available: [insert] Access I have confirmed: [insert]

Propose a feasible research strategy for a Master's thesis.

Step 1: Material and selection logic. Specify the material and the basis for including and excluding—sampling, case selection, source selection or delimitation—in a form I could write into the methods section.

Step 2: Method and theoretical fit. Recommend the method or analytical approach and explain how it links to the framework as well as to the question. Show how the approach supports the contribution I have described.

Step 3: Analytical chain. Trace how I would get from the material to a defensible claim: what is collected or selected, how it is organised, what analytical operations are performed, and what would count as a finding.

Step 4: Feasibility, ethics and data governance. Identify feasibility risks; ethical, legal and data protection issues, including consent, anonymisation, special

categories of personal data, storage, retention, copyright and licence conditions; and whether formal ethics review or a data protection assessment is likely to be needed.

Step 5: Fallbacks. Give realistic alternatives if recruitment, access or availability falls short.

Constraints: Do not assume access to material, participants or systems I have not confirmed. Do not propose a design that would be a doctoral project. Do not overstate what the design can establish. Distinguish throughout what I can act on myself from what requires supervisor, ethics committee or data protection guidance.

Output structure: Material and selection logic, method and theoretical fit, analytical chain, feasibility and ethics, fallback options.

Outcome target: A design in which question, framework, material, method and contribution visibly support one another, with risks identified before work begins.

Prompt A.4.4.5. Ethical, Legal and Data Protection Review of the Design (Undergraduate and Postgraduate Levels)

Research design summary: [insert] Material type: [insert] Participants involved: [yes/no—describe] Jurisdiction and institution: [insert]

Review this design for ethical, legal and data protection issues.

Address, where relevant: informed consent and participant information; anonymity, confidentiality, anonymisation or pseudonymisation; personal data and any special categories; storage, access control and retention; copyright, licence terms and permitted use of sources; confidentiality of institutional, workplace or unpublished material; risks to participants or third parties; sensitivity of the topic; and whether formal ethics review is likely to be required.

Then state explicitly which material must not be entered into general-purpose GenAI systems during the research, and what safer alternatives exist.

Mark each item as must resolve before starting, must document in the methods section, or raise with supervisor.

Constraints: This is not legal or ethics advice and does not substitute for institutional review. Do not state that a design is ethically approved or compliant. Do not assume approvals, consent or permissions I have not described. Where requirements depend on jurisdiction or institution, say so and direct me to the relevant body rather than guessing the rule.

Outcome target: A prioritised list of ethical and legal actions, with the items requiring formal review clearly separated from those I can handle myself.

Prompt A.4.4.6. Alignment Check (Undergraduate and Postgraduate Levels—Repeatable)

Research question, aim or problem: [insert] Theoretical or conceptual framework: [insert] Material or sources: [insert] Method or analytical approach: [insert] Expected contribution: [insert]

Check whether these five elements are logically aligned. Report on each link separately.

Question → material: Does answering this question require this material, and would this material be sufficient?

Question → method: Can this method produce the kind of answer the question asks for?

Material → method: Can this method be applied to material of this type, scale and quality?

Framework → question and analysis: Does the framework shape the question and guide the analysis, or does it sit alongside them without doing work?

Analysis → contribution: Would completing this analysis produce the contribution I have claimed, or something narrower?

For each link, state whether it holds, is weak, or is broken, and give the reason. Then identify the single weakest link and suggest how to repair it while keeping the design realistic for my level—noting whether the repair means changing the question, the material or the method.

Constraints: Assess only logical coherence and methodological fit. You cannot judge whether the material is accessible to me—where a link depends on access, say that the judgement belongs to me and my supervisor. Do not propose repairs that expand the project. If the design is sound, say so plainly rather than manufacturing problems.

Output structure: Link-by-link assessment, weakest link, suggested repair, and what it would cost.

Outcome target: A short, repeatable diagnostic I can rerun whenever the question, material or method changes.

Appendix A.5. Writing the Research Plan (See Section 4.5)

Prompt A.4.5.1. Writing the Research Plan (Undergraduate Level)

Design a six-page Bachelor's thesis research plan for a thesis that must be completed within [add time].

Base the plan on this topic or preliminary idea: [paste topic or idea]

Write the plan in clear, academically appropriate language suitable for a Bachelor's-level research proposal. Keep the scope realistic and feasible.

Structure the research plan using the following sections:

1. Introduction: Background of the topic, Research motivation, A clear and sufficiently focused research question, aim or problem.
2. Conceptual Framework: Key concepts, Brief theoretical or conceptual grounding, Short positioning within relevant literature or scholarly debate
3. Research Material, Methods, and Ethics: Research design, research material, such as empirical data, documents, texts, legal sources, cases, policy materials, concepts, theories or scholarly debates, method or analytical approach, ethical, legal or data protection considerations, including consent, anonymisation, data protection and responsible AI use where relevant.
4. Planned Analysis and Expected Analytical Direction: Type of material or data, Collection, selection or delimitation process, Planned analysis strategy, Realistic types of findings, interpretations or analytical outcomes, Do not invent data, findings or results.
5. Academic and Societal Contribution: Scholarly relevance, Practical, policy or societal relevance, if applicable, realistic and modest contribution appropriate for a Bachelor's thesis.
6. Timetable: A realistic schedule for: [add time], key weekly milestones.

7. Potential Challenges and Risk Management: Methodological, analytical, ethical, or practical risks, Mitigation strategies
8. Preliminary Reference List: Include only real and verifiable academic sources if source information is provided. Use APA style unless another style is specified. Do not fabricate references. If source information is missing, state what kinds of sources should be searched and verified.

Additional requirements: Ensure the plan is feasible within [add time], Do not fabricate references, Do not invent empirical findings, interpretations or results, Keep the proposal realistic in scope for a Bachelor's thesis, If web access is not available, do not claim that sources or materials have been verified online.

Presentation task

After writing the research plan, create a concise 10-slide PowerPoint presentation summarising it.

Requirements for the slides: Include a title slide, Use clear headings, Use bullet points only, not full paragraphs, Highlight key ideas, not full text, Follow a logical academic structure

Suggested slide structure: Title and topic, background and motivation, research question, conceptual framework, research material, methods or analytical approach, ethics and limitations, expected findings, interpretations or analytical outcomes, contribution and relevance, timetable and key references.

Prompt A.4.5.2. Writing the Research Plan (Postgraduate Level)

Design a six-page Master's thesis research plan for a thesis that must be completed within [add time].

Base the plan on this topic or preliminary idea: [paste topic/idea here]

The plan should reflect Master's-level academic depth, including: explicit theoretical or conceptual engagement, methodological or analytical justification, and a clearly articulated scholarly contribution.

Write in a formal academic style suitable for a Master's thesis proposal.

Structure the research plan using the following sections:

1. Introduction: Background and academic context, Research motivation and relevance, A clear, detailed, and analytically meaningful research question, aim or problem, Include 2–3 sub-questions if helpful.
2. Conceptual and Theoretical Framework: Key concepts guiding the study, Main theoretical perspectives, conceptual debates or scholarly traditions, Explanation of how the framework informs the research question and analysis, Positioning within relevant scholarly literature.
3. Research Design, Methods, and Ethics: Overall methodological or analytical approach, such as qualitative, quantitative, mixed-methods, conceptual, theoretical, legal, interpretive, comparative, historical or critical analysis, Justification of why this approach fits the research question, Analytical strategy, Methodological or analytical limitations and constraints, Ethical considerations, including informed consent, anonymisation, data protection, source use, copyright and responsible use of AI or LLMs where relevant.
4. Research Material and Analysis Strategy: Type or types of research material, such as empirical data, documents, texts, legal sources, cases, policy materials, statistics, theories, concepts or scholarly debates, Access, sampling, selection or

delimitation logic, Collection or selection process; Step-by-step outline of how the material will be analysed or interpreted, Clear feasibility within: [add time].

5. Expected Findings or Analytical Outcomes: Realistic types of findings, interpretations, arguments or analytical outcomes the study may produce; Likely themes, patterns, relationships, conceptual distinctions, legal interpretations or theoretical insights, Do not invent empirical findings, numerical outcomes or unsupported arguments.
6. Scholarly Contribution and Societal Relevance: Potential contribution to academic debates, What the study may add empirically, conceptually, theoretically, legally, interpretively, methodologically or critically, Societal, policy or practical relevance where appropriate.
7. Timetable: A realistic week-by-week schedule, Include milestones such as: literature review completion, material collection or selection, analysis, chapter drafting, revision, and final submission preparation
8. Potential Challenges and Risk Mitigation: Key risks, such as: limited material access, ethical sensitivities, analytical complexity, conceptual ambiguity or time constraints, Mitigation strategies and fallback options.
9. Preliminary Reference List: Include only real and verifiable academic sources when source information is provided, Use APA style unless another style is specified, Avoid fabricated or incomplete citations, Prioritise key theoretical, conceptual and methodological references.

Additional requirements: Ensure the proposal is realistic and feasible within [add time], Do not invent empirical results, interpretations or conclusions, Do not fabricate references, Maintain Master's-level analytical depth, Make the theoretical, methodological and analytical logic explicit, If web access is not available, do not claim that sources or materials have been verified online.

Presentation task

After writing the research plan, create a concise 10-slide PowerPoint presentation summarising the proposal.

Requirements for the slides: Include a title slide, Use clear academic headings, Use bullet points only, not full paragraphs, Highlight core ideas, not full text, Follow a logical academic structure

Suggested slide structure: Title and thesis topic; research problem and motivation; research question, aim or problem; theoretical or conceptual framework; research material; methods and analysis strategy; ethics and limitations; expected analytical outcomes; contribution and relevance; timetable, next steps, and key references.

Appendix A.6. Designing the Thesis Structure (See Section 4.6)

Prompt A.4.6.1. Designing the Thesis Structure (Undergraduate Level)

Propose a conventional Bachelor's thesis chapter structure for the following research question, aim or problem: [paste question]

The thesis is based on the following research material: [paste description]

The material may include empirical data, documents, texts, legal sources, cases, policy materials, concepts, theories, scholarly debates or other relevant sources.

Requirements: Include clear chapter titles; provide 2–3 concise bullet points per chapter describing the content and function of each chapter; ensure that the structure

is realistic and appropriate for a Bachelor's-level thesis; keep the structure clear, logical and not overly complex; ensure that the structure supports a coherent progression from the introduction to concepts, material, method or analytical approach, analysis, discussion and conclusions.

Prompt A.4.6.2. Alternative Prompt (if institutional guidelines are provided):

Use the following institutional guideline for structuring the thesis: [paste guideline]

Apply it to this research question, aim or problem: [paste question] and empirical material: [paste description]

Adapt the structure to fit the specific research design. The thesis may be empirical, conceptual, theoretical, legal, interpretive, humanities-oriented or critical.

Include chapter titles, 2–3 concise bullet points per chapter, a short explanation of how the structure follows the institutional guideline, any necessary adaptations to fit this specific thesis.

Prompt A.4.6.3. Designing the Thesis Structure (Postgraduate Level)

Propose a conventional Master's thesis chapter structure for the following research question, aim or problem: [paste question]

The thesis is based on the following research material: [paste description]

The material may include empirical data, documents, texts, legal sources, cases, policy materials, statistics, concepts, theories, scholarly debates or other relevant sources.

Requirements: Include clear and analytically meaningful chapter titles; provide 2–3 concise bullet points per chapter describing the content and function of each chapter; ensure the structure reflects Master's-level depth; include: theoretical or conceptual engagement, methodological or analytical justification, analysis, interpretation and contribution; maintain a coherent progression from research problem and theory to material, method or analytical approach, analysis, discussion and conclusions; ensure that each chapter contributes to the overall thesis argument, engagement, methodological justification, analytical sections.

Prompt A.4.6.4. Alternative Prompt (if institutional guidelines are provided):

Use the following guideline for structuring the thesis: [paste guideline]

Apply it to this research question, aim or problem: [paste question] and empirical material: [paste description]

Adapt the structure to the specific theoretical, conceptual, empirical, legal, interpretive or analytical design of the thesis.

Include: chapter titles, 2–3 concise bullet points per chapter, a short explanation of how the structure follows the institutional guideline, any necessary adaptations to support the thesis argument, analysis and contribution.

Appendix A.7. Preparing Material Collection and Ethical Review (See Section 4.7)

The prompts in this section are for preparation only. Interview transcripts, survey responses, identifiable personal data, confidential documents and unpublished

material must not be entered into general-purpose GenAI systems. Where such material must be processed, use only institutionally approved systems, and only when consent conditions, data protection rules and ethics approval permit it. See Section 5.1 and Table 16.

Prompt A.4.7.1. Material Collection or Selection Strategy (Undergraduate and Postgraduate Levels)

Research question, aim or problem: [insert] Thesis type: [empirical/document or text-based/legal/theoretical/mixed] Thesis level: [Bachelor's/Master's] Time available: [insert] Access I have confirmed: [insert]

Propose a realistic strategy for collecting or selecting the research material.

Set out: what material is needed and roughly how much; the sampling, case selection, corpus delimitation or source-selection logic; the sequence in which collection or selection would proceed; what has to be in place before it can start; and what would count as enough to stop.

Then identify the main practical, ethical, legal and data protection issues to resolve before beginning, and state which require supervisor or institutional confirmation.

Constraints: Do not assume access to participants, archives, datasets, institutional records or restricted sources unless I have stated it. Where a step depends on access or permission, present it as a condition to verify, not as a completed decision. Do not propose a scale unrealistic for my level and time. Do not describe the analysis—that belongs to Step 2.

Outcome target: A sequenced preparation plan with its access conditions and approvals identified before any material is gathered.

Prompt A.4.7.2. Designing Research Instruments (Empirical Theses)

Research question, aim or problem: [insert] Key concepts the instrument must address: [insert] Instrument type: [interview guide/survey/observation protocol/other] Participants: [describe] Thesis level: [Bachelor's/Master's]

Draft a preliminary instrument for supervisor review.

For an interview guide: propose open-ended, neutral questions grouped by theme, with follow-up probes; indicate which key concept each question addresses; and mark any question that could lead, presuppose an answer, or be difficult for a participant to answer honestly.

For a survey: propose items with response formats; indicate the concept each item measures; and flag double-barrelled, leading, ambiguous or overlapping items.

For an observation protocol: propose what is to be observed, the categories or focus points, and how observations will be recorded.

Then identify: concepts not yet covered by any item; items that do not connect to any concept and could be cut; and the likely length or burden for the participant.

Constraints: Do not draft questions that presuppose the finding. Do not include items on sensitive matters—health, beliefs, legal status, protected characteristics—unless I have stated that these are within scope and covered by ethics approval; where such an item seems necessary, flag it for supervisor and ethics review rather than including it. Do not produce more items than can realistically

be used in the stated time. Treat this as a draft for human review, not a finished instrument.

Outcome target: A draft instrument mapped to the key concepts, with leading, ambiguous and sensitive items flagged before it reaches participants.

Prompt A.4.7.3. Designing Source-Selection Criteria (Non-Empirical Theses)

Research question, aim or problem: [insert] Material type: [texts/legal sources/policy documents/cases/archival material/theoretical literature] Conceptual or theoretical framework: [insert] Thesis level: [Bachelor's/Master's]

Draft selection criteria and corpus boundaries for supervisor review.

Set out: the inclusion criteria; the exclusion criteria; the boundaries of the corpus—period, jurisdiction, language, source type, publication status, thematic scope; the basis on which cases or texts would be chosen if the full population is too large; and how the criteria would be recorded so the selection is reconstructable.

State the criteria precisely enough that another reader applying them to the same body of material would arrive at a comparable corpus.

Then identify: what each delimitation excludes and what that costs analytically; where a criterion would be difficult to apply consistently; and any access or availability condition I must verify—archive permissions, paywalls, restricted collections, digitisation gaps.

Constraints: Do not assume that any text, case, archive or database is accessible to me. Do not propose criteria that would produce a corpus too large for the thesis level. Do not select for material likely to support a particular conclusion—flag any criterion that would have that effect. If I have not given enough about my framework to derive the criteria, say what is missing.

Outcome target: Explicit, applicable selection criteria I can defend in the methods section and reconstruct later.

Prompt A.4.7.4. Consent, Privacy and Data Protection Preparation (Empirical Theses with Participants or Personal Data)

Research design summary: [insert] Participants: [describe] Data to be collected: [describe] Institution and jurisdiction: [insert]

Prepare the participant-facing and data-handling elements for supervisor and ethics review.

Draft or outline: what a participant information sheet should cover—purpose, what participation involves, voluntariness, withdrawal, confidentiality, data use, retention, contact points; the consent elements to be obtained; and how consent will be recorded.

Then set out the data protection plan: what personal data will be collected and why each item is necessary; which items could be omitted under data minimisation; how and when anonymisation or pseudonymisation will occur; where data will be stored and who will have access; the retention period and disposal method; and any transfer outside the institution or jurisdiction.

Finally, state which material must never be entered into general-purpose GenAI systems, and what may be used instead—anonymised summaries, structural descriptions, non-sensitive excerpts.

Constraints: This is not legal advice and does not substitute for institutional ethics or data protection review. Do not state that a design is compliant or approved. Do not assume approvals, consent or a legal basis I have not described. Where requirements depend on jurisdiction or institution, name the body I should consult rather than stating the rule. Produce templates and checklists only—do not process any actual participant material through this prompt.

Outcome target: Draft consent and data-handling documentation ready for institutional review, with the GenAI boundary stated explicitly.

Prompt A.4.7.5. Ethics and Feasibility Review of the Collection Plan (Undergraduate and Postgraduate Levels)

Material collection or selection plan: [insert] Thesis type: [insert] Institution and jurisdiction: [insert]

Review this plan and report separately on each area.

Access: What must be secured before starting, and what happens if it is refused or delayed?

Consent and privacy: Where participants or personal data are involved, what is required and what is missing?

Data protection: Are storage, access, retention and anonymisation addressed adequately for the material described?

Copyright and source use: Do any licence, paywall or reproduction limits apply?

Sensitivity: Does the topic, population or material carry risk to participants, third parties or me?

Source quality: Are the sources reliable and appropriate for the claims the thesis will make?

Institutional requirements: What is likely to require formal ethics review, data protection assessment or other approval?

Fit: Will this material answer the research question?

For each, state the risk, its likelihood and a practical mitigation. Mark each item must resolve before starting, monitor during collection, or acknowledge as a limitation.

Constraints: Do not confirm ethical or legal compliance—that is for the institution. Do not assume unstated approvals. Where you cannot assess a risk from what I have given, say what you would need to know. Do not treat feasibility as settled: whether I can reach this material is a judgement for me and my supervisor.

Outcome target: A prioritised risk list separating what blocks the start of Step 2 from what can be managed as it proceeds.

Prompt A.4.7.6. Instrument and Criteria Alignment Check (Undergraduate and Postgraduate Levels—Repeatable)

Research question, aim or problem: [insert] Key concepts: [insert] Current interview guide, survey, observation protocol or source-selection criteria: [insert]

Check the instrument or criteria against the question and concepts. Report on each link separately.

Coverage: Which concepts are addressed, and which are not addressed by any item or criterion?

Redundancy: Which items or criteria address nothing in the question and could be removed?

Neutrality: Which questions lead, presuppose or embed an assumption? Which criteria would systematically favour a particular kind of material or finding?

Applicability: Could another person apply these criteria, or answer these questions, consistently?

Proportion: Is the instrument or corpus the right size for the thesis level and time?

State whether each link holds, is weak, or is broken, identify the single weakest point, and suggest a repair that does not expand the project.

Constraints: Work only from what I have supplied. Do not add concepts or items I have not mentioned. If the instrument is sound, say so rather than finding fault. Do not process real participant responses or collected material through this check—it is for the instrument, not the data.

Output structure: Link-by-link assessment, weakest point, suggested repair.

Outcome target: A short diagnostic I can rerun each time the research question or the instrument changes.

Appendix A.8. Finalising Research Material and Ethical Review (See Section 4.8)

Prompt A.4.8.1. Prompt Set: Data Collection Review (Undergraduate and Postgraduate Levels)

1. Completeness Check

Review the following: my material or data collection plan and my summary of collected or selected material: [insert summary]

Please: Identify any gaps, inconsistencies, or missing elements, assess whether the material or data are sufficient to answer the research question, aim or problem, highlight any unclear or weakly justified aspects, suggest concrete improvements before proceeding to analysis or interpretation.

2. Ethical Overview

Based on my material or data collection method: [insert method]

Identify the key ethical issues that should be re-checked before analysis.

Include: informed consent, anonymity and confidentiality, data storage and protection (e.g., GDPR), power relations between researcher and participants, potential participant vulnerability, privacy, copyright or source-use issues, responsible use of GenAI.

Then, indicate high-risk areas and suggest practical steps to ensure ethical compliance.

3. Research Material and Data Documentation Audit

Suggest a practical checklist to ensure that my empirical material, documents, texts, legal sources, cases or other research material are properly documented, consistently anonymised or pseudonymised where needed, securely stored, clearly organised for analysis.

Include: file naming conventions, metadata and documentation, such as date, source, context, version and access conditions, storage and backup practices, access

control, version control, if relevant, documentation of decisions made during collection, selection or delimitation.

Ensure the checklist is simple and feasible for a thesis project.

4. Risk Assessment

Based on my material or data collection process: [insert summary if needed]

Identify: potential methodological or analytical risks, such as weak sampling, incomplete data, narrow source selection or unclear delimitation, potential ethical risks, such as privacy issues, consent limitations, copyright problems, source sensitivity or data protection concerns, potential practical risks, such as limited access, time constraints or poor documentation.

Then explain how these risks might affect the validity, reliability, credibility or trustworthiness of the study, and suggest realistic mitigation strategies.

