HANDBOOK FOR PRACTICE-BASED THESES

Ann-Louise Glasberg, Pia Höglund-Ingo, Pia Liljeroth, Carolina Silin

NOVIA
UNIVERSITY OF APPLIED SCIENCES

Handbook for Practice-Based Theses
Ann-Louise Glasberg
Pia Höglund-Ingo
Pia Liljeroth
Carolina Silin

Graphic design:
Jenny Wiik

Novia University of Applied Sciences, Wolffskavägen 33, 65200 Vasa, Finland

Novia publikation och produktion, serie L: Läromedel 1/2025
ISBN: 978-952-7526-54-5 (Online)
ISSN: 1799-4195

KONST SAMFUNDET

Svenska kulturfonden

Handbook for Practice-Based Theses

Ann-Louise Glasberg, Pia Höglund-Ingo, Pia Liljeroth, Carolina Silin

Novia University of Applied Sciences 2025

FOREWORD

Universities of Applied Sciences actively co-operate with working life in both teaching and research. Practice-based theses have become an important part of students' education. These theses aim not only to apply theoretical knowledge, but also to develop practical solutions and concrete products that benefit different sectors and industries.

In 2003, the first Finnish book, *Toiminnallinen opinnäytetyö*, written by Hanna Vilkka and Tiina Airaksinen, was published to guide both students and supervisors in writing practice-based theses. The latest Finnish book on writing theses that combines data collection and scientific writing with theory and practice in a way that develops working life, *Kirjoita itsesi asiantuntijaksi – Opas toiminnalliseen opinnäytetyöhön* (by Kostamo, Airaksinen, and Vilkka), was published in 2022.

The Swedish version of the handbook you are now reading is the first to be written in Swedish for Finnish conditions. The handbook aims to offer Swedish-speaking students and supervisors a practical handbook on how to proceed when doing a practice-based degree thesis.

The handbook was written within the framework of Novia University of Applied Sciences' project *Funktionella examensarbeten (Functional Theses)* (1.12022 – 31.12.2024), funded by the Swedish Cultural Foundation in Finland and the association Föreningen Konstsamfundet r.f. The handbook has been developed by senior lecturers and principal lecturers from the Department of Health and Welfare at Novia UAS, with the intention that it can also be used in other degree programs at universities of applied sciences.

The first version of the handbook was published internally at Novia University of Applied Sciences (UAS) in December 2023 and was used during the thesis process in the spring semester of 2024 by students and lecturers at the Department of Health and Welfare. Lecturers from other departments at Novia and other universities also had access to the handbook during the spring semester of 2024. During the autumn semester of 2024, the handbook was revised based on feedback from students and their supervisors, as well as feedback collected through interviews with those who had used the handbook. Before publication, the handbook has been expanded to include more practical examples, also from sectors other than social and health care, and the text has been clarified.

At Novia UAS we have degree programmes in English. This English version of the handbook offers also our English-speaking students' tools for conducting practice-based theses.

Turku, 8.4.2025
Pia Liljeroth, Project Manager

CONTENTS

1 INTRODUCTION

The purpose of this handbook is to provide you with tools and guidance for writing a practice-based thesis. At the same time, we aim to contribute to improving the process surrounding theses at universities of applied sciences and to encourage more projects that involve planning, testing, developing, and evaluating products, services, and processes. This benefits you as a student, the university of applied sciences, and the development of the professional field and industry.

When you start your thesis, you already have knowledge of research methodology and know how to structure a thesis and what its components are. You also know that it is common to carry out a survey of some kind as part of your thesis. But have you ever thought that your thesis could be something other than an investigative thesis that describes and maps something? Or how about the following examples done by students at the Department of Health and Welfare in