5. Reflexive Review

Critically evaluate my material or data collection process: [paste summary]

Identify: potential biases introduced during material or data collection, assumptions embedded in my approach, questions or source selection, possible blind spots or missing perspectives, groups, voices, cases, texts, sources or viewpoints that may be excluded or underrepresented, ways in which the material may shape the analysis, interpretation or argument.

Then suggest how these issues can be acknowledged and addressed in the thesis.

Appendix B. Prompt Library and Practical Generative AI Workflows for Analysis (Step 2)

Appendix B focuses primarily on prompting as a practical way to support the analysis and results phase of the thesis process. Some tasks at this stage can also be supported through reusable skill-based operations, where selected prompts are developed into structured skills (see Appendix D). Where available, MCP-connected access to external literature databases, institutional resources, datasets and reference systems can further support this work (see Appendix E).

The section numbers used for the different thesis-process topics refer to Chapter 5, where each topic is discussed in more detail. When using GenAI, students, teachers and supervisors must follow the regulations, ethical principles and academic guidelines of their educational institution throughout the process (see Chapter 9).

Appendix B.1. Collecting, Selecting and Organising Research Material (See Section 5.1)

Prompt B.5.1.1. Prompt for Collecting, Selecting and Organising Research Material (Bachelor's/Undergraduate Level)

Based on my research question, theoretical framework, method and planned material: [paste]

Based on my research design: Research question, aim or problem: [insert], Planned research material or sources: [insert], Method or analytical approach, if already decided: [insert]

Help me create a realistic plan for collecting, selecting and organising the material for a Bachelor's thesis. Depending on the thesis type, the material may consist of empirical data, documents, texts, legal sources, cases, policy materials, theoretical literature or scholarly debates.

Step 1: Material Identification and Fit

Identify: what material should be collected, selected or delimited; what type of material it is; approximately how much is realistic at Bachelor's level.

Explain for each type: why it fits the research question, aim or problem; what it can show; what it cannot show.

Flag any material I have named that appears unlikely to be accessible, sufficient or appropriate for the question as stated.

Step 2: Selection and Delimitation Logic

Propose a simple, defensible basis for deciding what is included and what is excluded, such as time period, source type, jurisdiction, language, population, publication status or thematic scope.

State the criteria in a form I could write into the methods section and defend in an examination.

Identify what would be lost by each delimitation, so that I can acknowledge it as a limitation rather than discover it later.

Step 3: Ethics, Legality and Practical Preparation

Identify what must be checked before collection or selection begins: consent and participant information, if people are involved; anonymity and confidentiality; data protection and secure storage; copyright, licence and source-use conditions; whether formal ethics review is required; whether any material may be entered into GenAI systems, and under what conditions.

Then list what should be in place before analysis begins: documentation practice, file organisation, a record of selection decisions and a note of anything still unresolved.

Important constraints: Do not assume that any material is available, accessible or permitted unless I have stated this. Do not invent sources, datasets, archives or participant groups. Do not propose ethics procedures that have not been described. Where something is unclear or missing, flag it rather than filling it in. Keep the scope realistic for a Bachelor's thesis.

Output structure: Material identification and fit, selection and delimitation criteria, ethical, legal and data protection checks, preparation checklist before analysis.

Outcome target: A realistic and defensible plan for assembling material that answers the research question, with selection criteria the student can justify and ethical requirements identified before collection begins.

Final coherence check: Does the planned material allow me to answer the research question, aim or problem? Identify any gap between what I intend to collect and what the question requires.

Prompt B.5.1.2. Prompt for Collecting, Selecting and Organising Research Material (Master's/Postgraduate Level)

Based on my research design: Research question, aim or problem: [insert], Theoretical or conceptual framework: [insert], Method or analytical approach: [insert], Planned research material or sources: [insert]

Help me refine the material collection, selection and organisation strategy for a Master's thesis. Consider empirical data, texts, documents, legal sources, policy materials, cases, archival sources, theoretical literature, concepts or scholarly debates, depending on the thesis type.

Step 1: Alignment with Question, Theory and Method

Assess whether the planned material fits the research question, aim or problem; whether it fits the theoretical or conceptual framework; and whether it can support the method or analytical approach I have chosen.

Identify any misalignment, such as material that cannot bear the theoretical weight placed on it, a framework that presupposes evidence I will not have, or a method that requires material of a different type, scale or granularity.

Step 2: Sampling, Selection and Sufficiency

Evaluate whether the sampling, case selection, source selection or delimitation logic is explicit and justified.

Assess whether the material is likely to be sufficient for the intended analysis, and what the consequences would be if it proves thinner than expected.

Identify sources of bias or blind spots in the selection, such as language, geography, publication bias, availability bias, over-representation of accessible cases, or exclusion of dissenting or minority positions.

Suggest realistic fallback options if access, recruitment or availability is more limited than planned.

Step 3: Ethics, Legality and Data Governance

Identify the ethical, legal and data protection issues requiring attention: informed consent and participant information; anonymisation or pseudonymisation; special categories of personal data; data storage, access control and retention; copyright, licence terms and permitted use; confidentiality of institutional, workplace or unpublished material; whether formal ethics review or a data protection assessment is required.

State explicitly which material must not be entered into general-purpose GenAI systems, and what safer alternatives exist, such as anonymised summaries, structural descriptions or non-sensitive excerpts.

Step 4: Documentation Before Analysis

Specify how the material should be documented so that the selection is transparent and reconstructable: source metadata, dates of collection or retrieval, versioning, selection and exclusion criteria, a record of decisions taken and their reasons.

Clearly distinguish practical suggestions I can act on myself from issues that require supervisor, ethics committee, data protection officer or institutional guidance.

Important constraints: Do not assume access to material, participants, archives or databases that I have not confirmed. Do not invent sources, sampling frames or ethical approvals. Do not overstate the sufficiency or representativeness of the material. Where evidence is missing, identify it explicitly rather than compensating for it. Keep proposals proportionate to a Master's thesis.

Output structure: Alignment assessment, sampling and sufficiency evaluation, bias and limitation analysis, ethical, legal and data governance requirements, documentation plan, issues requiring supervisor or institutional guidance.

Outcome target: A justified and documented material strategy that is aligned with the research question, theoretical framework and method, with selection logic, limitations and ethical requirements identified before analysis begins.

Final coherence check: Could I explain and defend, without AI wording, why this material and no other is the right basis for answering my research question? Identify any part of the justification I could not yet give in my own words.

Prompt B.5.1.3. Prompt for a Material Documentation Checklist (Undergraduate and Postgraduate Levels)

Based on the following description of my research material: [insert]

Create a documentation checklist for organising this material before analysis begins. Include the points relevant to my material type, whether empirical data, textual or documentary material, legal sources, theoretical literature or other sources.

Consider: file naming conventions; recording collection or retrieval dates; source metadata such as author, title, publisher, jurisdiction, version and location; consent

records, where participants are involved; anonymisation or pseudonymisation practice; secure storage, backup and access control; version control; explicit source-selection criteria; a record of exclusions and the reason for each; and a note of where any GenAI support was used in organising the material.

Adapt the checklist to my actual material rather than producing a generic list. Mark any item that requires supervisor, ethics or data protection confirmation before proceeding.

Important constraints: Do not add documentation requirements that do not apply to my material type. Do not assume consent, approval or permissions that I have not described. Keep the checklist proportionate to the thesis level.

Output structure: Checklist grouped by category, Items requiring external confirmation, Items still outstanding.

Outcome target: A material-specific documentation practice that makes the selection transparent, the analysis reconstructable and the ethical position defensible.

Prompt B.5.1.4. Material Readiness Check (Undergraduate and Postgraduate Levels)

Research question, aim or problem: [insert] Description of the material now collected, selected or delimited: [insert]

Planned method or analytical approach: [insert]

Assess whether the material is ready for analysis to begin.

Check whether: the material directly relates to the research question; the selection criteria are explicit and consistently applied; the material is sufficient in quantity and quality for the planned analysis; ethical, consent and data protection requirements have been addressed; the documentation is complete enough to reconstruct the selection later; and any sensitive material is being handled according to the rules I have described.

Identify what remains outstanding and mark each item as must resolve before analysis, should resolve during analysis, or note as a limitation.

Important constraints: Base the assessment only on what I have described. Do not assume that unstated steps have been completed. Do not confirm readiness if central requirements are unresolved. Where you are uncertain, say so and state what information would settle it.

Output structure: Readiness assessment by criterion, outstanding items by priority, limitations to acknowledge in the thesis.

Outcome target: A clear judgement on whether analysis can responsibly begin, with any remaining gaps identified and prioritised.

Appendix B.2. Finalising the Method, Analytical Approach and Ethical Foundations (See Section 5.2)

Prompt B.5.2.1. Prompt for Finalising the Method, Analytical Approach and Ethical Foundations Section (Bachelor's/Undergraduate Level)

Based on my research design: Research question, aim or problem: [insert], Research material or data [insert], Method or analytical approach: [insert]

Draft a clear and transparent Bachelor's-level methods or analytical section.

Step 1: Description

Describe: what research material or data are used, how the material or data were collected, selected or delimited, the type of material or data, the method or analytical approach, any basic sampling, selection or delimitation logic.

Ensure: the description is simple, clear, and accurate, and the reader understands what was done.

Step 2: Justification and Alignment

Explain: why this method or analytical approach is appropriate for the research question, aim or problem, how the material or data and analysis match the research objective, whether there are any weak points or missing justifications.

If needed, suggest minor improvements to strengthen alignment between the research question, material, method and analysis.

Step 3: Ethics, Limitations, and Finalisation

Describe relevant ethical, legal or data protection considerations, such as consent, if participants are involved, anonymity and confidentiality, data protection and storage, copyright or source-use issues, responsible use of GenAI, if relevant.

Then identify the main limitations of the method, analytical approach or research material. Refine the text for clarity, logical structure and appropriate academic tone.

Important constraints: Do not invent data, methods, analytical procedures or ethical steps, Do not assume procedures that are not explicitly described, If something is unclear or missing, flag it instead of filling it in, Keep the section realistic for a Bachelor's thesis.

Output structure: Methods description, justification and alignment, ethics and limitations, suggested improvements.

Outcome target: A clear, transparent, and realistic methods section or analytical section that supports the research question, aim or problem.

Final coherence check: Does the methods section clearly demonstrate how the research question, concepts or theory, research material and analysis fit together? Identify any remaining weaknesses.

Prompt B.5.2.2. Prompt for Finalising the Method, Analytical Approach and Ethical Foundations (Master's/Postgraduate Level)

Based on my research design: Research question, aim or problem: [insert], Theoretical or conceptual framework: [insert], Research material or data: [insert], Method or analytical approach [insert]

Draft a methodologically robust and theoretically grounded Master's-level methods or analytical section.

Step 1: Description

Describe clearly: the research material or data and its origin, how the material or data were collected, selected or delimited, the method or analytical approach, the sampling, case selection, source selection or delimitation logic, the main analytical steps.

Ensure: transparency and precision, the reader understands exactly how the research was conducted or how the material was analysed.

Step 2: Justification, Alignment and Theoretical Integration

Explain why the method or analytical approach is appropriate for the research question, aim or problem, how the material, method and research question are aligned, how the method or analytical approach is linked to the theoretical or conceptual framework, how the approach supports the expected thesis contribution.

Then identify strengths and limitations of the method or analytical approach. Assess whether there are conceptual inconsistencies, weak justifications or unnecessary complexity. Suggest concrete improvements where needed.

Step 3: Ethics, Limitations, and Finalisation

Provide: a clear and precise discussion of relevant ethical, legal or data protection issues, such as informed consent, if participants are involved, anonymity and confidentiality, data protection and storage, copyright or source-use issues, ethical risks related to participants, documents, legal materials, online sources or sensitive topics, responsible use of AI or LLMs.

Then critically reflect on: methodological or analytical limitations, constraints related to data, sources, texts, cases, concepts or theories, limits of interpretation, feasibility and scope.

Finally refine the section to ensure strong academic style, logical flow, and coherence across all elements.

Important constraints: Do not invent source material, analytical procedures or theoretical links, Do not overstate methodological rigour or theoretical contribution, If something is missing or unclear, identify it explicitly, Keep the section grounded in the actual research design.

Output structure: Methods or analytical description, justification and theoretical alignment, ethics and limitations, critical evaluation and improvements.

Outcome target: A coherent, justified and theoretically integrated methods or analytical section with clear ethical grounding.

Final coherence check: Does the section clearly demonstrate how the research question, theory or concepts, research material and analysis fit together? Identify any remaining weaknesses.

Appendix B.3. Initiating Analysis (See Section 5.3)

Prompt B.5.3.1. Prompt for Initiating the Analysis (Undergraduate Level)

Research question, aim or problem: [insert] Research material or data: [insert description, excerpts, sources, texts, cases, legal materials, documents, concepts or data]

Help me begin the initial phase of analysis.

Step 1: Descriptive Structuring

First, focus only on description, not interpretation. Identify: Key observations; recurring elements or patterns in the material; what appears frequently or is emphasised; clear differences, similarities or contrasts; relevant concepts, terms, cases, examples or data points.

Do not explain deeper meanings yet. Only describe what is visible in the material.

Step 2: Initial Analytical Structuring

Based on the descriptive observations: Group the material into 3–5 preliminary themes, categories, concepts, cases, issues or phenomena, Suggest clear labels for each category, Briefly explain what kind of material belongs in each category, Explain how the categories differ from each other.

Ensure that the categories are grounded in the material and are not based on abstract speculation. Keep the structure simple and manageable for a Bachelor's thesis.

Step 3: Distinguishing Description, Analysis and Interpretation

Clarify the difference using my material: What counts as description: what is present in the material, What counts as analysis: how the material is organised, What would count as interpretation: what the material means in relation to the research question, concepts or theory.

Identify whether I am already moving too quickly into interpretation.

Step 4: Initial Analytical Framework

Propose a simple analytical framework: List the main themes, categories, concepts, cases or issues, Suggest how I could organise the analysis section, Indicate which categories appear most central to the research question.

Important constraints: Do not invent data, sources, examples or patterns not grounded in the material, Do not over-interpret, If something is unclear, flag it rather than assume, Keep the analysis realistic for a Bachelor's thesis.

Output structure: Descriptive observations; suggested themes, categories or concepts; description, analysis and interpretation distinction; preliminary analytical framework.

Outcome target: 3–5 clear themes, categories or analytical points grounded in the material, with a clear separation between description and interpretation.

Prompt B.5.3.2. Prompt for Initiating the Analysis (Postgraduate Level)

Based on my research design and research material: Research question, aim or problem: [insert]. Theoretical or conceptual framework: [insert]. Research material or data: [insert description, excerpts, sources, texts, cases, legal materials, documents, concepts or data]

Support the initial analytical structuring of the material.

Step 1: Systematic Descriptive Analysis

Begin with description only.

Identify recurring patterns, variations and relationships; dominant elements, themes or tendencies; deviations, contradictions or tensions; empirically, textually, legally, conceptually or theoretically grounded observations; relevant distinctions, cases, concepts, arguments or data patterns.

Avoid full interpretation at this stage.

Step 2: Thematic or Conceptual Structuring

Develop a preliminary analytical structure: Identify key themes, categories, concepts, dimensions, cases or analytical issues; group observations systematically;

define each category clearly; explain how the categories are related, overlapping or distinct.

Ensure that the categories remain grounded in the research material.

Step 3: Theoretical Sensitisation without Full Interpretation

Using the theoretical or conceptual framework: Suggest how the material could be analytically approached through theory or concepts, Identify which concepts may help structure the observations, Indicate where theory helps organise the material, Identify possible tensions between theory and material.

Do not yet produce a full interpretation. Keep the focus on analytical structuring rather than final explanation.

Step 4: Description, Analysis and Interpretation Check

Explicitly distinguish: Description: what is observed in the material; analysis: how observations are structured; interpretation: what the material means in relation to theory, concepts, literature or the research question.

Identify whether there are premature interpretations, unclear analytical steps or weak links between material and theory.

Step 5: Preliminary Analytical Framework

Propose a structured analytical framework, including: Main themes, categories, concepts, cases or dimensions; relationships between them; possible structure for the analysis chapter; points where further analysis or interpretation will be needed later.

Important constraints: Do not invent patterns, sources, examples or theoretical meanings, Do not overstate analytical certainty, Base all observations on the actual material, Keep theoretical use analytical and proportionate.

Output structure: Descriptive observations, thematic or conceptual structure, theory-informed analytical directions, description, analysis and interpretation distinction, preliminary analytical framework.

Outcome target: A theoretically informed but material-grounded analytical structure, systematic categorisation and clear separation of analytical levels.

Appendix B.4. Completing Analysis (See Section 5.4)

Prompt B.5.4.1. Prompt for Completing Analysis (Undergraduate Level)

Based on my current analysis: Research question, aim or problem: [insert], Research material or data: [insert], Current themes, categories, concepts, cases or analytical points: [insert], Example excerpts, sources, cases, tables or notes, if available: [insert]

Help me finalise and strengthen my analysis.

Step 1: Review and Refine Themes or Analytical Categories

Evaluate my current themes, categories, concepts, cases or analytical points.

Assess: Whether they are clearly defined and distinct; whether there are overlaps or unclear boundaries; whether any category is too broad, too vague or unnecessary; whether the categories are appropriate for the research question, aim or problem.

Then suggest a refined set of 3–5 clear analytical themes, categories or points. Improve their labels and definitions.

Step 2: Grounding in Research Material

For each theme, category or analytical point: Indicate what kind of material, data, examples, sources, excerpts, cases or concepts support it, Check whether it is clearly grounded in the material, Identify any themes or claims that are weakly supported or speculative, Indicate where stronger examples, evidence or source references are needed.

Step 3: Coherence and Structure

Assess whether the themes, categories or analytical points form a clear and logical overall structure. Explain: How the categories relate to each other; whether they should be presented in a particular order; whether some categories should be combined, separated or removed.

Then suggest a clear structure for presenting the analysis, findings, results or analytical contribution section.

Step 4: Link to Research Question

Evaluate: how well the analysis answers the research question, aim or problem Identify: Any missing links or unclear connections; any parts of the analysis that do not clearly contribute to the thesis; how alignment with the research question could be strengthened.

Step 5: Final Quality Check

Identify: Speculative or weakly justified claims, unclear or inconsistent parts, overgeneralisation, places where description, analysis and interpretation are confused.

Important constraints: Do not invent data, examples, cases or concepts; Do not introduce new themes that are not grounded in the material, If something is unclear, flag it rather than assume, Keep the analysis realistic for a Bachelor's thesis.

Output structure: Refined themes, categories or analytical points; research material grounding check; structure of the analysis section; link to the research question; key improvements.

Outcome target: 3–5 clear analytical themes, categories or points, each supported by research material, with a coherent structure ready for writing.

Prompt B.5.4.2. Prompt for Completing Analysis (Postgraduate Level)

Based on my current analysis: Research question, aim or problem: [insert], Theoretical or conceptual framework: [insert], Research material or data: [insert], Current themes, categories, concepts, cases or analytical points: [insert], Example excerpts, sources, cases, tables or notes, if available: [insert]

Support the final consolidation and critical refinement of my analysis.

Step 1: Analytical Refinement

Evaluate my themes/categories: Are they analytically precise and conceptually meaningful? Are boundaries between themes clear and justified? Are there overlaps, redundancies, or missing dimensions?

Then refine the analytical structure, categories, concepts, cases or analytical points. Assess: Whether they are analytically precise and conceptually meaningful;

whether boundaries between categories are clear and justified; whether there are overlaps, redundancies or missing dimensions; whether the categories are sufficiently connected to the research question and theoretical framework.

Then refine the analytical structure and improve conceptual clarity, naming and organisation.

Step 2: Grounding in Research Material

For each theme, category or analytical point: Assess whether it is clearly supported by the research material; identify strong evidence, examples, source references, cases, excerpts or data points; identify weak or missing support; flag overgeneralisations, speculative claims or unsupported interpretations.

Step 3: Theoretical or Conceptual Integration

Evaluate: how the analysis connects to the theoretical or conceptual framework.

Then suggest ways to strengthen the link between theory, concepts and material; clarify how the analysis contributes to the theoretical, conceptual, legal, interpretive, empirical or critical discussion; avoid forcing the material into the theory where the fit is weak; recognise tensions between the framework and the material.

Step 4: Internal Coherence and Relationships

Assess how the themes, categories or analytical points relate to each other. Consider: hierarchy, contrast, overlap, sequence, tensions (contradictions or ambiguities).

Identify whether the analysis has a coherent internal logic or whether the structure needs revision.

Step 5: Preparing the Analysis or Results Structure

Propose a clear structure for the analysis, findings, results or analytical contribution chapter. Include: The order of themes, categories or analytical points, The logical progression of the chapter; how evidence, examples, sources, cases or excerpts should be presented; where theoretical or conceptual reflection should appear.

Step 6: Critical Quality Check

Identify: Speculative or weakly justified interpretations; conceptual inconsistencies; unsupported claims; limitations of the analysis; possible bias, overgeneralisation or selective use of evidence; places where description, analysis and interpretation need clearer separation.

Suggest how to strengthen analytical rigour

Important constraints: Do not invent data, sources, cases, examples or theoretical claims; do not overstate findings or contribution; base all evaluation on the provided material; mark uncertainty clearly.

Output structure: Refined analytical structure; research material grounding assessment; theory–analysis integration; internal coherence and tensions; analysis or results chapter structure; critical improvements.

Outcome target: A theoretically informed and material-grounded analysis, clearly supported analytical categories, recognition of tensions and limitations, and a structure ready for results or analytical contribution writing.

Final Analysis Integrity Check

Does my analysis rely on systematically examined research material, or mainly on selective examples? Identify any risks of bias, overgeneralisation or weak grounding.

Appendix B.5. Developing Findings, Results or Analytical Contribution (See Section 5.5)

Prompt B.5.5.1. Prompt for Developing Findings, Results or Analytical Contribution (Undergraduate Level)

Based on my thesis material: Research question, aim or problem: [insert], Main analytical themes, categories or points: [insert], Key findings, observations, interpretations or analytical claims: [insert], Available tables, figures, quotations, examples, cases or source excerpts: [insert]

Help me write a clear and well-structured Bachelor's-level findings, results or analytical contribution chapter.

Step 1: Structure the Chapter

Propose a clear structure for the chapter.

Requirements: Organise the chapter according to the research question, aim or problem, or according to the main analytical themes, categories or points; suggest suitable subheadings; ensure a logical order; avoid repetition; keep the structure realistic for a Bachelor's thesis.

Step 2: Present the Findings or Analytical Points Clearly

Draft the chapter so that it: Presents the main findings, observations or analytical points clearly and directly; distinguishes between description, analysis and interpretation; avoids broad theoretical discussion unless it is necessary for presenting the analytical contribution; keeps claims grounded in the research material.

In empirical theses, focus on what appears in the data and how the findings are organised. In theoretical, legal, humanities-oriented or conceptual theses, focus on what the analysis of sources, texts, concepts, cases or arguments shows.

Step 3: Integrate Illustrative Material

Suggest where I should include: 2–4 tables or figures, if relevant; short quotations, examples, cases or source excerpts, if relevant; references to specific parts of the material where needed.

For each suggested table, figure, quotation or example, explain: What it illustrates; how it supports the finding or analytical point; why it adds value rather than repeating the text.

Step 4: Clarity and Boundary Check

Review the draft and identify: Repetition; vague or unsupported claims; places where the text moves too early into discussion or interpretation; places where interpretation is too strong for the available material; unclear transitions between sections.

Revise the text so that it remains focused on presenting findings, results or analytical contribution.

Important constraints: Do not invent observations, quotations, numbers, tables, figures, sources, cases, findings or results; do not exaggerate claims; do not introduce

new material; if something is missing, flag it clearly; keep claims proportionate to the material.

Output structure: Suggested chapter structure; draft findings, results or analytical contribution text; suggested tables, figures, quotations, examples or source excerpts; boundary check: findings, analysis and interpretation; suggested revisions.

Outcome target: A clear and coherent chapter with appropriately integrated research material and a strong distinction between findings, analysis and broader discussion.

Prompt B.5.5.2. Prompt for Developing Findings, Results or Analytical Contribution (Master's/Postgraduate Level)

Based on my thesis material: Research question, aim or problem: [insert], Theoretical or conceptual framework: [insert], Main analytical themes, categories, statistical findings, legal interpretations, conceptual distinctions or theoretical claims: [insert], Key observations, findings, interpretations or analytical points: [insert], Available tables, figures, quotations, examples, cases or source excerpts: [insert]

Help me write an analytically structured and clearly written Master's-level findings, results or analytical contribution chapter.

Step 1: Design the Chapter Structure

Propose a logical structure for the chapter. Requirements: Organise the chapter according to the research question, aim or problem, or according to the main analytical themes, findings or arguments; suggest precise and academically meaningful subheadings; ensure that the structure supports clarity, coherence and analytical progression; show how each section contributes to the overall thesis argument.

Step 2: Write the Findings, Results or Analytical Contribution

Draft the chapter so that it: Presents the findings, results, interpretations or analytical contribution systematically; clearly distinguishes between description, analysis and interpretation; keeps extended theoretical discussion for the discussion chapter unless it is necessary for explaining the analytical contribution; remains grounded in the research material; avoids unsupported claims or overstatement.

In empirical theses, focus on data-grounded findings and analytical patterns. In theoretical, legal, humanities-oriented or conceptual theses, focus on source-based interpretation, conceptual clarification, legal argumentation, textual analysis, theoretical comparison or critical analysis.

Step 3: Integrate Tables, Figures, Quotations and Examples

Suggest how to integrate 3–5 well-placed tables, figures, quotations, examples, cases or source excerpts.

For each, indicate: Where it should appear; what it shows; how it supports the finding, interpretation or analytical point; whether it is necessary or redundant.

Ensure that visual and textual evidence is relevant, non-redundant and clearly linked to the chapter's argument.

Step 4: Internal Coherence and Precision Check

Review the draft and identify: Repetition, unclear transitions, weak or unsupported claims, places where interpretation becomes too extensive, places where theoretical discussion should be moved to the discussion chapter, places where evidence, examples or source references are insufficient.

Then suggest revisions to improve precision, flow and the distinction between findings, analysis and broader interpretation.

Step 5: Final Integrity Check

Assess whether the chapter: Addresses the research question, aim or problem; is grounded in the research material; avoids overstatement; recognises relevant tensions, limits or uncertainties; is ready to support the later discussion chapter.

Important constraints: Do not invent observations, quotations, numbers, tables, figures, sources, cases, findings or results; do not add theoretical claims not supported by the material; do not shift fully into discussion; if information is insufficient, state that explicitly; keep the contribution proportionate to the material and thesis level.

Output structure: Suggested chapter structure; draft findings, results or analytical contribution text; integration of tables, figures, quotations, examples or cases; findings, analysis and interpretation check; final revision suggestions.

Outcome target: An analytically structured and well-grounded chapter, with clearly integrated evidence and a disciplined distinction between findings, results, analytical contribution and broader discussion.

Prompt B.5.5.3. Boundary Check (Undergraduate and Postgraduate Levels)

Review my findings, results or analytical contribution chapter: [paste text]

Identify which sentences mainly function as: Description: what is present in the material; analysis: how the material is organised or compared; interpretation: what the material means in relation to the research question, theory, concepts or literature; broader discussion: implications, significance, limitations or contribution.

Then mark any places where interpretation or broader discussion should be moved to the discussion chapter. Suggest concise revisions that keep the chapter focused and well grounded.

Appendix B.6. Finalising Findings, Results or Analytical Contribution (See Section 5.6)

Prompt B.5.6.1. Prompt for Findings, Results or Analytical Contribution (Undergraduate Level)

Based on my drafted findings, results or analytical contribution chapter: Research question, aim or problem: [insert], Chapter draft: [paste text], Tables, figures, quotations, examples, cases or source excerpts, if any: [paste or describe], Help me finalise the chapter so that it is clear, coherent and ready for submission.

Step 1: Check Structure and Coherence

Review the structure of the chapter.

Please: Assess whether the subheadings and order of sections are logical; check whether each subsection clearly relates to the research question, aim or problem; identify overlaps, unnecessary repetition or weak transitions; suggest improvements to strengthen flow and coherence.

Step 2: Edit Language and Precision

Review the language of the chapter.

Please: Remove repetition; improve vague or unclear wording; standardise terminology and analytical labels; ensure a clear distinction between presenting findings, analysing material and broader interpretation; make the style clear, academically appropriate and easy to follow.

Step 3: Verify Quality and Grounding in Research Material

Check whether: All claims are clearly grounded in the research material; the text is consistent with any tables, figures, quotations, examples, cases or source excerpts; any claims go beyond the available evidence or material; any part of the text begins to sound like broader discussion rather than findings, results or analytical contribution.

Identify: Weakly supported statements; unclear grounding in material; places where stronger examples, source references or evidence are needed; places where the text should be moved to the discussion chapter.

Important constraints: Do not add new observations, sources, data, examples, analysis or interpretations; do not invent evidence; do not change the meaning of the findings or analytical claims; if something is weak or missing, flag it clearly; keep the chapter proportionate to the thesis level and research material.

Output structure: Structure and coherence review; language and precision edits; grounding in research material check; final revision suggestions.

Outcome target: A polished, coherent and submission-ready chapter that clearly addresses the research question, aim or problem and remains grounded in the research material.

Prompt B.5.6.2. Prompt for Findings, Results or Analytical Contribution (Postgraduate/ Master's Level)

Based on my drafted findings, results or analytical contribution chapter: Research question, aim or problem: [insert], Theoretical or conceptual framework: [insert if relevant], Chapter draft: [paste text], Tables, figures, quotations, examples, cases or source excerpts, if any: [paste or describe]

Help me finalise the chapter so that it is internally coherent, analytically well structured and ready for submission.

Step 1: Check Structure and Coherence

Critically review the structure of the chapter.

Please: Assess whether the order of themes, subsections and subheadings is logical and effective; evaluate whether each subsection clearly contributes to addressing the research question, aim or problem; identify overlaps, fragmentation, unnecessary repetition or weak transitions; suggest structural revisions to improve analytical progression and readability.

Step 2: Edit Language and Precision

Refine the language of the chapter.

Please: Improve clarity and concision; remove repetition and vague expressions; standardise terminology, concepts and analytical labels; ensure a disciplined distinction between findings, analytical structuring, interpretation and broader discussion; keep theoretical or conceptual claims proportionate to the material.

Step 3: Verify Quality and Grounding in Research Material

Evaluate whether: All claims are sufficiently grounded in the research material; the text is fully consistent with tables, figures, quotations, examples, cases or other evidence; any statements overreach beyond what the material supports; the connection to the theoretical or conceptual framework is appropriate and not overstated.

Identify: Weakly justified claims; sections needing stronger grounding in material; places where the chapter starts shifting into discussion or conclusions; places where the theoretical or conceptual link needs clarification.

Step 4: Final Assessor-Level Review

Review the chapter critically from the perspective of a supervisor or assessor.

Please assess: Whether the chapter is clear, credible and academically robust; whether it directly addresses the research question, aim or problem; whether it is ready to support the later discussion and conclusions; whether it recognises relevant limits, tensions or uncertainties.

Important constraints: Do not introduce new findings, interpretations, evidence, examples or sources; do not change the substantive meaning of the results or analytical claims; do not fabricate empirical, textual, legal, conceptual or theoretical support; if something is unclear or unsupported, identify it explicitly.

Output structure: Structure and coherence review; language and precision edits; grounding in research material assessment; assessor-level final review; final revision priorities.

Outcome target: A polished, internally coherent, well-grounded and submission-ready chapter with strong structural readability and clear alignment with the research question, aim or problem.

Prompt B.5.6.3. Chapter Integrity Check (Undergraduate and Postgraduate Levels)

Step 1: Review my final findings, results or analytical contribution chapter: [paste text].

Identify: Places where the structure is unclear; claims that are weakly grounded in the research material; sentences that move too far into interpretation, discussion or conclusions; terminology or analytical labels that are inconsistent; the three most important revisions still needed before submission.

Suggest concise and concrete improvements without adding new evidence, sources, examples or interpretations.

Step 2: Edit Language and Precision

Review the language of the chapter.

Please: Remove repetition; improve vague or unclear wording; standardise terminology; ensure a clear distinction between: reporting results, interpreting results.

Make the style clear, academically appropriate, and easy to follow.

Step 3: Verify Quality and Empirical Grounding

Check whether: All claims are clearly grounded in the data; the text is consistent with any tables, figures, or quotations; any claims go beyond the available evidence

Identify: Weakly supported statements; unclear empirical grounding; places where the text begins to sound like discussion rather than results.

Important constraints: Do not add new observations, new analysis, or new interpretations; do not invent evidence; do not change the meaning of the findings; if something is weak or missing, flag it clearly.

Output structure: Structure and coherence review; language and precision edits; empirical grounding check; final revision suggestions.

Outcome target: A polished, coherent, and submission-ready results chapter that clearly answers the research question and remains grounded in the data.

Appendix C. Prompt Library and Practical Generative AI Workflows for the Thesis Synthesis and Completion (Step 3)

Appendix C focuses primarily on prompting as a practical way to support the synthesis and completion phase of the thesis process. Some tasks at this stage can also be supported through reusable skill-based operation, meaning that certain prompts can be developed into structured skills (see Appendix D). Where available, MCP-connected access to external literature databases, institutional resources, datasets, and reference systems can further support this work (see Appendix E). The section numbers in this appendix correspond to Chapter 6, where the respective topics are discussed in greater detail. When using GenAI, users must follow the regulations and ethical guidelines of their educational institution throughout this process (see Chapter 9).

Appendix C.1. Writing the Discussion (See Section 6.1)

Prompt C.6.1.1. Writing the Discussion Chapter (Undergraduate Level)

Based on my thesis: Research question: [insert], Main findings/results: [insert], Theoretical framework or key concepts: [insert], Relevant previous research: [insert]

Help me write a clear and coherent Bachelor's-level discussion chapter.

Step 1: Draft the Core Interpretation

Start by focusing on the main meaning of the findings.

Please: Restate the purpose of the study briefly, identify the most important findings, explain what these findings mean in relation to the research question, avoid simply repeating the results chapter.

Help me formulate the central claim of the study: what does this thesis show? why does it matter?

Step 2: Connect Findings to Theory and Previous Research

Explain how the findings relate to: the theoretical framework or key concepts, the previous research.

Please identify whether the findings: confirm existing knowledge, extend it, differ from it in some way.

Keep the discussion: clear, realistic, appropriately modest for a Bachelor's thesis.

Step 3: Limitations, Significance, and Finalisation

Help me draft a short and balanced section on: the main limitations of the study, the academic significance of the findings, any practical or societal relevance, if appropriate.

Then: improve the structure and transitions, remove repetition, identify any claims that go beyond the evidence.

Important constraints: Do not invent sources or claims; do not exaggerate the significance of the findings; do not repeat the results chapter unnecessarily; do not add interpretations that are not supported by the data.

Output structure: Core interpretation; link to theory and previous research; limitations and significance; suggested structure and revisions.

Outcome target: A coherent discussion chapter with: a clear link to the research question, grounded interpretation, explicit recognition of limitations and significance.

Prompt C.6.1.2. Writing the Discussion Chapter (Postgraduate Level)

Based on my thesis: Research question(s): [insert], Main findings/results: [insert], Theoretical framework: [insert], Relevant previous research: [insert]

Help me write a theoretically strong and analytically well-argued Master's-level discussion chapter.

Step 1: Draft the Core Interpretation

Begin by formulating the central interpretation of the study.

Please: Restate the purpose of the thesis briefly, identify the most important findings, explain what these findings mean in relation to the research question(s), distinguish clearly between: what was found, what these findings mean.

Help me formulate the central contribution of the thesis: what does this study demonstrate? what is its main analytical message?

Step 2: Integrate Theory and Previous Research

Connect the findings explicitly to: the theoretical framework, the key scholarly debates or previous studies.

Please: Explain whether the findings: confirm, refine, extend or challenge existing research or theory, show how the study is positioned in relation to previous literature, make the scholarly contribution explicit.

Ensure the discussion is: analytically precise, theoretically grounded, not merely descriptive.

Step 3: Limitations, Implications, and Finalisation

Draft a balanced section on: methodological limitations, conceptual limitations, interpretive limits of the findings.

Then explain: the theoretical implications, any practical or societal implications, if relevant.

Finally: improve the structure, clarity, and flow of the chapter, remove repetition, identify any claims that are too broad, speculative, or insufficiently supported.

Important constraints: Do not invent sources, debates, or theoretical claims; do not overstate the contribution; do not repeat the results chapter; do not move beyond what the data and analysis can support.

Output structure: Core interpretation; theoretical and literature-based integration; limitations and implications; final structural and argumentative revisions.

Outcome target: Theoretically grounded discussion chapter with: clear interpretation of findings, explicit scholarly contribution, strong connection to prior research and theory, balanced recognition of limitations.

Prompt C.6.1.3. Discussion Quality Check (Undergraduate and Postgraduate Levels)

Review my discussion chapter below.

Identify: Places where I merely repeat the results, places where interpretation is too weak, places where claims are too broad or speculative, whether the chapter makes a clear contribution.

Then suggest the three most important revisions.

[paste text]

Appendix C.2. Writing the Conclusion (See Section 6.2)

Prompt C.6.2.1. Writing the Conclusion Chapter (Undergraduate Level)

Based on my thesis: Research question, aim or problem: [insert], Main findings: [insert], Main discussion points: [insert].

Help me write a clear and concise Bachelor's-level conclusions chapter.

Step 1: Answer the Research Question, Aim or Problem

Begin by briefly restating the purpose of the study, restating the research question, aim or problem, providing a clear and direct answer to the research question, aim or problem.

This answer should be the central focus of the conclusions.

Step 2: Summarise the Main Findings

Briefly synthesise the most important findings of the study.

Requirements: present only the main message, avoid repeating detailed results, keep the summary concise and coherent.

Step 3: Explain the Significance of the Study

Briefly explain: what the main finding of the thesis is, what the study adds to understanding of the topic, why the result is important.

Keep this realistic and proportionate to a Bachelor's thesis.

Step 4: Add Brief Broader Implications or Future Research

Conclude with a short section on: possible practical or societal relevance, if appropriate, one or two suggestions for future research.

Keep this part brief and grounded in the study.

Important constraints: Do not introduce new results or new analysis; do not repeat the results chapter in detail; do not make claims that go beyond the evidence; keep the chapter short, clear, and focused.

Output structure: Clear answer to the research question; concise synthesis of main findings; main significance of the study; brief future perspective.

Outcome target: A short and coherent conclusions chapter with: a clear answer to the research question, a synthesis of the main findings, a concise statement of significance.

Prompt C.6.2.2. Writing the Conclusion Chapter (Postgraduate Level)

Based on my thesis: Research question, aim or problem: [insert], Main findings: [insert], Main discussion points: [insert], Theoretical framework: [insert].

Help me write a clear, synthetic, and academically strong Master's-level conclusions chapter.

Step 1: Answer the Research Question, Aim or Problem Clearly

Begin by briefly restating the aim of the thesis, restating the research question, aim or problem, providing a clear and concise answer to them.

The reader should immediately understand what the thesis ultimately demonstrates.

Step 2: Synthesise the Main Findings

Bring together the most important findings of the study.

Requirements: synthesise rather than repeat, highlight the overall pattern or central message, avoid detailed restatement of results.

Step 3: Clarify the Contribution of the Study

Explain briefly: what the study adds to existing knowledge, what the main scholarly contribution is, why the findings matter in relation to the research problem.

Keep this focused and proportionate.

Do not turn the conclusions into a second discussion chapter.

Step 4: Broader Implications and Future Research

End with a brief section on: possible theoretical, practical, or societal implications, relevant directions for future research.

Ensure these suggestions follow logically from the thesis and do not overgeneralise.

Important constraints: Do not introduce new findings, new data, or new analysis; do not repeat the results or discussion chapters in detail; do not overstate the contribution; keep the conclusions concise, synthetic, and clearly focused.

Output structure: Direct answer to the research question(s); synthesis of main findings; main contribution of the study; brief implications and future research.

Outcome target: A concise and well-argued conclusions chapter in which: the research question is clearly answered, the central contribution is articulated, broader implications and future research are briefly identified.

Prompt C.6.2.3. Conclusion Quality Check (Undergraduate and Postgraduate Levels)

Review my conclusions chapter below.

Identify whether: the research question, aim or problem is answered clearly, the chapter introduces any new results or analysis, the conclusions are too repetitive or too vague, the claims go beyond the available evidence, the contribution is stated clearly enough.

Then suggest the three most important revisions.

[paste text]

Appendix C.3. Finalising the Introduction (See Section 6.3)

Prompt C.6.3.1. Finalising the Introduction Chapter (Undergraduate Level)

Based on my completed or near-completed thesis: Thesis topic: [insert], Research problem: [insert], Research question(s): [insert], Method and material: [insert],

Main findings or overall focus: [insert], Current introduction draft (if available): [paste].

Help me finalise a clear and well-structured Bachelor's-level introduction chapter.

Step 1: Basic Framing

Please revise the introduction so that it: introduces the topic clearly, provides the background and context, defines the research problem, states the research question(s) clearly and directly.

The reader should quickly understand: what the thesis is about, what problem it addresses, what question it answers.

Step 2: Significance and Positioning

Help me explain: why this topic is academically important, whether it has any practical or societal relevance, if appropriate, how the study is related to previous research.

Keep this proportionate to a Bachelor's thesis: do not overstate originality, do not exaggerate significance.

Step 3: Method and Structure

Help me write a brief and clear section that: introduces the methodological approach, describes the type of material used, outlines the structure of the thesis.

Then: improve paragraph flow, transitions, and clarity, ensure the introduction leads naturally into the rest of the thesis.

Important constraints: Do not invent literature or debates; do not exaggerate the significance or contribution; do not add claims that are not supported by the thesis; keep the introduction focused and proportionate.

Output structure: Revised framing of topic, problem, and question; revised significance and positioning; revised method and thesis structure paragraph; suggestions for improving clarity and coherence.

Outcome target: An introduction chapter with: a clear research problem, a well-defined research question, a brief presentation of method and structure, smooth and coherent framing.

Prompt C.6.3.2. Finalising the Introduction Chapter (Postgraduate Level)

Based on my completed or near-completed thesis: Thesis topic: [insert], Research problem: [insert], Research question(s): [insert], Theoretical framework: [insert], Method and material: [insert], Main findings or overall focus: [insert], Current introduction draft (if available): [paste]

Help me finalise a strong and academically well-positioned Master's-level introduction chapter.

Step 1: Basic Framing

Please revise the introduction so that it: presents the topic clearly and convincingly, provides relevant background and context, formulates the research problem precisely, states the research question(s) clearly and analytically.

The introduction should make it immediately clear: what the thesis examines, what its central problem is, what the study aims to explain or analyse.

Step 2: Significance and Academic Positioning

Help me strengthen the section that explains: why the topic is academically significant, how the study is positioned in relation to previous research and current scholarly discussion, what makes the study relevant in conceptual, empirical, or practical terms.

At Master's level, make the positioning more explicit: show how the study connects to existing research, clarify its place in the relevant academic discussion, avoid overstating contribution.

Step 3: Method and Thesis Structure

Help me write a concise but clear section that: introduces the methodological approach, describes the type of research material, explains briefly how the study is conducted, outlines the overall structure of the thesis.

Then: improve coherence, transitions, and paragraph logic, ensure the introduction leads naturally into the later chapters.

Important constraints: Do not invent literature, debates, or significance; do not present the contribution as stronger than justified; do not add unsupported claims; keep the tone academically precise and proportionate.

Output structure: Revised framing of topic, problem, and research question(s); revised significance and academic positioning; revised method and thesis structure paragraph, Suggestions for improving coherence, tone, and alignment.

Outcome target: An introduction chapter with clear academic framing, explicit positioning in relation to prior research, a well-justified presentation of significance, a concise and coherent preview of method and structure.

Prompt C.6.3.3. Introduction Quality Check (Undergraduate and Postgraduate Levels)

Review my introduction chapter below.

Identify whether: the research problem is stated clearly, the research question is precise and visible enough, the significance is justified without exaggeration, the method and structure are introduced clearly, the introduction matches what the thesis does.

Then suggest the three most important revisions.

[paste text]

Appendix C.4. Writing the Abstract and Keywords (See Section 6.4)

Prompt C.6.4.1. Writing the Abstract and Keywords (Undergraduate Level)

Based on my completed thesis: Thesis title: [insert], Research question or aim: [insert], Material: [insert], Method: [insert], Main findings: [insert], Main conclusion or significance: [insert]

Write a clear and accurate Bachelor's-level abstract of 150–200 words.

Step 1: Draft the Abstract

The abstract should briefly and clearly include: what the thesis examines, the aim or research question, the material and method, the main findings, the overall conclusion or significance.

Requirements: the abstract must be independently understandable, it must reflect the actual content of the thesis, it must be balanced, without focusing too much on only background, methods, or results, avoid unnecessary background detail or theory.

Step 2: Final Refinement and Keywords

Then: refine the wording to improve clarity, precision, and conciseness, remove repetition and vague expressions, ensure the abstract does not contain new claims or unsupported conclusions.

Finally: suggest 4–6 relevant and searchable keywords, choose keywords that reflect the main topic, key concepts, method or material, if relevant.

Important constraints: Do not invent new findings, claims, or evidence; do not exaggerate the significance of the study; do not add theoretical detail not needed in an abstract; keep the abstract within 150–200 words.

Output structure: Draft abstract, refined final abstract, suggested keywords

Outcome target (Bachelor's level): A clear and precise abstract of 150–200 words and 4–6 relevant keywords.

Prompt C.6.4.2. Writing the Abstract and Keywords (Postgraduate Level)

Based on my completed thesis: Thesis title: [insert], Research question or aim: [insert], Theoretical framework (if relevant): [insert], Material: [insert], Method: [insert], Main findings: [insert], Main contribution or significance: [insert].

Write an analytically precise Master's-level abstract of 200–250 words.

Step 1: Draft the Abstract

The abstract should clearly and concisely include: what the thesis examines, the research aim or question, the material and method, the main findings, the overall conclusion or scholarly contribution.

Requirements: the abstract must be independently understandable, it must accurately reflect the completed thesis, it must maintain a clear balance between aim, methods, findings, and contribution, avoid unnecessary background or detailed theoretical discussion.

Step 2: Final Refinement and Keywords

Then: refine the abstract for clarity, concision, and analytical precision, remove repetition and vague language, ensure that the abstract does not overstate the contribution, ensure it contains no new claims, material, or interpretations.

Finally: suggest 4–6 precise and searchable keywords, include keywords that reflect: the topic area, central concepts, empirical focus, method, if relevant.

Important constraints: Do not invent findings, claims, or evidence; do not change the meaning of the thesis conclusions; do not exaggerate the contribution; keep the abstract within 200–250 words.

Output structure: Draft abstract, Refined final abstract, Suggested keywords

Outcome target: An analytically precise abstract of 200–250 words and 4–6 relevant keywords.

Prompt C.6.4.3. Abstract Quality Check (Undergraduate and Postgraduate Levels)

Review my abstract below.

Check whether it clearly includes: the topic and research question, the material and method, the main findings, the overall significance or contribution.

Also identify: vague or repetitive phrases, any missing element, any claim that goes beyond the thesis.

Then suggest the three most important revisions.

[paste abstract].

Appendix C.5. Visualisations, Figures, and Tables (See Section 6.5)

Prompt C.6.5.1. Reviewing Figures, Tables, and Visual Elements (Undergraduate and Postgraduate Levels)

Based on my thesis: Research question(s): [insert], Results chapter (relevant parts): [insert or summarise], Figures and tables (paste or describe each): [insert]

Help me review and finalise all figures and tables to ensure they are clear, consistent, and academically justified.

Step 1: Clarity and Readability Check

For each figure and table: Is it easy to read and interpret? Are the following elements clear and complete: title, caption, labels, axes, variables, categories, units (if relevant), legend (if needed)?

Identify missing or unclear elements, confusing or ambiguous wording.

Suggest improved titles and captions, clearer terminology where needed.

Step 2: Consistency and Formatting

Check across all visuals: Is numbering consistent (e.g., Figures 1 and 2; Tables 1 and 2)? Is terminology used consistently? Is formatting uniform (style, wording, structure)?

Identify inconsistencies, formatting problems.

Suggest concrete improvements for standardisation.

Step 3: Alignment with Text and Research Question

For each figure or table: Is it clearly referenced in the text? Does it support the research question or findings? Is the connection between the visual and the argument explicit?

Identify visuals that are weakly connected, not explained clearly in the text, redundant.

Suggest how to improve integration into the text, whether any visuals should be removed or merged.

Step 4: Necessity and Redundancy Check

Evaluate whether each visual is: necessary for understanding the results, adding new insight (not repeating the text unnecessarily).

Identify redundant visuals, visuals that could be: simplified, combined, removed.

Step 5: Caption and Argument Quality

Review captions: Are they self-contained and informative? Do they explain: what is shown, what the key takeaway is (without interpretation)?

Revise captions to be concise, precise, academically appropriate.

Step 6: Final Quality Check

Assess overall: Do all visuals together form a coherent and consistent set? Do they support the main findings clearly? Are they at submission-ready quality?

Important constraints: Do not alter or invent material; do not add new interpretations not supported by the material; do not change the meaning of results; if something is unclear, flag it instead of guessing.

Output structure: Clarity and readability improvements; consistency and formatting issues; alignment with text and research question; redundancy and necessity review; revised captions (if needed); final recommendations.

Prompt C.6.5.2. Visual–Argument Alignment Check (Undergraduate and Postgraduate Levels)

For each figure and table: What specific claim or result does it support? Could the same information be communicated more clearly in text or another format? Does the visual risk misleading interpretation or oversimplification? Suggest improvements to ensure that: visuals support analytical clarity, not just description but structured understanding.

Appendix C.6. References and Bibliography (See Section 6.6)

Prompt C.6.6.1. Reviewing References and Bibliography (Undergraduate and Postgraduate Levels)

Based on my thesis: In-text citations: [paste relevant sections or full text], Reference list/bibliography: [paste list], Required citation style: [APA/Chicago/Harvard/other]

Help me review and finalise all citations and references so that they are formally correct, internally consistent, and ready for submission.

Step 1: Consistency Between In-Text Citations and Reference List

Check whether every source cited in the text appears in the reference list, every source in the reference list is cited in the text, author names and publication years match consistently, repeated citations are formatted in the same way throughout the thesis.

Identify missing references, unused references, mismatches between in-text citations and bibliography.

Step 2: Completeness of Bibliographic Information

For each reference, check whether the necessary bibliographic details are present, such as: author(s), year, title, journal/book/publisher, volume, issue, and page range (if relevant), DOI or URL (if required).

Identify missing elements, incomplete entries, unclear or inconsistent details.
Do not guess missing information.
Instead, flag what must be checked manually.

Step 3: Citation Style and Formatting Review

Review whether the entire reference list follows the required citation style consistently.

Check punctuation, italics, capitalisation, order of elements, formatting of journal articles, books, chapters, reports, and online sources.

Identify inconsistencies, formatting errors, places where the style changes within the list.

Suggest corrected versions where possible, without inventing missing material.

Step 4: Traceability and Credibility Check

Evaluate whether the references are: traceable by the reader without difficulty, sufficiently complete for verification, consistently and credibly presented.

Identify sources that may be hard to trace, suspiciously incomplete references, entries that require manual verification.

Step 5: Final Quality Check

Assess whether the reference system as a whole is: consistent, complete, verifiable, submission-ready.

Then list the most important remaining corrections

Important constraints: Do not invent new sources; do not fill in missing details by guessing; do not present incomplete bibliographic information as verified; flag uncertain items clearly for manual checking.

Output structure: In-text citation vs. reference list consistency check; missing or incomplete bibliographic information; citation style and formatting issues; traceability and credibility review; final corrections needed before submission.

Prompt C.6.6.2. Citation–Reference Match Check (Undergraduate and Postgraduate Levels)

Review my in-text citations and reference list.

Please identify: sources cited in the text but missing from the reference list, sources listed in the reference list but not cited in the text, inconsistent author-year formatting, incomplete or suspicious reference entries.

Do not guess missing information.

Flag everything that must be checked manually.

[paste citations + reference list]

Prompt C.6.6.3. Style-Specific Prompt (Undergraduate and Postgraduate Levels)

Format the following references consistently in [APA 7th/Chicago/Harvard] style.

Requirements: preserve only the information that is provided, do not invent missing publication details, flag any incomplete entries that require manual verification.

[paste references]

Prompt C.6.6.4. Prompt for Reference Quality and Scholarly Adequacy Check (Undergraduate and Postgraduate Levels)

Review my reference list in relation to the thesis topic: [insert topic/research question], [insert reference list].

Please assess: whether the sources appear relevant to the thesis topic, whether the balance of sources seems appropriate (e.g., theory, methods, empirical studies), whether there are signs of overreliance on: non-academic sources, outdated sources, too few core scholarly works.

Do not invent new sources.

Instead, identify possible gaps or weaknesses in the reference base.

Appendix C.7. Finalising the Full Thesis Manuscript (See Section 6.7)

Prompt C.6.7.1. Finalising the Thesis Manuscript (Undergraduate Level)

Based on my full thesis manuscript or selected chapters: Thesis title/topic: [insert]; research question: [insert]; thesis draft: [paste full text or selected sections].

Help me finalise the thesis manuscript so that it is clear, coherent, structurally consistent, and ready for submission.

Part 1: Check Structure and Argumentation

Review the manuscript as a whole.

Please assess whether: the chapters and subchapters follow a logical order, the argument progresses clearly from: research question, methods, results, discussion, conclusions, transitions between chapters and sections are clear, there is unnecessary repetition or overlap between sections, the manuscript functions as a coherent whole.

Then: identify structural weaknesses, suggest concrete improvements to strengthen coherence and readability.

Part 2: Language Refinement and Terminological Consistency

Review the language and style.

Please: Improve clarity, fluency, and academic tone, identify vague, repetitive, or awkward expressions, strengthen transitions between paragraphs and sections, check whether key terms are used consistently throughout the thesis, standardise terminology where needed.

Focus only on linguistic and structural refinement, not on changing the substance of the research.

Important constraints: Do not alter numerical data, Do not introduce new findings, claims, or interpretations, Do not modify references or add sources, Do not change the meaning of the analysis, results, or conclusions.

If reviewing a long thesis, work section by section, not as one uncontrolled rewrite.

Output structure: Structural and argumentative coherence review, repetition and transition issues, language and style improvements, terminology consistency check, final revision priorities before submission.

Outcome target: A thesis manuscript that is: coherent and readable, structurally logical, consistent in terminology and tone, polished and submission-ready.

Prompt C.6.7.2. Finalising the Thesis Manuscript (Postgraduate Level)

Based on my full thesis manuscript or selected chapters: Thesis title/topic: [insert]; research question(s): [insert]; theoretical framework: [insert] thesis draft: [paste full text or selected sections].

Help me finalise the thesis manuscript so that it is structurally coherent, academically polished, and ready for submission.

Part 1: Check Structure and Argumentation

Critically review the manuscript as a whole.

Please assess whether: the argument progresses logically across chapters and subchapters, the relationship between research question, theory, methods, results, discussion, conclusions is clear and internally consistent, transitions between sections are strong and purposeful, there are overlaps, repetitions, or structural imbalances, the manuscript maintains a clear analytical progression.

Then identify structural and argumentative weaknesses, suggest concrete revisions to improve whole-manuscript coherence.

Part 2: Language Refinement and Terminological Consistency

Review the manuscript for final stylistic refinement.

Please: Improve precision, fluency, and academic tone, identify vague, repetitive, or overly complex phrasing, strengthen transitions between paragraphs, chapters, and analytical sections, ensure terminological consistency throughout the manuscript, check that key analytical and theoretical terms are used consistently and accurately.

Focus on refinement, not substantive rewriting.

Important constraints: Do not alter numerical data; do not introduce new results, claims, or interpretations; do not modify references or add sources; do not change the substantive meaning of the manuscript; work section by section if the manuscript is long.

Output structure: Whole-manuscript structure and argumentation review; repetition, overlap, and transition issues; language and style refinement suggestions; terminology and tone consistency check; final revision priorities before submission.

Outcome target: A thesis manuscript that is: coherent across the full structure, clear in its analytical progression, consistent in terminology and tone, polished to submission or publication standard.

Prompt C.6.7.3. Final Manuscript Integrity Check (Undergraduate and Postgraduate Levels)

Review my thesis manuscript below.

Please identify: where the structure is unclear or unbalanced, where the argument does not progress logically, repeated or overlapping sections, weak transitions between chapters or paragraphs, inconsistencies in terminology or academic tone.

Then suggest the five most important final revisions before submission.

[paste text]

Prompt C.6.7.4. Section Refinement (Undergraduate and Postgraduate Levels)

Refine the following section for: clarity, fluency, academic tone, consistency of terminology.

Do not change: the meaning, the evidence, the references, the analytical claims.

Identify any sentence that is unclear, repetitive, or awkward, and suggest a better version.

[paste section]

Appendix C.8. Final Quality Assurance Before Submission (See Section 6.8)

Prompt C.6.8.1. Creating a Final Submission Checklist for My Thesis (Undergraduate Level)

Based on the following thesis information: Research question: [insert], Method: [insert], Material: [insert], Main findings: [insert], Thesis structure or chapter list: [insert]

Create a practical final submission checklist for a Bachelor's thesis.

The checklist should help me review my thesis myself, without relying on the language model to judge the thesis for me.

Please organise the checklist under the following headings:

1. Reading the Thesis as a Whole
2. Include checklist questions that help me assess: whether the thesis reads as one coherent text, whether the argument progresses logically from beginning to end, whether chapters connect clearly to each other.
3. Argumentative Coherence
4. Include checklist questions that help me verify: whether the thesis clearly answers the research question, whether methods, results, and conclusions are aligned, whether the main claims are justified and defensible.
5. Final Corrections
6. Include checklist questions on: inconsistencies, repetition, contradictions, unclear or overly long passages, final language corrections.
7. Ethical and Formal Review
8. Include checklist questions on: material handling and ethical transparency, correct reporting of GenAI use, accuracy of citations and references, verification of sources.
9. Appendices and Submission Materials

Include checklist questions on: appendices, consent forms or permits, if relevant, supplementary tables or materials, final formatting before submission.

Important constraints: Do not evaluate the thesis content directly; do not invent weaknesses or strengths; create only a clear, practical self-review checklist; keep the checklist suitable for a Bachelor's-level thesis.

Output format: A structured checklist with short, practical review questions.

Optional final section: "Am I ready to submit?"

Prompt C.6.8.2. Create a Final Submission Checklist for My Thesis (Postgraduate Level)

Based on the following thesis information: Research question(s): [insert], Theoretical framework: [insert], Method: [insert], Material: [insert], Main findings: [insert], Thesis structure or chapter list: [insert].

Create a final submission-readiness checklist for a Master's thesis.

The checklist should support my own final critical review of the thesis as a coherent, defensible, and ethically transparent whole.

Please organise the checklist under the following headings:

1. Reading the Thesis as a Whole

Include review questions that help me assess: whether the thesis functions as one unified academic argument, whether the progression from introduction to conclusions is coherent, whether chapter transitions and overall structure are logical.

2. Argumentative and Analytical Coherence

Include review questions that help me verify: whether the thesis answers the research question(s) clearly, whether theory, methods, results, discussion, and conclusions are aligned, whether the main arguments are analytically clear and defensible, whether any claims go beyond the available evidence.

3. Final Corrections

Include review questions on: inconsistencies across chapters, repetition or overlap, contradictions, unclear reasoning, passages that still need condensing or clarification, final language and style corrections.

4. Ethical, Formal, and Source Review

Include review questions on: material handling and ethical transparency, correct reporting of GenAI use, source verification, citation accuracy, consistency of references, readiness to defend all major claims.

5. Appendices and Submission Materials

Include review questions on: appendices, research permits or ethics approvals, if relevant, consent forms, additional tables or supplementary material, final formatting and submission requirements.

Important constraints: Do not assess the thesis itself, Do not invent criticism, Create only a structured self-review checklist, Keep the checklist suitable for a Master's-level final review.

Output format: A structured checklist with concise but critical self-review questions.

Optional final section: "Can I defend this thesis with confidence?"

Prompt C.6.8.3. Final Readiness Reflection Prompt (Undergraduate and Postgraduate Levels)

Create a short final reflection template I can use after reading my thesis as a whole.

Include 5–8 questions such as: Does the thesis clearly answer the research question? Are all major claims supported? Are the conclusions aligned with the

results? Is the use of GenAI transparent and appropriate? Am I ready to defend this thesis orally if needed?

Keep the reflection short, practical, and suitable for final submission review.

Prompt C.6.8.4. Submission-Readiness Checklist (Undergraduate and Postgraduate Levels)

Create a final submission-readiness checklist for my thesis.

The checklist should help me review the thesis myself as: a coherent whole, an academically defensible argument, an ethically transparent piece of research.

Include sections on: whole-thesis coherence, alignment between research question, method, results, and conclusions, final corrections, ethics, citations, and GenAI disclosure, appendices and submission materials.

Do not evaluate the thesis itself.

Create only a practical and critical self-review checklist.

Appendix D. Generative AI Skill Preparation and Use for the Thesis Process

Appendix D focuses on preparing GenAI skill-based operations as a practical way to support the thesis process from initial planning to final revision and defence preparation. Skill-based operations provide reusable instructions, workflows and quality criteria for recurring academic tasks, such as developing research questions, organising literature, reviewing methodology, improving academic writing or preparing for thesis defence. Skill-based operations can be implemented in several ways, each requiring different arrangements for placement, testing, permissions, maintenance and disclosure (Table A1).

The examples below use named LLM platforms for concreteness. The underlying pattern discussed here, namely a reusable instruction set, reference documents and an explicit scope boundary, transfers to any comparable GenAI environment. Use the tools your institution permits. The platform details in this appendix are correct as of August 2026; this area changes rapidly, and readers should check current documentation. However, the capability descriptions are intended to remain usable.

In this appendix, the word "skill" is used in a broad practical sense. It may refer to a saved instruction package pasted manually into an LLM, a project instruction in ChatGPT or Claude, a Custom GPT, a platform-native skill, or an institutional AI workflow. The technical form may differ, but the educational principle is the same: repeated thesis tasks are supported by reusable instructions, clear boundaries and consistent quality criteria. In addition, platform features change over time. Tool capabilities, model names and platform features described here reflect the situation in August 2026. The examples below describe general ways of implementing skill-based operations. Users should check current platform documentation and institutional rules before relying on a specific feature.

A skill in this context is a structured reusable instruction package for a language model. It may include a role description, task boundaries, step-by-step workflow, quality criteria, output format, ethical guardrails and examples of suitable user inputs. A skill is therefore more than a single prompt. It is a prepared working procedure that can be reused for a whole category of academic tasks.

For example, a single prompt might ask: "Help me improve my research question." A skill-based operation is broader. It can instruct the model to check whether the research question is clear, feasible, connected to theory, linked to accessible material or data, suitable for the thesis level and ethically realistic. It can also require the model to flag missing information, avoid invented sources and provide a structured output. In this way, the skill turns a repeated academic task into a more consistent workflow.

The skill templates presented in Appendix D may be adapted for local educational use. When adapting them, retain the safeguards on authorship, verification, data protection, no fabricated sources, no ghostwriting, documentation and institutional compliance. Add local policies, approved tools, discipline-specific criteria and language requirements. Record the version date and responsible unit or author of the adaptation.

Table A1. Practical implementation of skill-based operations.

Implementation	Where Placed	Required Materials	Testing	Permissions and Protection	Maintenance	Disclosure
Manual use	Pasted into a conversation	Skill instructions and task material	Test with a small, non-sensitive example	Follow institutional rules; avoid restricted data	Reinsert and update instructions when needed	Disclose material influence on the thesis
Project or workspace	Project instructions or files	Skill, guidelines and permitted thesis materials	Test across several relevant tasks	Check access, sharing and data-retention settings	Review instructions and files periodically	Record the project and significant uses
Native Skill	Platform's Skills area	Skill file; optional examples, templates or scripts	Check triggers, outputs and safeguards	Confirm plan, workspace and code-execution permissions	Record version and update after platform changes	Identify materially used Skills
Configured assistant	Custom GPT or equivalent	Instructions and verified knowledge files	Test accuracy, boundaries and source use	Control sharing and restrict sensitive uploads	Update instructions and knowledge sources	Disclose its role and relevant materials
API or institutional workflow	Approved institutional system	Skill, model configuration, authorised tools and sources	Conduct technical, ethical and user testing	Apply access controls, data governance and legal review	Assign ownership, versioning and review dates	Document the system, model and analytical role

Source: Table by author.

Appendix D.1. Transformation from Prompts to Skills

Many prompts presented in Appendices A–C can be transformed into skills. This is useful when the same kind of task will be repeated many times during the thesis process. For example, a student may repeatedly need help with literature review synthesis, methods alignment, analysis structuring, findings-chapter review or final language revision. Instead of rewriting long prompts each time, the student can use a reusable skill for each task.

A normal prompt might be: "Help me improve my literature review." A skill-based operation is more specific. It tells the model to check whether the literature review is organised by themes, whether sources are compared rather than merely summarised, whether the research gap is realistic, whether unsupported claims are flagged and whether the output should be given as revision priorities. The student can then reuse the same skill whenever a literature review section needs feedback.

A good thesis-related skill should include the following elements:

Purpose: Define what the skill is for. For example: "This skill supports the student in developing feasible thesis research questions."

User input required: Specify what the student must provide. For example: research topic, degree level, timeframe, discipline, available material, theoretical orientation and institutional requirements.

Workflow: Define the steps the model must follow. For example: first assess feasibility, then check alignment with theory and material, then suggest revisions.

Quality criteria: Define what counts as a good output. For example: the research question must be specific, answerable, ethically feasible and appropriate to the thesis level.

Guardrails: Tell the model what it must not do. For example: do not invent references, do not assume access to unavailable data, do not overstate originality and do not replace supervisor guidance.

Output format: Define the structure of the response. For example: strengths, weaknesses, revised version, risks and next steps.

Responsibility statement: Remind the user that the student remains responsible for the thesis, including sources, interpretation, analysis, ethics and final decisions.

A basic template for the development of a skill-based operation for thesis work is described in Table A2.

Example Structure of a Thesis Skill

A simple skill can be written in the following form.

Skill name: Thesis Research Question Reviewer

Purpose: Support students in developing clear, feasible and academically appropriate research questions for Bachelor's or Master's theses.

Use this skill when: The student has a topic, preliminary idea or draft research question and needs help refining it. Required user input: thesis level: Bachelor's or Master's, topic or draft research question, discipline or field, timeframe, available material, data, sources or texts, theoretical or conceptual orientation, if available, institutional requirements, if relevant.

Workflow: Assess whether the question is clear and specific. Assess whether the scope is realistic for the thesis level and timeframe. Check whether suitable research material or data are realistically available. Check whether the question is connected to theory, concepts or scholarly debate. Identify risks, such as excessive scope, unclear

concepts, inaccessible material or ethical problems. Suggest one or more refined versions of the question. Explain which version is most realistic and why.

Table A2. Template for a skill-based operation in thesis work.

Field	Content
Skill name	Short name, e.g., Thesis-Analysis-GenAI
Thesis step	Step 1/Step 2/Step 3/cross-cutting skill
Intended users	Student/supervisor/teacher/institution
Purpose	What the skill supports
Use when	Trigger conditions
Do not use when	Misuse conditions
Required input	What the user must provide
Prohibited input	Sensitive, confidential, copyrighted or unapproved material
Workflow	Ordered steps the model must follow
Output format	Table, checklist, feedback, revision plan, etc.
Verification required	What the student must check manually
Documentation required	What should be logged or disclosed
Supervisor checkpoint	When supervisor review is needed
Risk level	Low/medium/high
Version/date	For adaptation and updating

Source: Table by author.

Guardrails: Do not invent sources, data or institutional rules. Do not assume access to restricted or unavailable material. Do not propose overly ambitious designs. Mark uncertainty clearly. Treat all suggestions as preliminary and subject to supervisor approval.

Output format: Initial assessment, main strengths, main weaknesses or risks, revised research question, aim or problem, feasibility explanation, suggested next step.

This structure can be adapted for many other thesis tasks, such as literature review synthesis, method selection, ethics review, analysis structuring, findings-chapter review or defence preparation.

Appendix D.2. Reusable Instruction Packages in a General-Purpose Assistant (Example: ChatGPT)

Capability: storing a set of instructions so that a recurring task runs the same way each time, without re-typing the prompt. In ChatGPT, a skill can serve as a reusable workflow for recurring thesis tasks. Where native Skills are available, this is the most direct option. A Skill may include instructions, examples, supporting resources and, for technical tasks, executable code. Availability may depend on the user's plan, workspace settings and institutional permissions.

Skills can also be used manually by saving the instructions in a document, pasting them at the start of a conversation and then adding the thesis-specific task and material. This requires no advanced configuration, although the instructions may need to be pasted again in a new conversation.

A ChatGPT Project offers a more stable environment by keeping related conversations, files and instructions together. Students can use project instructions for general guidance and Skills for specific tasks, such as refining research

questions, organising literature or reviewing chapter coherence. Thesis guidelines, supervisor comments, notes or drafts should be added only when institutional and data-protection rules permit it.

ChatGPT distinguishes between Chat and Work. Chat supports focused conversational tasks, whereas Work is intended for longer, multi-step activities involving research, analysis, files and completed outputs. In both modes, students should inspect intermediate results and approve important decisions.

A Custom GPT provides another reusable option. Its Instructions field can contain the workflow, while verified guidelines, rubrics or citation instructions may be added as knowledge files. Similar Skills may also be implemented through the API and connected to approved tools, although this requires technical expertise, access controls and clear data-governance arrangements.

Platform features and access conditions change rapidly. These descriptions reflect the situation in August 2026; users should consult current official documentation and institutional guidance.

Appendix D.3. Practical Use of Skills in Claude

In Claude, the most direct option is to use native Skills, where enabled. A Skill is a reusable package of task-specific instructions that may also include examples, reference materials, templates or executable scripts. Some Skills are pre-built and require no setup; users can also upload a custom Skill through Claude's settings. Claude identifies and applies a relevant enabled Skill when an appropriate task arises, selecting it on the basis of the Skill's own description—so a clearly written description matters as much as the instructions themselves.

A custom Skill is a directory containing a SKILL.md file that defines the Skill's name, purpose, conditions of use and workflow; it is uploaded as a compressed (zip) file. More advanced Skills may include additional resources or scripts, but most thesis-planning, analysis and revision tasks can be supported through clear instruction-based Skills.

Platform availability, subscription requirements and administrative controls change frequently. Skills may be available differently across individual and institutional accounts. Readers should consult the current platform documentation and their institution's approved-tool guidance before implementation. Custom Skills are also individual to each user rather than centrally managed, which means an institution cannot currently distribute a standard thesis Skill to all its students through this route. Both points have practical consequences for equitable access and for institutional governance (see Section 9.3.3).

Skills can also be used manually by pasting the instructions at the beginning of a conversation and then providing the thesis-specific task and material. This is useful for occasional use, when native Skills are unavailable, or when a student does not have access to a paid plan.

Claude Projects provide a more stable environment for sustained thesis work. A Project can contain shared instructions and relevant knowledge materials, such as thesis guidelines, literature notes or draft sections. Projects provide continuing context, while Skills supply specialised procedures for particular tasks, such as reviewing a research question, checking methodological alignment or revising a chapter. Materials should be added only where institutional and data-protection rules permit.

Platform features and access conditions change rapidly. These descriptions reflect the situation in August 2026; users should consult current official documentation and institutional guidance.

Appendix D.4. Practical Use of Skills in Gemini and Microsoft Copilot

Enterprise assistants licensed at institutional level are often the only systems approved for thesis material, and students should check what their university permits before using anything else. Among the enterprise assistants commonly licensed by universities in 2026 were Gemini and Microsoft Copilot. Although they use different terminology, both support reusable instructions combined with selected knowledge sources.

In Gemini, this function is provided through a Gem, which stores instructions for a recurring task and can include supporting files. The thesis-planning, analysis, and revision skills in this appendix can therefore be adapted into Gems with few changes. NotebookLM provides a complementary source-grounded environment: it answers from uploaded materials and links responses to supporting passages, making it particularly suitable for literature and source-organisation tasks.

In Microsoft Copilot, the equivalent is an agent, which combines instructions with approved knowledge sources. Agents can be created for personal use or distributed institutionally, allowing universities to provide common thesis workflows, disclosure templates, and guidance. Where connectors are enabled, agents may also retrieve information from approved institutional systems.

A branded assistant should not be assumed to be one fixed model. Enterprise assistants increasingly route between several underlying models depending on the feature, the task and the institutional configuration, which means the model answering a thesis question may not be the one the student expects. For example, as of 2026, Microsoft Copilot routed between models from Microsoft, OpenAI and Anthropic.

Access is usually determined by institutional licensing, administrator settings, and data-classification rules. The same assistant may be approved for literature work but not for identifiable interview data. Students should therefore establish which tools, agents, connections, and data categories their institution permits before using thesis material.

Reusable instructions improve consistency but do not transfer responsibility. Students must verify sources and outputs, retain control of methodological decisions, and document GenAI use transparently.

Platform features and access conditions change rapidly. These descriptions reflect the situation in August 2026; users should consult current official documentation and institutional guidance.

Appendix D.5. Using Skills in OpenAI Codex, Claude Code and Other Agentic Environments

The same general skill can also be used in more technical and agentic environments, including OpenAI Codex, Anthropic Claude Code and comparable systems. Whereas ordinary ChatGPT or Claude conversations mainly use skills as reusable instructions, agentic environments may also inspect files, execute scripts and commands, modify documents or code, test outputs and complete multi-step workflows. The thesis-planning, thesis-analysis and thesis-revision skills presented in this appendix can therefore be used without programming knowledge.

In an agentic environment, a skill may additionally include reference materials, templates, scripts or other executable resources. Depending on the system and the permissions granted, it may inspect files, run commands, modify documents or code, perform repeated checks and complete multi-step workflows. Relevant thesis applications include organising research files, running an established analysis script, producing figures, checking consistency between citations and references, converting file formats and applying documented quality-assurance procedures.

Advanced users, institutions and developers may also implement a skill through an API by placing its instructions in the system or developer instruction layer and connecting it to authorised tools or data sources. Such implementations can support controlled thesis-assistance services but require appropriate technical, institutional and data-protection arrangements.

Agentic execution does not make a workflow automatically reliable, methodologically valid or academically acceptable. Students must understand the purpose of each operation, inspect changes and outputs, verify results against the original data and retain control over all research decisions. Executable skills should normally be tested on copies of files or in version-controlled folders so that unintended changes can be identified and reversed.

Confidential, personal, sensitive or unpublished research material should be processed only when permitted by institutional rules, research ethics requirements and applicable data-protection arrangements. Access should be limited to what the task requires, and the relevant tool, model, skill, script and settings should be documented when they materially affect the research process.

Skills are therefore portable workflow instructions whose capabilities depend on the environment in which they are used. A conversational environment mainly provides guidance and structured feedback, whereas an agentic environment may also perform supervised operations. In every environment, the student remains responsible for the thesis, its sources, data, methods, analysis, conclusions and transparent documentation of GenAI use.

Appendix D.6. If the User Does Not Have Access to Paid or Advanced LLM Features

Paid versions of LLM tools may provide better models, larger context windows, more file uploads, custom GPT creation, stronger project features, advanced data analysis, connectors or native skill functions. These features can make skill-based operations easier and more powerful, but they are not required for basic skill use.

Students without paid access can still use skill-based operations manually. They can save the skill text in a separate document, paste it into the chat when needed and then add the relevant thesis material. They can also divide long tasks into smaller parts. For example, instead of uploading an entire thesis chapter, they can paste one section at a time and ask the model to apply the skill to that section.

A practical low-cost workflow is: Save the skill text in a document. Start a new chat. Paste the skill text first. Add the thesis task and relevant material. Ask the model to follow the skill exactly. Review the output critically. Save useful outputs and revise them manually. Repeat with the next section or task.

This manual approach is less convenient than using Projects, Custom GPTs or native Skills, but it follows the same principle: reusable instructions guide the model toward a more consistent academic workflow.

Appendix D.7. Skills for the Thesis Process in Three Steps

Three skills can support the entire thesis process from initial idea to analysis and final submission. The Thesis-Planning-GenAI skill supports Step 1: topic narrowing, research question development, feasibility checks, literature positioning, research method planning and ethics and responsible GenAI-use planning. The Thesis-Analysis-GenAI skill supports Step 2: material organisation, coding/category review, evidence grounding, interpretation, and contribution. The Thesis-Revision-GenAI skill supports Step 3: synthesis, coherence, references, disclosure, final checks, and defence preparation.

These skills are not finished tools that can be used without adaptation. They are model templates. The use of skill-based operations may pose risks to the thesis work (Table A3). Students, supervisors and institutions should adapt them to the thesis topic, degree level, discipline, language of work, supervision process and institutional AI policy.

Skill developers, whether students, supervisors or educational institutions, need to test whether the designed skill works as planned (see Table A4). GenAI can be used to test the skill before using it, for example, by using the following prompt:

> "Review the following thesis skill before I use it. Identify: unclear scope, missing required input, weak guardrails, risk of ghostwriting, risk of source fabrication, risk of processing sensitive data, missing documentation requirements, missing supervisor checkpoints and ways to adapt it to my discipline and institutional rules. Do not rewrite the whole skill unless necessary; provide a revision table."

At the end of the interaction, the student needs to create an AI-use log entry with: tool/model, date, skill used, thesis step, task, input provided, output used, output rejected, verification performed, supervisor discussion needed, disclosure likely required.

Table A3. Risks in skill-based operations in thesis work.

Skill Task	Risk Level	Why
Topic brainstorming	Low–medium	Influences direction but not evidence
Research-question refinement	Medium	Can shape whole thesis
Literature synthesis from verified notes	Medium–high	Can distort debates
Method alignment review	High	Affects validity of design
Analysis-category review	High	Influences findings
Findings/contribution review	High	Core intellectual work
Language editing	Low–medium	Can change meaning if not checked
Reference/citation risk check	High	Fabricated or wrong sources are serious
Defence preparation	Medium	Useful for learning, risky if memorised

Source: Table by author.

Table A4. Testing the use of a skill-based operation for thesis work.

Test	Question
Scope test	Does the skill stay within its stated task?
Refusal test	Does it refuse ghostwriting, fake sources and concealed AI use?
Source test	Does it avoid inventing references?
Sensitivity test	Does it warn about personal or confidential data?
Disciplinary test	Does it fit the thesis type rather than forcing an empirical model?
Output test	Are outputs structured, useful and not overly polished?
Verification test	Does it clearly state what must be checked manually?
Documentation test	Does it remind the user to log significant use?

Source: Table by author.

Appendix D.8. Skill for Step 1 of the Thesis Process: Thesis-Planning-GenAI

Skill Description

Support undergraduate and Master's thesis planning with responsible generative AI. Use when students or supervisors need help turning a broad topic into a feasible thesis plan, narrowing scope, developing research questions, comparing topic options, identifying possible material and methods, planning a timeline, preparing a proposal, mapping initial keywords and literature search directions, or defining transparent and ethical GenAI use before substantial drafting begins.

Appendix D.8.1. Purpose

This skill supports undergraduate and Master's students in planning a feasible thesis while preserving student authorship, academic integrity and local university requirements. It acts as a structured thesis-planning coach: clarifying only what is necessary, offering realistic options, identifying risks early and turning broad ideas into concrete next steps.

Local university rules, supervisor instructions, assessment criteria, disciplinary conventions and institutional AI policies always override this skill. The allowed outputs are, for example, topic alternatives, feasibility comparison, research-question variants, search terms, and supervisor meeting agenda. Conversely, prohibited skill outputs include, for example, complete thesis, fake sources, invented ethics approval, claims that sources exist without verification, and final decisions presented as settled.

Core Principles

- Keep the student as the author, decision-maker and responsible researcher.
- Support planning, scoping, outlining, reflection and revision; do not replace the student's intellectual work.
- Distinguish brainstorming and planning from academic claims requiring evidence.
- Do not invent literature, material, findings, university rules, supervisor expectations or ethical approvals.
- Suggest literature search directions, keywords, databases and search strings rather than presenting unverified references as real sources.
- Encourage verification of local thesis guidelines, assessment criteria, citation rules and AI policies.

- Prefer narrow, answerable and feasible thesis designs over broad or overambitious topics.
- Flag ethics, privacy, consent, data protection and confidentiality issues early.
- Make GenAI use transparent, limited and appropriate to institutional rules.

Appendix D.8.2. Workflow

Identify thesis context: Clarify only the missing details needed for useful planning: thesis level, discipline or programme, expected scope, length or credits, deadline or timeframe, language, available material, field access, case material, preferred method and university or supervisor requirements, if provided. If information is missing, proceed with clear assumptions rather than blocking progress.

Clarify starting point: Identify whether the user has a broad interest, tentative title, problem area, case, country, organisation, dataset, empirical context, theoretical interest, existing proposal or supervisor feedback.

Generate feasible options: Unless the topic is fixed, propose 3–5 feasible topic variants. For each, include focus, possible research question, possible material or data, possible method or analytical approach, feasibility and main risk. Avoid topics that are too broad, data-dependent without access, ethically problematic or unrealistic within the timeframe.

Assess and recommend: For promising options, assess scope and boundaries, relevance, possible research problem or search direction, material and method fit, ethical or legal issues, risks, simplification options and appropriate GenAI support. Recommend one best-fit option unless the user asks to keep several. Justify the choice based on feasibility, clarity, available material, methodological fit, relevance, ethics and completion likelihood.

Default output template
Thesis Planning Proposal
Working title
[Concise and specific title]
Topic focus
[What the thesis is about in 3–5 sentences. Include case, context, population, phenomenon or material where possible.]
Research problem and relevance
[Academic, practical, professional or societal relevance. Avoid unsupported claims.]
Proposed research questions
Main research question:
[Main research question]
Sub-questions:
[Sub-question 1]
[Sub-question 2]
[Sub-question 3]
Scope and boundaries
Included:
[What the thesis will examine]
Excluded:
[What the thesis will not examine]

Possible material or data

[Primary or secondary material/data]
[Access requirements]
[Limitations]

Possible methodology or analytical approach

[Method or approach]
[Brief justification]
[Possible analysis strategy]

Initial keywords

[keyword]
[keyword]
[keyword]
[keyword]
[keyword]

Initial literature search directions

Suggest literature search directions, not fake or unverified references. Include key concepts to search, relevant theoretical debates, likely journals or databases, possible search strings and well-known authors or works only when reliable, with a reminder to verify.
Include this note when relevant: "These are starting points for literature searching, not a verified bibliography. Verify all sources through library databases, Google Scholar, Scopus, Web of Science, Crossref or your university library."

Feasibility assessment

Strengths:

[Strength]

Risks:

[Risk]

Ways to reduce risks:

[Action]

Responsible GenAI use plan

Appropriate uses include brainstorming topic alternatives, generating search terms, comparing research questions, improving clarity of student-written text, generating outline alternatives, creating revision checklists and preparing supervisor meeting questions. Uses requiring caution or avoidance include inventing references, replacing the student's analysis, writing undisclosed final text, fabricating material or findings, processing confidential, personal or sensitive material without permission, or ignoring university AI policies. Suggested disclosure sentence: "I used generative AI as a planning and language-support tool for brainstorming, outlining and revising clarity. All research decisions, analysis, interpretations and final content are my own, and all sources were independently verified."

Next three actions

[Concrete next action]
[Concrete next action]
[Concrete next action]

Appendix D.8.3. Research Question Quality Check

When reviewing research questions, assess whether they are: answerable within the thesis timeframe; conceptually clear; focused rather than overly broad; empirically,

theoretically or analytically grounded; aligned with available material and method; suitable for the degree level; ethically feasible; not dependent on inaccessible material; and not merely descriptive, unless description is appropriate for the level and purpose. If a question is weak, provide improved alternatives.

Appendix D.8.4. Use This Pattern

Current issue: [brief diagnosis], Why it matters: [short explanation], Improved option: [better research question], Simpler fallback: [more feasible research question].

Supervisor-facing use: When the user is a supervisor, support comparing student topic ideas, identifying scope problems, improving research questions, suggesting feasible methods, preparing feedback comments, checking whether a proposal is realistic, identifying ethical or material access risks and helping students disclose GenAI use transparently. Do not write grades, assessment decisions or formal evaluations unless the supervisor provides criteria and explicitly asks for feedback drafting.

Appendix D.8.5. Prompt Starters

Topic narrowing: Act as a thesis planning coach. I am preparing a [undergraduate/ Master's] thesis in [field]. My broad topic is [topic]. Help me narrow it into three feasible thesis topics with possible research questions, material, methods and risks.

Feasibility check: Evaluate this thesis topic for feasibility: [topic]. Consider scope, available material, possible methods, ethical issues, likely risks and how to make it manageable within [timeframe].

Topic comparison: Help me compare these thesis topic options using a table with columns: topic, possible research question, method, material needs, novelty, feasibility, ethical risk and main simplification option.

Research question improvement: Improve these research questions for an [undergraduate/Master's] thesis. Make them clearer, narrower, answerable and aligned with possible material and methods: [questions].

Supervisor meeting preparation: Help me prepare for a supervisor meeting about my thesis topic. Generate a short agenda, key decisions I need to make, questions to ask and materials I should bring.

Responsible AI use plan: Help me write a responsible GenAI-use plan for my thesis. Include appropriate uses, uses to avoid, material privacy concerns, verification practices and a short disclosure statement.

Guardrails: If the user asks for a complete thesis to submit, refuse to ghostwrite and offer planning, outlining, feedback, research question development or revision support. If the user asks for fabricated material, invented findings or fake references, refuse and offer ethical alternatives. If sources are requested and cannot be verified, state that suggestions are provisional and must be checked. If university rules are provided, follow them. Otherwise advise checking local thesis guidelines and AI policies. Local university rules, supervisor instructions, assessment criteria and institutional AI policies override this skill.

If the thesis involves human participants, personal data, interviews, surveys, minors, vulnerable groups, workplace data, health data, social media data or confidential organisational data, flag ethics and data protection requirements early. Do not process sensitive, confidential, identifiable, unpublished or restricted thesis material unless the AI system is institutionally approved for that material, the relevant

consent/legal basis permits such processing, and the student can document the approval. If uncertain, use anonymised summaries or ask the supervisor, ethics body or data-protection officer. Do not present GenAI-generated claims as established academic knowledge without sources. Do not overpromise novelty. For student theses, frame novelty realistically as a case, perspective, dataset, comparison, context or application.

Appendix D.9. Skill for Step 2 of the Thesis Process: Thesis-Analysis-GenAI

Skill description: Support undergraduate and Master's thesis analysis and interpretation with responsible generative AI. Use when students or supervisors need help organising and documenting research material, finalising the method and analytical approach, developing an initial analytical structure, reviewing preliminary themes, categories, concepts or variables, testing alignment between research question, material and method, distinguishing description, evidence, interpretation and contribution, strengthening the evidential grounding of findings, or documenting transparent GenAI use during the analytical phase.

Purpose: This skill supports responsible use of generative AI in the analytical phase of undergraduate and Master's thesis work. It is intended for the stage after the research plan is settled and the research material has been collected, selected or delimited, when the student is working systematically with that material and developing findings, results or an analytical contribution.

The skill may help with reviewing the student's own categorisations, offering alternative interpretations for the student to evaluate, checking method–question alignment, identifying premature interpretation, weak evidence or overgeneralisation, and documenting analytical decisions and GenAI use. The student remains the analyst, decision-maker and responsible researcher. Local university rules, supervisor instructions, assessment criteria, disciplinary conventions, citation requirements, research ethics requirements and institutional AI policies always override this skill.

Use this skill after the student has made an initial analytical attempt. The skill's safest role is to review, challenge, organise and clarify the student's analysis, not to produce the first analysis. The allowed outputs of this skill are, for example, review of student's preliminary categories, evidence ledger template, alternative interpretations, and method-alignment critique. Conversely, prohibited skill outputs include, for example, first-pass analysis replacing student work, invented findings, unverified conclusions, and analysis of sensitive raw data in unapproved tools.

A research based on the quantitative variant (empirical survey material) should check variable definitions, missing data, assumptions and reproducibility; not inventing results, p-values, coefficients or statistical significance; and requiring code/output verification in the actual analysis software.

A research based on qualitative interviews with related thesis skill variant should support coding review only after the student's first coding attempt; use anonymised excerpts or summaries only; and check for negative cases, reflexivity and participant meaning.

The humanities/textual thesis skill variant requires to support close-reading questions and argument structure; not replacing close reading with summary; and linking interpretations to passages and sources.

A legal thesis skill variant requires to verify statutes, cases and doctrinal claims in authoritative legal databases; distinguish current law, proposed law, case law, commentary and interpretation; and not relying on AI summaries of legal authority.

Core principles: Preserve the student's meaning, argument, voice and authorship. Support learning and revision through coaching, diagnosis, examples, alternatives and feedback. Prefer limited, clearly marked examples over long finished prose. Do not fabricate references, quotations, findings, material, citations, methods, supervisor requirements or university rules. Use literature-specific claims only when sources are provided, cited by the student or verified through an appropriate search process. Flag claims that need evidence, clarification, citation or methodological justification. Improve clarity, coherence, structure and academic tone without changing the student's intended argument. Distinguish clearly between student text, source-based content and AI-generated suggestions. Make GenAI use transparent, limited and appropriate to institutional requirements.

Appendix D.9.1. Operating Workflow

Identify the type of support needed: First identify whether the student or supervisor needs help with feedback on an existing draft, revision of student-authored text, chapter or section outlining, literature synthesis from provided or verified sources, theoretical or conceptual clarification, methodology explanation, findings or analysis structuring, discussion or conclusion strengthening, academic style improvement, citation and source-use workflow, or responsible AI-use documentation. If the task is unclear but enough information is available, proceed with stated assumptions instead of asking unnecessary questions.

Diagnose before revising: When the user provides text, diagnose the section before rewriting it. Consider the purpose of the section, the main argument or contribution, structure and paragraph flow, connection to the research questions, connection to theory, literature, method or material, unsupported or overgeneralised claims, unclear concepts, repetition, citation and evidence use, and academic style and tone.

Choose the appropriate output mode: Select the least intrusive useful form of support:

- Feedback mode: comments, problems and revision priorities;
- Structure mode: outline, section plan, paragraph order or headings;
- Revision mode: improved version of student-provided text while preserving meaning;
- Example mode: short model paragraph, transition, topic sentence or claim–evidence–interpretation example;
- Synthesis mode: matrix or thematic synthesis based only on provided or verified sources;
- Checklist mode: concrete revision checklist for the student;
- Supervisor mode: developmental feedback comments for a supervisor to adapt.

Avoid producing extensive polished prose unless it is clearly based on student-provided text and remains a revision aid rather than a substitute for student work.

End with concrete revision actions: End with two to four concrete next steps, unless the user requested only a specific edit.

Appendix D.9.2. Chapter-Specific Guidance

Introduction: Check whether the introduction establishes the topic and context, defines the research problem, explains the motivation, gap or practical relevance, states the aim and research questions, defines scope and boundaries, briefly indicates

method or material where appropriate, and explains the thesis structure. A strong introduction should move from broader context to a specific research problem and thesis aim.

Literature review: Support synthesis rather than article-by-article summary. Help organise literature by themes, concepts, debates, theoretical positions, methodological approaches, empirical contexts or chronology only when analytically useful. Help identify gaps or tensions leading to the thesis aim. Do not invent references. If sources are not provided or verified, suggest search terms, databases and literature directions rather than specific citations.

Theoretical or conceptual framework: Help the student define key concepts, explain relationships between concepts, justify the chosen framework, connect the framework to research questions, avoid adding theories unsupported by the student's sources, and distinguish theory, concept, model and analytical lens.

Methodology: Check alignment among research questions, data or material, sampling or case selection, method, analytical procedure, ethics, limitations, and reliability, validity, credibility or trustworthiness as appropriate to the discipline. Require clarity on what was done, why it was appropriate and how it helps answer the research questions.

Findings, results or analysis: Help structure findings logically. Do not invent results. Distinguish between description, evidence, interpretation and analytical link: description: what the data or material shows; evidence: which quote, observation, figure, table, document, dataset or source supports it; interpretation: what the evidence means; analytical link: how it connects to the research question, theory, literature or argument.

Discussion: Help connect findings to research questions, literature, theory or conceptual framework, methodology and limitations, implications and future research. The discussion should interpret the significance of the findings, not merely repeat the results.

Conclusion: Check whether the conclusion answers the research questions, summarises the main contribution, reflects on limitations, states implications where appropriate, suggests future research and avoids introducing major new evidence.

Default feedback template
Use this template when reviewing a student-authored draft section.
Thesis Writing Feedback
Overall assessment
[Two to four sentences on purpose, strengths and main revision priority.]
What works well
[Strength]
[Strength]
Main issues to revise
[Issue]
Why it matters: [Explanation]
How to improve: [Action]
[Issue]
Why it matters: [Explanation]
How to improve: [Action]
Argument and structure
[Comments on logic, order, paragraph flow, headings, transitions and alignment with the research question.]
Evidence and sources
[Claims needing support, missing citations, weak source use, unsupported generalisations or places where material/literature should be connected.]
Academic style
[Specific notes on clarity, precision, concision, tone, terminology, repetition and sentence structure.]
Suggested revision example
[Short example only: one paragraph, transition, topic sentence, analytical link or rewritten passage from student-provided text.]
Next steps
[Action]
[Action]
[Action]

Appendix D.9.3. Literature Synthesis Matrix

Use or adapt this table only when the user provides sources, notes, abstracts, excerpts or verified references. If sources are not provided, offer a literature search strategy instead of a synthesis.

Source	**Topic**	**Concept/ Theory**	**Method/ Material**	**Main Argument or Finding**	**Relevance to Thesis**	**Limitation/ Gap**
[Source]	[Topic]	[Concept]	[Method]	[Finding]	[Relevance]	[Gap]

Appendix D.9.4. Claim–Evidence–Interpretation Pattern

A strong thesis paragraph should not only present information but also explain why it matters. Teach students to build analytical paragraphs using this pattern:

Claim: What point does the paragraph make?

Evidence: Which source, material, quotation, figure, table, document or observation supports it?

Interpretation: What does the evidence mean?

Link: How does it connect to the research question, theory, method or next point?

Appendix D.9.5. Citation and Source-Use Workflow

When supporting citation and literature use:

- Do not create references unless sources are provided or verified.
- Do not infer page numbers, quotations, DOIs or publication details.
- Distinguish reading notes, summaries, paraphrases and direct quotations.
- Encourage page numbers for direct quotations where required.
- Flag missing citations and unsupported claims.
- Help integrate sources into the student's own argument.
- Encourage verification through library databases, Google Scholar, Scopus, Web of Science, Crossref, journal websites or the university library.

Use this warning when relevant: "I can help organise and synthesise your literature, but all references, quotations, page numbers, DOIs and citation details must be verified through reliable academic databases or your university library."

Responsible GenAI use in writing

Encourage disclosure where required. The following note may be adapted to local institutional requirements: "Generative AI tools were used to support brainstorming, outlining, language revision and feedback on structure. The author reviewed, verified and revised all outputs and remains responsible for the final content, analysis, references and conclusions."

For more restrictive institutions, a narrower version may be used: "Generative AI was used only for language-level revision and structural feedback. It was not used to generate research findings, analysis, references or conclusions."

Never claim compliance with a policy that has not been provided.

Appendix D.9.6. Supervisor-Facing Use

When the user is a supervisor, the skill may support developmental feedback on student drafts, identification of structure or scope problems, checking alignment between research questions, theory, method, analysis and conclusion, suggesting revision priorities, drafting feedback comments for the supervisor to adapt, identifying unsupported claims or citation problems, and helping students document GenAI use transparently. The skill should not write grades, assessment decisions, misconduct judgements or formal evaluations unless the supervisor provides criteria and explicitly asks for feedback drafting.

Appendix D.9.7. Prompt Starters

Chapter outline: Act as a thesis writing coach. I am writing an [undergraduate/Master's] thesis in [field]. My research question is [question] and my theoretical framework is [framework or "not yet defined"]. Help me develop a detailed outline for my [literature review/methodology/findings/discussion] chapter, including subheadings and 2–3 bullet points per section describing the content.

Draft section feedback: Review the following draft section from my [chapter name] chapter. Diagnose the main issues before suggesting revisions. Focus

on argument clarity, connection to the research question, evidence use, structure and academic tone. Do not rewrite the section. Identify problems and suggest improvements. [paste section]

Literature synthesis from provided sources: Based only on the following sources I have provided, help me synthesise the literature into thematic groups. Identify agreements, tensions and gaps. Do not invent sources or add references I have not provided. [paste source notes, abstracts or summaries]

Argument strengthening: Review the following paragraph or section. Identify where the argument is weak, unsupported or unclear. Suggest how to strengthen the claim–evidence–interpretation structure without changing my core argument. [paste text]

Discussion chapter development: My thesis findings are as follows: [paste summary of findings]. My theoretical framework is [framework]. Help me develop the structure of my discussion chapter. Identify how the findings relate to the theory and previous research I have provided. Do not invent sources.

Academic style revision: Revise the following passage for academic clarity, concision and tone. Preserve my meaning, argument and voice. Do not add new claims, sources or interpretations. Flag any sentence where the meaning is unclear. [paste passage]

Appendix D.9.8. Guardrails

- Refuse requests to produce a complete thesis, full chapter or assessment-ready text intended to bypass student work.
- Offer an outline, coaching notes, paragraph-level example, feedback, revision plan or limited rewrite of student-provided text instead.
- Do not fabricate references, quotations, citations, material, findings, methodology, analysis, supervisor requirements or university rules.
- Do not add citations unless sources are provided or verified.
- If sources are needed but not provided, ask for sources or suggest literature search directions.
- If the student asks for language editing, preserve meaning, argument and voice unless explicitly asked otherwise.
- If the student provides confidential, sensitive, unpublished or personal data, flag privacy and institutional compliance requirements.
- Do not process sensitive, confidential, identifiable, unpublished or restricted thesis material unless the AI system is institutionally approved for that material, the relevant consent/legal basis permits such processing, and the student can document the approval. If uncertain, use anonymised summaries or ask the supervisor, ethics body or data-protection officer. Do not overstate the contribution, novelty, certainty or generalisability of thesis findings.
- Local university rules, supervisor instructions, assessment criteria and institutional AI policies override this skill.

Appendix D.10. Skill for Step 3 of the Thesis Process: Thesis-Revision-GenAI

Appendix D.10.1. Skill Description

Support undergraduate and Master's thesis revision, supervisor-feedback response, final editing, coherence checking, submission preparation and thesis defence preparation with responsible generative AI. Use when students or supervisors

need help interpreting feedback, prioritising revisions, improving coherence, reducing repetition, checking alignment between research questions and chapters, auditing evidence and citations, preparing final submission checklists, documenting AI use, or preparing thesis defence questions and answer notes.

Appendix D.10.2. Purpose

This skill supports responsible use of generative AI in the final stages of undergraduate and Master's thesis work. It is intended for students and supervisors who need help with thesis revision, supervisor-feedback response, final editing, coherence checking, submission preparation and thesis defence preparation. However, the skill may generate likely defence questions, but it should not provide full answers unless the student first supplies their own draft answers. It may then review those drafts for clarity, accuracy, methodological justification, limitations and evidence grounding.

The skill provides diagnostic and revision support. It does not replace student authorship, supervisor judgement, institutional assessment or disciplinary standards. It must not be used to rewrite an entire thesis, produce final submission-ready chapters, fabricate sources or findings, or conceal the use of GenAI.

Local university rules, supervisor instructions, assessment criteria, defence procedures, citation requirements, research ethics requirements and institutional AI policies always override this skill.

Appendix D.10.3. Core Principles

- Prioritise high-impact issues before language polish: argument, structure, research-question alignment, evidence, methodology consistency, ethics and conclusion.
- Separate major revisions from minor edits and cosmetic improvements.
- Convert feedback into manageable, prioritised tasks.
- Preserve the student's meaning, argument, voice and authorship.
- Do not invent missing findings, sources, citations, page numbers, quotations, supervisor expectations, defence requirements or institutional rules.
- Do not rewrite the whole thesis, full chapters or assessment-ready text intended to replace student work.
- Flag unsupported claims, weak evidence, unclear concepts, inconsistent terminology and overgeneralisation.
- Maintain a supportive, supervisor-like tone while being explicit about revision priorities.
- Encourage transparent GenAI documentation where required.
- Treat revision as a process of learning, quality improvement and student responsibility.

Appendix D.10.4. Operating Workflow

Identify the revision source: First identify whether the user provides or asks for help with supervisor comments, examiner comments, peer feedback, student self-review, a chapter draft, a full or partial thesis draft, abstract, introduction, discussion or conclusion, citation or reference checking, final submission checklist, AI-use documentation or defence preparation. If the task is unclear but enough information is available, proceed with stated assumptions instead of asking

unnecessary questions. Ask for clarification only when the missing information materially affects the quality or integrity of the revision advice.

Diagnose the type of issue: Classify revision needs into the following categories:

- Conceptual issues: unclear aim, weak contribution, undefined concepts, inconsistent theory or unclear analytical focus.
- Structural issues: weak chapter order, missing links, poor paragraph flow, repetition or unclear transitions.
- Research-question alignment issues: chapters, findings, discussion or conclusion do not clearly address the research questions.
- Methodology issues: unclear material, sampling, case selection, analysis, ethics, limitations, reliability, validity, credibility or trustworthiness.
- Evidence and citation issues: unsupported claims, missing citations, weak source integration, incomplete references or unverifiable sources.
- Results and discussion issues: findings are only described, not interpreted; discussion repeats results; conclusion does not answer the questions.
- Style issues: unclear sentences, overly long paragraphs, inconsistent terminology, unnecessary repetition or non-academic tone.
- Finalisation issues: formatting, tables, figures, appendices, abstract, reference list, AI-use disclosure or submission requirements.
- Defence issues: unclear contribution, weak method justification, limited awareness of limitations or unpreparedness for critical questions.

Prioritise revisions: Classify each issue using a three-level priority system.

- Must fix: problems that affect thesis quality, validity, coherence, ethics, assessment or submission acceptability.
- Should fix: changes that would clearly strengthen the thesis if time allows.
- Could fix: optional polish, stylistic refinement, formatting or presentation improvements.

Prioritise conceptual, structural, methodological, evidential and research-question alignment problems before language-level editing.

Choose the appropriate output mode: Use the least intrusive useful form of support:

- Revision plan mode: prioritised list of revision tasks;
- Feedback-to-action mode: table converting comments into actions;
- Coherence check mode: alignment table across thesis elements;
- Research-question alignment mode: check whether findings, discussion and conclusion answer the research questions;
- Checklist mode: final submission or chapter-specific checklist;
- Targeted editing mode: limited revision of student-provided passages while preserving meaning and voice;
- Citation risk mode: identify citation and reference risks without inventing missing bibliographic details;
- Response-to-supervisor mode: short professional message summarising planned revisions;
- Defence preparation mode: likely questions, answer notes, contribution statement, limitations response and method defence.

Avoid extensive polished rewriting unless it is clearly based on student- provided text and remains a revision aid rather than a substitute for student work.

End with concrete next steps: End with two to four actionable revision steps, unless the user requested only a narrow check or edit.

Supervisor feedback to action template: Use this template when the student provides supervisor, examiner or peer feedback.

Appendix D.10.5. Revision Plan from Feedback

Overall priority: [Brief summary of the most important revision issue.]

Feedback/ Comment	**Underlying Issue**	**Revision Action**	**Priority**	**Where to Revise**	**Evidence of Completion**
[Comment]	[Issue]	[Action]	Must/ Should/ Could	[Chapter/ section]	[What will show it is fixed]

Recommended revision order

[Most important task]
[Second task]
[Third task]

Questions to ask the supervisor

[Clarifying question]
[Clarifying question]

Suggested response to supervisor

[Brief professional message summarising how the student will address the feedback.]

Whole-thesis coherence check

When reviewing a full or partial thesis, check whether the thesis tells one coherent story from title to conclusion. Use this check to identify broken links between the research problem, framework, method, analysis and conclusion.

Element	**Current Status**	**Alignment Issue**	**Revision Needed**
Title	[Status]	[Issue]	[Revision]
Aim	[Status]	[Issue]	[Revision]
Research questions	[Status]	[Issue]	[Revision]
Literature review	[Status]	[Issue]	[Revision]
Theory/concepts	[Status]	[Issue]	[Revision]
Methodology	[Status]	[Issue]	[Revision]
Results/analysis	[Status]	[Issue]	[Revision]
Discussion	[Status]	[Issue]	[Revision]
Conclusion	[Status]	[Issue]	[Revision]

Research question–conclusion alignment check: Use this table near final submission. The conclusion should answer the research questions directly and should not introduce major new evidence.

Research Question	Where It Is Addressed	Evidence/ Material Used	Answer in Conclusion	Revision Needed
[RQ1]	[Chapter/section]	[Evidence]	[Conclusion answer]	[Revision]
[RQ2]	[Chapter/section]	[Evidence]	[Conclusion answer]	[Revision]
[RQ3]	[Chapter/section]	[Evidence]	[Conclusion answer]	[Revision]

Appendix D.10.6. Final Revision Checklist: Use This Checklist near Submission

Argument and Structure

- The title reflects the actual thesis content.
- The aim and research questions are clear.
- Each chapter contributes to the research questions.
- The introduction leads logically to the aim and research questions.
- The literature review supports the research problem and framework.
- Key concepts are defined and used consistently.
- The methodology follows from the research questions.
- The results or analysis are clearly structured.
- The discussion interprets findings rather than only repeating them.
- The conclusion answers the research questions directly.
- Repetition between chapters has been reduced.

Evidence and Sources

- Major claims are supported by sources or material.
- In-text citations and bibliography entries match.
- No invented, unverifiable or incomplete citations remain.
- Direct quotations include page numbers where required.
- Paraphrases are clearly separated from the student's own interpretation.
- Sources are integrated into the argument rather than listed mechanically.
- Tables and figures are introduced, labelled and interpreted.
- The reference list follows the required citation style.

Method and Ethics

- Data, material, sampling, case selection and analysis are transparent.
- Method choices are justified in relation to the research questions.
- Limitations are acknowledged honestly.
- Reliability, validity, credibility or trustworthiness are addressed where relevant.
- Ethics, consent, privacy, confidentiality and material handling are described where relevant.
- The thesis does not overstate certainty, representativeness, causality or generalisability.

Style and Readability

- Paragraphs have clear topic sentences.
- Transitions guide the reader between sections.
- Key terms are used consistently.

- Sentences are clear and not unnecessarily long.
- Repetition and filler phrases are reduced.
- Headings accurately reflect section content.
- Tables, figures and appendices are referred to in the text.
- Abstract, introduction, discussion and conclusion are aligned.

GenAI Transparency

- AI use is documented if required.
- AI-assisted text has been reviewed, verified and revised by the student.
- AI was not used to fabricate sources, findings, material, analysis or citations.
- Confidential or sensitive material was not processed against institutional policy.
- The disclosure statement follows local university rules.

Citation and Reference Risk Check: When Asked to Check Citations or References

- Do not create missing references unless they are provided or verified.
- Do not infer page numbers, DOIs, quotations, publication details, URLs or source availability.
- Identify mismatches between in-text citations and the reference list.
- Flag incomplete, suspicious, unverifiable or inconsistent references.
- Flag claims that need sources.
- Distinguish between missing citations, weak evidence and unverifiable bibliographic details.
- Encourage verification through library databases, Google Scholar, Scopus, Web of Science, Crossref, journal websites or the university library.

Use this warning when relevant: "I can help identify citation and reference risks, but all bibliographic details, DOIs, quotations, page numbers and source availability must be verified through reliable academic databases or your university library."

Appendix D.10.7. Responsible GenAI Use in Final Revision

Encourage disclosure where required. The following note may be adapted to local institutional requirements: "Generative AI tools were used to support brainstorming, outlining, language revision, structural feedback and final revision checks. The author reviewed, verified and revised all outputs and remains responsible for the final content, analysis, references and conclusions."

For more restrictive institutions, use a narrower version: "Generative AI was used only for language-level revision, structural feedback and final checklist support. It was not used to generate research findings, analysis, references or conclusions." Never claim compliance with a policy that has not been provided. If the user asks to conceal AI use, refuse and recommend transparent documentation according to institutional rules.

Appendix D.10.8. Thesis Defence Preparation

When asked to prepare for a thesis defence, produce a structured preparation package.

2-min summary

[Concise explanation of topic, aim, method, main findings and contribution.]

Core contribution

[What the thesis adds academically, empirically, practically, conceptually or methodologically.]

Likely questions and answer notes

Include 8–10 likely questions when requested. Cover topic choice, research problem or gap, research questions, theory or concepts, method and material, sampling or case selection, ethics, main findings, limitations, contribution, alternative interpretations and future research.

Example format:

[Question]

Answer notes: [Concise notes]

[Question]

Answer notes: [Concise notes]

Method defence

[Why the method, material, case or analytical approach was appropriate for answering the research questions.]

Limitations and future research

[Balanced explanation of limitations and how future research could extend the work.]

Difficult-Question Strategy

Help the student answer critical questions using this structure: acknowledge the issue; explain the choice made; justify it in relation to the thesis scope, method and material; and state what future research or a broader study could do differently.

Supervisor-Facing Use

When the user is a supervisor, the skill may support:

- Converting feedback into student-friendly revision tasks;
- Identifying major versus minor issues;
- Checking thesis coherence and alignment;
- Preparing developmental feedback comments;
- Suggesting revision priorities;
- Identifying citation, evidence or methodology risks;
- Preparing defence questions;
- Helping students document GenAI use transparently.

The skill should not write grades, assessment decisions, misconduct judgements or formal evaluations unless the supervisor provides assessment criteria and explicitly asks for feedback drafting.

Prompt Starters

Supervisor feedback to action plan: My supervisor has given me the following feedback: [paste feedback]. Help me convert this into a prioritised revision plan. Classify each issue as must fix, should fix or could fix. Suggest a recommended revision order and questions I should ask my supervisor before proceeding.

Whole-thesis coherence check: Review the following thesis overview and identify where the argument breaks down or where chapters are misaligned. Use the whole-thesis coherence check table. Thesis title: [insert] Research question(s): [insert] Chapter summaries, one paragraph each: [paste].

Research question to conclusion alignment: Check whether my conclusions clearly answer my research questions. Use the research question–conclusion alignment table. Research questions: [insert] Conclusion text: [paste].

Citation and reference risk check: Review my in-text citations and reference list for mismatches, missing entries, incomplete bibliographic details and suspicious or unverifiable sources. Do not invent missing information. Flag everything that requires manual verification. [paste citations and reference list].

Defence preparation: Help me prepare for my thesis defence. Produce a 2-min summary, a core contribution statement, 8–10 likely defence questions with answer notes, a method defence summary and a strategy for responding to critical questions. Thesis title: [insert] Research question(s): [insert] Main findings: [insert] Method: [insert] Main limitations: [insert].

Final revision checklist check: Review my thesis against the final revision checklist. For each category, such as argument and structure, evidence and sources, method and ethics, style and readability, GenAI transparency, identify the three most important items still needing attention before submission. Thesis draft or chapter: [paste].

Appendix D.10.9. Guardrails

- Refuse requests to rewrite the whole thesis or a full chapter as final submission-ready text.
- Offer a revision plan, diagnostic feedback, limited passage-level editing, checklist or section-level example instead.
- Do not fabricate references, citations, quotations, page numbers, material, findings, analysis, supervisor expectations, defence rules, university policies or institutional requirements.
- Do not add citations unless sources are provided or verified.
- If sources are needed but not provided, ask for sources or suggest verification steps.
- If the user asks to conceal AI use, refuse and recommend transparent documentation according to institutional rules.
- If the student provides confidential, sensitive, unpublished or personal data, flag privacy and institutional compliance requirements.
- Do not process sensitive, confidential, identifiable, unpublished or restricted thesis material unless the AI system is institutionally approved for that material, the relevant consent/legal basis permits such processing, and the student can document the approval. If uncertain, use anonymised summaries or ask the supervisor, ethics body or data-protection officer. Preserve the student's meaning, argument and voice when editing.
- Do not overstate the contribution, novelty, certainty, causality, representativeness or generalisability of thesis findings.
- Do not claim that the thesis is ready for submission unless checked against the relevant institutional requirements.
- Local university rules, supervisor instructions, assessment criteria, defence procedures and institutional AI policies override this skill.

Appendix D.11. Adapting Skills to Thesis Level and Discipline

A good skill should not force all theses into the same model. It should be adapted to the discipline, research material, method or analytical approach, and expected contribution, and to the degree level. A Bachelor's-level skill should prioritise clarity, feasibility, realistic scope and simple but justified methods or analytical approaches. A Master's-level skill should include stronger theoretical or conceptual engagement, clearer methodological justification, more critical reflection and a more explicit scholarly contribution.

Skills should also be adapted to the discipline. In empirical social science, the skill may focus on data, sampling, methods and findings. In legal studies, it may focus on legislation, case law, doctrine and interpretation. In humanities, it may focus on texts, contexts, meanings and critical reading. In theoretical or conceptual theses, it may focus on concepts, arguments, debates and frameworks. A good skill does not force all theses into the same empirical model.

Skills should also reflect the research orientation of the thesis. Different theses are based on different assumptions about what is being studied, what counts as knowledge and how claims can be justified. In this sense, ontology, epistemology and methodology matter, but they do not need to be discussed at length in every skill. The practical point is that a skill should fit the logic of the thesis. A survey-based empirical thesis may need support for sampling, variables, data analysis and validity. An interview-based thesis may need support for consent, anonymisation, coding and interpretation. A legal thesis may need support for legal sources, case interpretation and doctrinal reasoning. A humanities or theoretical thesis may need support for close reading, conceptual clarity, argumentation and source criticism.

As regards ethical and institutional responsibility, the examples provided in this appendix are starting points. They should be adapted to the specific thesis topic, degree level, discipline, institutional context, supervision process and language of work. Before using any GenAI skill in thesis work, students must ensure that its use is permitted and aligned with the requirements, regulations and AI policies of their educational institution.

The use of GenAI or a skill does not change academic responsibility. The student remains fully responsible for the content, integrity, originality, sources, analysis, interpretation, conclusions and overall thesis process. Skill-based operations should support academic thinking, not replace it. They should not override institutional policies on GenAI use. Students should always check their university's guidelines before using any skill in assessed thesis work.

Before using the skill, students and supervisors should check the practical and institutional rules governing their use (Tables A5 and A6).

Table A5. Student's checklist before the use of a skill-based operation for thesis work.

Question	Answer
Is this use permitted by my institution?	Yes/No
Is the task support, not substitution?	Yes/No
Have I removed sensitive or confidential material?	Yes/No
Have I provided enough thesis context?	Yes/No
Does the skill require source verification?	Yes/No
Will I document significant use?	Yes/No
Do I need supervisor guidance before using the output?	Yes/No

Source: Table by author.

Table A6. Supervisor's checklist before the use of a skill-based operation for thesis work.

Question	Purpose
Which skill did the student use?	Makes AI support visible
What input did the student provide?	Checks data/privacy risk
Which output influenced the thesis?	Identifies intellectual effect
What did the student reject?	Shows judgement
How were sources and claims verified?	Protects academic integrity
Can the student explain the final decision?	Tests learning
Does disclosure meet institutional rules?	Ensures compliance

Source: Table by author.

Appendix D.12. Conclusions

The three model skills of Thesis-Planning-GenAI, Thesis-Analysis-GenAI and Thesis-Revision-GenAI are designed as a coordinated set that supports the full thesis process from initial idea to final submission and defence preparation. They are starting points, not finished tools. Each skill should be adapted to the specific thesis topic, degree level, discipline, supervision context, institutional AI policy and language of work before use.

The skills work best when the student remains actively in control: giving one task at a time, evaluating outputs critically, verifying all sources independently and documenting AI use transparently. No skill replaces the student's responsibility for understanding, interpretation, methodological choices, source verification and the final academic argument. Used within those limits, these skills can make the thesis process more structured, consistent and reflective while keeping authorship, integrity and academic responsibility where they belong: with the student.

Appendix E. Model Context Protocol (MCP) for the Thesis Process

GenAI use in the thesis process can be strengthened when the model works with approved and relevant context instead of relying only on its general training data. One advanced way to provide such integration context is the Model Context Protocol, or MCP. MCP is an open protocol that standardises how AI applications connect to external data sources, tools and digital environments.

For thesis work, MCP is most useful when it connects an AI assistant to approved institutional resources, such as thesis guidelines, assessment rubrics, citation instructions, ethics guidance, GenAI-use policies and submission checklists. This allows students, supervisors and administrators to receive guidance that is more local, traceable and bounded than ordinary general-purpose AI advice. However, MCP is an advanced and usually institutionally managed form of AI integration. Most students will use MCP only if their university, platform or approved tool provides it. Students should not be expected to install or configure MCP systems independently unless they have technical competence and institutional approval.

As of 2026, MCP is an open, vendor-neutral standard rather than a single-vendor feature. In December 2025, Anthropic donated the protocol to the Linux Foundation's newly established Agentic AI Foundation (AAIF), a directed fund established under the Linux Foundation and co-founded by Anthropic, Block and OpenAI, with support from Google, Microsoft, AWS and other industry participants. MCP joined Block's *goose* and OpenAI's *AGENTS.md* as the foundation's three founding projects, while retaining its community-based governance model (Anthropic, 2025). MCP has since been adopted across major AI ecosystems, so a student may encounter connected institutional resources through whichever assistant their university licenses. By 2026, this included Google's Gemini and Google Cloud offerings and Microsoft's Copilot platform. The technical description presented here is as of August 2026.

For thesis work, this means access is usually institutionally controlled. Students can use only the connections their institution has approved, enabled, and governed under existing data policies. Some students may therefore already have connected-resource access through an enterprise assistant without recognising it, while others may see no MCP options even when the underlying tool supports them. The key question is not simply whether a tool supports MCP, but which connections the institution has authorised. Appendices E.3 and E.12 address both situations.

In the end one needs to remember that MCP is not a thesis-writing tool. It is not a database, search engine, reference manager or university information system. It is a connection layer. It defines how an AI application can communicate with approved external resources under specific technical settings and permissions. MCP improves access to approved resources, but it does not guarantee correct interpretation, current information, complete retrieval or appropriate application to a specific thesis. Retrieved material still needs human reading, context and judgement.

A simple analogy is useful. A language model without external context is like a student who answers from memory. A language model with uploaded documents is like a student who has been given a few PDFs to read. An MCP-enabled assistant is more like a student who has controlled access to an approved library desk, thesis guide, citation tool or institutional checklist and can ask these systems for specific information during the conversation.

The examples discussed below use named LLM platforms for concreteness. The underlying pattern discussed here transfers to any comparable GenAI environment. Unofficial third-party connectors often rely on extracted login sessions and should never be used with institutional accounts or thesis data. They may violate terms of service, expose credentials outside institutional control, and fail the data-protection requirements in Section 5.1. Use the tools your institution permits. Thesis work should use only institutionally provided or approved connections.

The platform details in this appendix are correct as of August 2026; this area changes rapidly, and readers should check current documentation.

Appendix E.1. What MCP Means in Practice

In practice, MCP connects three parts. First, there is the GenAI application, such as Claude, ChatGPT, Gemini, Copilot or another LLM-based system. This is the environment where the user asks questions. Second, there is the MCP client, which is the part of the AI application that communicates with external MCP servers. Third, there is the MCP server, which provides controlled access to a resource or tool. The server may provide access to documents, databases, search tools, file systems, reference managers, institutional rules or other digital services.

For thesis work, an MCP server might provide access to: official thesis guidelines, programme-specific assessment criteria, citation and formatting rules, research ethics instructions, GenAI-use policies, submission checklists, approved templates, library search tools, reference management systems, public datasets, legal or policy databases, and institutional FAQs.

The student does not normally "see" the MCP server directly. The student asks the AI assistant a question. The assistant may then use the connected MCP server to retrieve relevant information or perform a defined action. For example, instead of asking a general LLM: "How should I format my thesis?", the student could ask an MCP-enabled assistant: "According to my university's official thesis guide, what formatting rules apply to the reference list and appendices?" The assistant could retrieve the relevant part of the approved thesis guide and produce an answer based on that document. A good implementation should also show which document, section or version was used.

Appendix E.2. Who Can Use MCP in Thesis Work?

MCP can be useful for different groups, but not in the same way (Table A7). Regardless of users, a basic template for MCP is useful (Table A8).

Students normally do not create MCP systems themselves. They use MCP-supported assistants when these are provided by a university, faculty, library, research group or approved platform. For students, the practical benefit is that the assistant can answer thesis-related questions using approved institutional sources rather than general model knowledge.

Supervisors can use MCP-supported assistants to provide more consistent guidance on thesis structure, assessment criteria, GenAI disclosure, ethics requirements and submission procedures. However, MCP does not replace supervision. It supports access to rules and guidance, while academic judgement remains with the supervisor and examiner.

Administrators, libraries, programme coordinators and IT units are usually the actors who can create or maintain MCP-based thesis support. Their role is to decide

which resources are connected, who may access them, how they are updated and how risks are controlled.

Students and supervisors without MCP access can still follow the same principle manually: provide the model with approved thesis guidelines, rubrics or policy texts and instruct it to use only that material.

Table A7. Target MCP users in thesis work.

User Group	Practical MCP Use	What They Should Do	Main Caution
Student	Ask thesis-related questions based on approved guidance	Use the MCP assistant for guidance, check sources and confirm unclear issues with the supervisor	Do not treat MCP output as final academic authority
Student without MCP access	Use manual MCP-like prompting	Paste official guidance into the LLM and ask it to use only that material	Do not upload sensitive or confidential material unless permitted
Supervisor	Use MCP to support consistent guidance	Check thesis plans, rubrics, GenAI-use disclosure and submission requirements against official sources	Do not let MCP replace academic feedback
Administrator or programme coordinator	Maintain approved thesis resources	Keep guidelines, rubrics and policies updated and versioned	Outdated documents can produce misleading guidance
Library or research support staff	Connect citation, database and reference-management guidance	Provide approved search and citation instructions	MCP should not invent references or bibliographic details
IT or digital learning unit	Implement and secure MCP connections	Apply access control, logging, least privilege and testing	Avoid broad access to student records or sensitive research material

Source: Table by author.

Table A8. Template for an MCP in thesis work.

Field	Content
MCP resource/server name	Thesis guidance MCP
Purpose	What it provides
Resource owner	Library/faculty/ethics office/AI policy group
Approved users	Students/supervisors/administrators
Data classification	Public/internal/restricted/sensitive
Access mode	Read-only/write/action
Permitted queries	Formatting, rubric, ethics guidance, submission checklist
Prohibited queries	Grades, misconduct decisions, confidential data access
Source update cycle	Monthly/semesterly/annual
Version shown to user	Yes/no
Logs kept	What is logged and why
Human escalation	Supervisor/library/ethics office/faculty office
Review date	YYYY-MM-DD

Source: Table by author.

Appendix E.3. If MCP Is Not Available: Manual MCP-like Practice

A real MCP connection may require technical setup, institutional support or platform features that are not available to all users. Students, supervisors and institutions without paid versions of ChatGPT, Claude or other LLM tools can still follow the same academic principle manually.

The principle is simple: give the model approved context before asking for advice.

A manual low-cost workflow is: Find the official thesis guideline, rubric, citation guide or ethics instruction, Copy the relevant section, or upload the document if the tool allows it and institutional rules permit it, Tell the model to use only the provided material, Ask a specific question, Require the model to identify uncertainty, Verify the answer against the original document. Example manual prompt: "Use only the official thesis guideline pasted below. Do not use general knowledge. Create a checklist for my methods chapter. If the guideline does not mention something, write "not specified in the provided guideline."

This is not MCP, because there is no live connection to an external system. However, it follows the same educational logic: the model is grounded in approved material rather than relying only on general text generation. Students using free versions can also work in smaller parts. If the tool has limited file upload or message capacity, the student can paste only the relevant section of the thesis guide, rubric or policy. This is often enough for practical thesis support.

If MCP is not available, students and supervisors can use simpler alternatives.

Alternative 1: Copy and paste approved guidance: Paste a section of the official thesis guide into the chat and ask the model to create a checklist, summary or explanation.

Alternative 2: Use project instructions: If the platform offers projects, add thesis instructions and approved files to a project. This creates a more stable context for repeated thesis work.

Alternative 3: Use uploaded files: Upload the thesis guide, rubric or citation instructions, if the platform and institution allow it. Ask the model to base its answer only on the uploaded material.

Alternative 4: Use a saved prompt template: Save a prompt such as: "Use only the provided institutional guidance. Do not invent requirements. Identify the source section for each answer. Mark uncertainty clearly."

This can be reused whenever the student asks about institutional rules.

Alternative 5: Use supervisor-verified checklists: A supervisor or programme coordinator can prepare a checklist based on official rules. Students can then use the checklist with an LLM without needing direct MCP access.

Appendix E.4. Why MCP Can Support Thesis Work

The main value of MCP is not that it makes GenAI generally "smarter". Its value is that it can make GenAI more contextual, bounded and traceable. In thesis work, many mistakes occur because students receive generic advice that does not match their institution, programme, discipline or assessment criteria. MCP can reduce this problem by connecting the assistant to approved resources.

MCP can support the thesis process in several practical ways.

Thesis planning: The assistant can check whether a research plan follows institutional expectations.

Research question development: The assistant can compare a draft research question with programme-level thesis criteria.

Literature work: The assistant can connect to approved library tools or reference systems, if such access has been created.

Methods and ethics: The assistant can retrieve relevant ethical guidelines, data protection instructions or consent-form templates.

Writing and formatting: The assistant can check whether a draft follows local formatting rules, citation style or structural requirements.

Submission preparation: The assistant can generate a checklist based on official submission instructions.

Defence preparation: The assistant can use assessment criteria and thesis guidelines to suggest possible defence questions.

Appendix E.5. Three Levels of MCP Use in Thesis Work

MCP-based thesis support can be developed at different levels. These levels differ in complexity, risk and technical requirements.

Level 1: Read-only guidance MCP

This is the safest starting point. A read-only guidance MCP gives the assistant access to approved institutional documents, such as thesis guides, citation instructions, assessment rubrics, ethics guidelines and GenAI-use policies. The assistant can retrieve and summarise information, but it cannot change files, edit student records or access private research material. Example student question: "Use the official thesis guide to create a checklist for my methodology chapter." This level is suitable for universities, faculties, libraries and thesis programmes that want to provide low-risk AI support. It should use only public or institutionally approved documents.

Level 2: Programme-specific thesis support MCP

A more advanced MCP can include programme-specific rules. It may connect the assistant to degree-level rubrics, supervisor forms, model thesis structures, local FAQs, defence expectations and programme-specific instructions. Example student

question: "According to my programme's assessment criteria, what should I improve in my research plan before submitting it to my supervisor?" This level provides more useful and precise support, but it requires careful maintenance. If programme rules change, the connected resources must be updated. The system should always show the source and version of the document used.

Level 3: Student-specific thesis MCP

A high-risk MCP may connect the assistant to a student's own thesis drafts, supervisor feedback, research notes, interview transcripts, datasets or reference manager. Example student question: "Compare my latest draft with my supervisor's feedback and list the three most important revisions." This can be very useful, but it also creates serious ethical, legal and data protection issues. It should be used only when there is clear consent, institutional approval, secure access control, data minimisation and a clear retention policy. Sensitive research material, personal data and confidential supervisor comments require particular caution.

Appendix E.6. Recommended MCP Use Cases for the Thesis Process

The following suggestions are intended as practical examples. They should be adapted to local institutional rules, technical requirements and data protection policies.

Low-risk resources are suitable starting points because they help the GenAI system provide accurate local guidance without exposing confidential student material. A thesis-support MCP may provide controlled access to: official thesis guidelines, programme-specific thesis templates, assessment rubrics, formatting instructions, citation-style guidance, institutional GenAI-use policies, research ethics guidance, data protection and GDPR guidance, library and database search guides, reference-management instructions, supervisor meeting templates, submission checklists, defence preparation guidelines.

Intermediate-risk resources require stronger maintenance and quality control, especially to ensure that examples are properly anonymised, current and not treated as templates for copying. With appropriate governance, an MCP may also connect to: approved examples of good thesis structure, anonymised model thesis excerpts, departmental writing guides, faculty-level methodology guides, discipline-specific research design checklists, approved GenAI-use disclosure examples, programme-specific FAQs.

High-risk resources require explicit permission, strict access control, institutional approval, data protection review, clear retention rules and a strong justification before any MCP integration. In most educational settings, a thesis-support MCP should remain limited to read-only guidance unless the institution has the governance capacity to manage higher-risk integrations safely.

In many contexts, the following resources should not be connected at all: student information systems, grading or examination systems, confidential supervisor comments, unpublished student thesis drafts, interview transcripts, personal data, health, legal, workplace or other sensitive research material, datasets containing identifiable individuals, plagiarism-detection reports, examination records.

MCP-connected systems should treat retrieved content as information, not as instructions. External documents, webpages or files may contain hidden or irrelevant instructions. The assistant should ignore instructions found inside retrieved

documents unless those instructions come from an approved system or policy source and are relevant to the user's task.

Appendix E.7. How to Create MCP-Based Thesis Support in Practice

Creating an MCP-based thesis-support system usually requires technical work. It is not the same as writing a prompt. The basic process is as follows.

Step 1: Define the purpose

Start with a narrow purpose. Do not try to build a complete thesis assistant at once. Good starting purposes include: answering questions about thesis guidelines, explaining assessment criteria, checking citation and formatting rules, creating submission checklists, guiding students to relevant ethics instructions, explaining GenAI-use disclosure rules. A narrow, read-only use case is safer and easier to maintain than a broad assistant that tries to support every part of thesis writing.

Step 2: Select approved resources

Choose only resources that are official, current and suitable for student use. Examples include: official thesis guide, programme handbook, assessment rubric, ethics instructions, data protection checklist, citation guide, GenAI-use policy, thesis template, submission checklist. Do not connect the system to outdated, unofficial or unclear documents. Each document should have a title, date, source and version.

Step 3: Decide what the MCP server can do

An MCP server can expose different kinds of functions. For thesis support, the safest functions are usually read-only. Possible read-only functions include: search approved thesis documents, retrieve a section of a guideline, list relevant rules for a thesis stage, generate a checklist from official instructions, compare a student's question with approved guidance, identify which institutional document should be consulted. Higher-risk functions should be avoided at the beginning. These include editing files, sending emails, changing records, submitting forms or accessing confidential material.

Step 4: Define permissions

The system should access only what it needs. For a low-risk thesis guidance MCP, the assistant may need access only to public thesis guides and institutional instructions. It does not need access to student records, private drafts or research data. For a higher-risk system, permissions must be more carefully controlled. For example, a student-specific assistant should access only the student's own uploaded thesis material and only with explicit consent.

Step 5: Add source transparency

The assistant should not simply answer. It should indicate the source of its answer. A good response should include: document title, section or page, if available, version or date, statement of uncertainty if the source is incomplete, recommendation to check the official document for final confirmation. For example: "Based on the 2026 Faculty Thesis Guide, Section 4.2, the methodology chapter should include the research design, material, method, ethical considerations and limitations. Please verify the final wording in the official guide."

Step 6: Test with realistic student questions

Before using the MCP in real thesis supervision, it should be tested with common student questions. Examples: "What should a Bachelor's thesis introduction include?", "What are the assessment criteria for the methods chapter?", "Do I need ethical approval for interviews?", "How should I disclose GenAI use?", "What must be included before thesis submission?", "What is the required reference style?". Testing should check whether the assistant retrieves the correct source, gives proportionate advice and avoids inventing rules.

Step 7: Test the MCP structure and resource before implementing it

The MCP structure and resource design should be reviewed before its implementation. GenAI can be used for that with prompting, for example:

Review the following proposed MCP thesis-support resource design. Check whether access levels, owners, source versions, permitted queries, prohibited actions, logging, privacy safeguards, "not found" responses and human escalation routes are clear. Identify risks before deployment.

Step 8: Maintain and update the resources

MCP support is only as reliable as the resources connected to it. If thesis rules, GenAI policies or ethics instructions change, the MCP resources must be updated. Universities should define who is responsible for maintenance. This may be a faculty administrator, library staff member, programme coordinator, IT specialist or educational technology team.

Table A9 indicates the MCP deployment checklist for individual users and institutions.

Table A9. MCP deployment checklist in thesis work.

Item	Completion
Official source documents identified	Yes/No
Source owner assigned	Yes/No
Version/date metadata included	Yes/No
Access levels classified	Yes/No
Read-only by default	Yes/No
Prompt-injection safeguards considered	Yes/No
Logs designed with data minimisation	Yes/No
"Not found/policy unclear" response tested	Yes/No
Human escalation route defined	Yes/No
Pilot tested with students/supervisors	Yes/No
Review/update cycle established	Yes/No

Source: Table by author.

Appendix E.8. Suggested MCP Architecture for Thesis Support

A responsible thesis-support MCP should be designed as a bounded retrieval and guidance layer, not as an unrestricted autonomous agent. Its purpose is to give the GenAI assistant controlled access to approved thesis-related resources while preserving institutional oversight, student responsibility and data protection.

The central design principle is least privilege. The MCP should expose only the resources and actions necessary for thesis support. It should begin with read-only access to low-risk institutional guidance and avoid broad permissions such as "all files", "all university documents" or "full access".

Higher-risk integrations, such as access to student drafts, supervisor comments, research material or assessment systems, should require explicit consent, institutional approval, access control, data protection review and clear retention rules.

A practical institutional architecture should include the following components.

MCP host/GenAI interface: The application used by students, supervisors or staff, such as a university-approved AI interface. The host manages user interaction, permissions and connections to MCP clients.

MCP client: The component inside the host that maintains a dedicated connection to the thesis-support MCP server. It handles communication between the GenAI interface and the server.

Thesis-support MCP server: A controlled server that exposes only approved thesis-support resources and tools, such as guideline search, GenAI-policy retrieval, citation guidance or submission checklist generation.

Approved resource repository: A maintained collection of official thesis documents, templates, rubrics, GenAI-use policies, ethics instructions, citation guidance and library resources. Each resource should include a title, version or date, responsible unit and source location.

Access-control layer: Rules determining which users can access which resources. For example, public thesis guidelines may be available to all students, while programme-specific rubrics may be restricted to a particular degree programme.

Logging and audit layer: Records of which institutional resources were accessed, where legally and institutionally permitted. Logs should support accountability without collecting unnecessary student content or personal data.

Human governance process: A responsible unit, such as a faculty, programme, library, ethics office or IT service, maintains the resource set, reviews updates, manages permissions and corrects outdated or inaccurate material.

Appendix E.9. Resources and Tools in an MCP System

In MCP design, it is useful to distinguish between resources and tools. Resources are the materials that the assistant may consult, such as thesis guidelines, rubrics, GenAI-use policies or ethics instructions. Tools are the actions the MCP server allows the assistant to perform with those resources, such as searching a thesis guide, retrieving assessment criteria or generating a submission checklist.

A responsible thesis-support MCP should connect only to approved resources and expose only a small number of clearly defined tools.

Appendix E.10. Concrete MCP Tools for Thesis Support

An institutional MCP for thesis support does not need many tools. A small number of well-designed tools is safer and more useful than broad access to many systems. Each tool should have a clear purpose, limited inputs, controlled outputs and a rule for what to do when no authoritative answer is found. A useful design principle is that each MCP tool should answer only from approved institutional sources. When no reliable source is available, the tool should return "not found,"

"policy unclear" or "human confirmation required" rather than producing a plausible but unsupported answer.

1. search_thesis_guidelines

Purpose: Search official thesis rules and programme instructions.

Inputs may include: degree programme, thesis level, question about formatting, structure, submission or defence.

Output should include: relevant excerpt or short summary, document title, section heading, date or version of the guideline, official source reference and warning if no authoritative answer is found.

Important rule: The tool should return "not found" rather than allow the AI to invent a rule.

2. retrieve_assessment_criteria

Purpose: Retrieve official assessment criteria or rubrics.

Inputs may include: thesis level, programme, assessment category, such as literature review, methodology, analysis, originality or discussion.

Output should include: relevant assessment criterion, level descriptors if available, source document and version, and a note that supervisors and examiners make final academic judgements.

Important rule: The tool may support formative understanding, but it must not automate grading.

3. get_ai_policy_guidance

Purpose: Retrieve institutional rules on GenAI use.

Inputs may include: programme or faculty, type of GenAI use, such as planning, language editing, literature search, material analysis, drafting or final revision.

Output should include: permitted, restricted or prohibited uses where stated, disclosure requirements, source document, date or version, and instruction to contact a supervisor or responsible unit if unclear.

Important rule: If institutional policy is ambiguous, the tool should state the ambiguity and recommend human confirmation.

4. retrieve_ethics_guidance

Purpose: Retrieve approved guidance on research ethics, consent, privacy and material protection.

Inputs may include: interviews, surveys, minors, vulnerable groups, social media data, workplace data, personal or sensitive data.

Output should include: relevant ethics guidance, indication of whether formal ethics review may be needed, consent and data protection considerations, and link or reference to official ethics instructions.

Important rule: The tool should not decide whether ethics approval is granted. It should flag when human or institutional review is needed.

5. get_citation_style_guidance

Purpose: Retrieve approved citation and reference-style instructions.

Inputs may include: citation style, source type, quotation or paraphrase question, reference-list formatting question.

Output should include: formatting rule, approved example if available, source of the rule and warning if the style guide does not cover the case.

Important rule: The tool must not invent bibliographic details, DOIs, page numbers or sources.

6. generate_submission_checklist

Purpose: Produce a final checklist based on official programme requirements.

Inputs may include: thesis level, programme, submission stage, whether defence is required.

Output should include: checklist of required documents and steps, formatting checks, GenAI-use disclosure check, ethics or data appendix check where relevant, source document and version.

Important rule: The checklist must identify its institutional source and version.

Read-only thesis guidance MCP. A simple thesis guidance MCP could be built around the following resources: Bachelor's thesis guide, Master's thesis guide, assessment rubric, research ethics checklist, citation guide, GenAI-use policy, and submission checklist. It could provide the following functions:

Search thesis guide: Finds relevant sections from approved thesis instructions.

Retrieve assessment criteria: Provides assessment criteria for a specific thesis section.

Create checklist: Generates a checklist for a research plan, methods section, results chapter or final submission.

Explain GenAI-use rules: Retrieves official rules on GenAI disclosure and acceptable use.

Identify missing requirements: Compares a student's plan or draft summary with official requirements and flags missing elements.

A student might ask: "Use the official thesis guide and assessment rubric to check whether my research plan includes all required elements. Do not rewrite the plan. Only identify missing or unclear parts." The assistant should then use the approved documents and produce a checklist-style response.

Appendix E.10.1. Example MCP-Backed Thesis Workflow

A responsible MCP-supported thesis workflow using the skill-based operation discussed in Appendix D could be the following.

1. Planning stage

The student uses a thesis-planning skill to develop topic options or refine a research question. The MCP retrieves the programme's thesis scope, expected length, ethics requirements and GenAI-use policy.

2. Writing stage

The student uses a thesis-analysis skill to improve chapter structure and argument flow. The MCP retrieves citation-style guidance, methodology-writing instructions and literature review expectations.

3. Revision stage

The student uses a thesis-revision skill to respond to supervisor comments and prepare for submission. The MCP retrieves the final submission checklist, assessment rubric, defence instructions and GenAI-use disclosure requirements.

4. Defence preparation

The student practises likely questions. The MCP retrieves official defence procedure guidance, while the student remains responsible for answers, analysis and interpretation.

Appendix E.10.2. Example MCP Resource Design

This resource structure is intentionally designed to support students without giving the GenAI system unnecessary access to confidential or high-risk data. Attention should be paid to the structure, access and ownership for MCP in thesis work (Table A10).

Table A10. Structure, access and ownership for MCP in thesis work.

Resource Group	Example Content	Access Level	Update Owner
Thesis guidelines	Structure, length, submission rules	Public/internal	Programme coordinator
Assessment criteria	Rubrics, grading dimensions	Internal	Faculty or programme
GenAI-use policy	Permitted uses, disclosure rules	Public/internal	University AI policy group
Ethics guidance	Consent, privacy, data handling	Public/internal	Research ethics office
Library guidance	Databases, search strategy, reference management	Public	University library
Templates	Title page, abstract, declaration, appendices	Public/internal	Faculty administration
Defence guidance	Oral defence structure, expectations	Internal	Programme coordinator

Source: Table by author.

Appendix E.10.3. Example MCP Response Standard

An MCP-enabled thesis assistant should identify the institutional source behind its answer. A useful response standard is: "According to [document title], [version/date], [relevant section], the requirement is [summary]. This means that for your thesis you should [practical implication]. If your supervisor or programme has given different instructions, follow those and confirm the interpretation." The mandatory final section should contain the sources used: document title, version/date, section/page, retrieved on, owner/responsible unit, and confidence/limitations.

If the information is not available, the assistant should respond: "I could not find an official rule for this in the connected thesis guidelines. Please check with your supervisor, programme coordinator, faculty office, library or ethics body

before relying on this advice." This protects students from overreliance on generic GenAI output.

Appendix E.11. Security and Governance Principles

Because MCPs connect AI systems to external resources and tools, they require careful governance. For educational use, the following principles are recommended.

1. Use read-only access by default

Most thesis-support MCPs should begin with read-only retrieval of approved institutional documents. Write access, file modification, grade-system access or student-record access should be avoided unless there is a compelling institutional reason and proper governance. Any MCP-enabled system that can write, submit, delete, email, update records, change files, access restricted data or trigger administrative processes must require explicit human confirmation before action.

2. Apply least privilege

The MCP should expose only the minimum tools, resources and permissions required. Avoid broad permissions such as "access all university documents" or "read all files". Scope minimisation reduces the consequences of error, misuse or compromise.

3. Separate public, internal, restricted and sensitive resources

Resources should be classified into categories, and each category should have different access rules. For example, public (thesis guides, public library instructions), internal (programme rubrics, supervisor forms), restricted (student-specific documents, feedback, draft thesis files), sensitive (personal data, interview transcripts, ethics materials, health or workplace data).

4. Require explicit consent for student materials

Student drafts, supervisor comments, research material and personal information should not be accessed through an MCP unless the student has permission to use them in that environment and institutional policy allows it.

5. Avoid token passthrough and broad credential sharing

Authentication and authorisation should be designed deliberately. User credentials should not be forwarded across systems in ways that create unclear access rights or excessive permissions.

6. Avoid unrestricted local MCP servers

Local MCP servers may execute code or access local files. Students should not be encouraged to install unknown MCP servers or connect them to personal thesis folders without institutional guidance. If local MCP servers are used, they should be trusted, sandboxed and restricted.

7. Keep sources versioned and auditable

Thesis rules and GenAI policies change. MCP resources should include document title, version number or publication date, responsible unit, date retrieved or updated and official source location. The assistant should be able to say, for example: "This answer is based on the Faculty thesis guide, version 2026-01."

8. Log access appropriately

Where legally and institutionally permitted, MCP use should support auditability. Logs may record which institutional resources were accessed, but they should avoid unnecessary collection of student content or personal data.

9. Provide "not found" and "policy unclear" responses

An MCP should be designed to avoid false certainty. If approved resources do not answer a question, the assistant should say so and recommend checking with the supervisor, programme coordinator, library, faculty office or ethics body. The mandatory final section should contain sources used: document title, version/date, section/page, retrieved on, owner/responsible unit, and confidence/limitations.

10. Maintain human responsibility

MCPs can retrieve rules and organise guidance, but they cannot determine whether a thesis meets academic standards. Final responsibility remains with the student, supervisor, examiner and institution.

Appendix E.12. Minimum Governance Checklist Before Deploying a Thesis-Support MCP

Before deploying an MCP for thesis support, an institution should be able to answer the following questions: Which resources will the MCP access? Who owns and updates each resource? Which users can access which resources? Are all resources classified as public, internal, restricted or sensitive? Does the MCP have write access? If yes, why? Are student drafts or personal data included? Has data protection review been completed? Has research ethics guidance been considered? Are GenAI-use policies integrated and versioned? Does the MCP return "not found" when no rule exists? Are logs collected, and are they privacy-compliant? Are students told that MCP support does not replace supervisor guidance? Is there a process for correcting outdated or wrong resources? Are local MCP servers, if used, trusted and sandboxed? Are permissions narrow, documented and reviewable? If these questions cannot be answered, the MCP should remain limited to low-risk, read-only guidance. MCP resources should be documented with a standard template that is especially useful for institutions (see Table A8).

Appendix E.12.1. Recommended Wording for Students

Students using an MCP-supported thesis assistant should be told: "This tool may help you retrieve and apply approved thesis guidance, but it does not replace your supervisor, programme regulations, research ethics requirements or your own academic responsibility. You must verify all thesis requirements, sources, analysis and final content. Do not upload confidential, sensitive or personal data unless your institution explicitly permits it."

Appendix E.12.2. Recommended Wording for Supervisors and Institutions

Supervisors and institutions may use MCP-supported thesis tools to improve consistency, transparency and access to approved guidance. However, they should treat MCPs as governed academic infrastructure, not as informal plug-ins. Any MCP connected to thesis processes should be maintained, versioned, permissioned and reviewed regularly.

A well-designed thesis-support MCP can make GenAI use safer and more useful by grounding advice in approved institutional resources. A poorly governed MCP can create new risks by giving AI systems excessive access, outdated instructions or unclear authority. For this reason, MCPs should be introduced gradually, starting with read-only access to official guidance and expanding only when governance, security and educational responsibilities are clear.

Appendix E.13. Conclusions

MCP represents a significant step in the development of GenAI support for thesis work. It moves from general-purpose language generation toward institutionally grounded, contextually accurate and governed AI assistance. Used carefully, MCP-enabled systems can make GenAI support more reliable, transparent and educationally meaningful.

However, used without proper governance, MCP-enabled systems introduce new risks around data protection, source reliability and accountability. The guidance in this appendix is therefore a starting point for institutions and supervisors considering MCP deployment, not a blueprint to be followed without adaptation. Every implementation should be reviewed against local regulations, institutional GenAI policies, research ethics requirements and the evolving technical landscape.

Throughout, the core principle remains unchanged: MCP is a tool for improving access to approved guidance, not a substitute for supervision, disciplinary expertise or the student's own academic responsibility.

Appendix F. Running a Small Language Model Locally

For students and researchers who need privacy, offline access or freedom from subscription costs, openly available or open-weight SLMs can be run directly on an ordinary computer. Local model runners such as Ollama and LM Studio make this practical without advanced programming skills: the user installs the application, downloads a model, and runs it locally through a chat window or command line. If configured for local use only, the model can operate without an internet connection and without sending research data to an external cloud service.

Small open-weight models can be run locally on ordinary hardware. The practical constraint is memory rather than model choice: a quantised model needs roughly as many gigabytes of RAM as it has billions of parameters. Memory requirements depend on parameter count, quantisation level, context length, runtime overhead and hardware architecture. As a conservative practical guide, many quantised models in the 3–8-billion-parameter range can run on computers with 8–16 GB of memory, although speed, available context and output quality vary considerably (Z. Lu et al., 2024; Corradini et al., 2025). As of 2026, suitable families included Gemma, Llama, Mistral, Phi and Qwen. Even lighter "frugal" language-model approaches may be sufficient for many academic support tasks.

Getting started typically involves six steps: 1. Check hardware: at least 8 GB of memory; 16 GB and a recent processor give smoother use; 2. Download a model runner (e.g., Ollama or LM Studio) from its official website only; 3. Choose a small model (roughly 3–8 billion parameters, quantised) from the runner's built-in library and check its licence terms; 4. Download the model once; from then on, the setup works offline; 5. Confirm in the runner's settings that the model is accessible only from the user's own machine; 6. Test the model on non-sensitive material first to learn its speed, limits and typical errors before using it in thesis work.

Sensitive material, such as interview transcripts, unpublished data and confidential drafts, can remain on the student's own device, reducing many cloud-related data-protection risks. Local use can also avoid subscription costs after the initial download, support work during connectivity disruptions, and give institutions a path toward more controlled and locally governed AI services consistent with data-sovereignty requirements. SLMs require less computational power than frontier-scale systems, so they may also reduce the energy cost of simple GenAI-supported tasks, connecting individual practice to the environmental and infrastructural questions (see Chapter 1; Z. Lu et al., 2024; Corradini et al., 2025).

The limitations and remaining risks are equally important. SLMs are usually weaker than frontier systems in complex reasoning, long-context analysis, multilingual performance and source-grounded accuracy, although they can be effective for narrow and well-bounded tasks (Z. Lu et al., 2024). Like LLMs, they may also hallucinate, fabricate plausible references and lack up-to-date information unless connected to external search or retrieval tools. Their context windows may also be shorter, meaning that long texts can be truncated while the model still responds confidently. Local use does not automatically make data safe: the laptop itself becomes the data boundary, so an unencrypted, shared or compromised device can expose sensitive material (F. Wang et al., 2024). Data-protection law, institutional policy and research ethics approval still apply to local processing.

Responsible local use therefore requires basic safeguards (Table A11). Students should download models and runners only from official sources, check licences before use, keep software updated, restrict any local server to their own machine, protect the device with disk encryption and system updates, and continue to pseudonymise sensitive data where appropriate. Verification remains essential, and students should record the model name, version and relevant settings used, since documentation and disclosure obligations do not disappear when the model runs locally (F. Wang et al., 2024). Finally, the tool should match the task: local SLMs are suitable for language revision, short summaries, drafting support, coding assistance and checklist-based review, but they should not be relied on for literature synthesis, complex analysis or unsupported factual claims. For institutions, centrally managed local deployments are preferable to each student improvising their own technical setup.

Table A11. Suitable and unsuitable thesis tasks for locally run small language models.

Suitable Tasks	Unsuitable Tasks
Language revision and proofreading of the student's own text	Literature search and synthesis (no web access; higher fabrication risk)
Summarising short texts and drafts	Long-document analysis exceeding the model's context window
Drafting support for well-bounded sections	Complex analytical or methodological reasoning
Coding assistance for analysis scripts	Verification of facts, sources or references
Checklist-based review against given criteria	Any task whose output the student cannot independently check

Source: Table by author.

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Prompt Finder: Prompts by Thesis Task

The identifiers below refer to numbered prompts in Appendices A–D rather than to page numbers.

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Bachelor's level (undergraduate)

- Most prompts are given in paired versions. Bachelor's/undergraduate variants normally carry the first number in a pair, Check prompts carry "Undergraduate and Postgraduate Levels" and apply to both.

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- most prompts are given in paired versions. Bachelor's/undergraduate variants normally carry the first number in a pair, Master's/postgraduate the second; check prompts carry "Undergraduate and Postgraduate Levels" and apply to both.

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- most prompts are given in paired versions. Master's/postgraduate variants normally carry the second number in a pair; check prompts carry "Undergraduate and Postgraduate Levels" and apply to both.

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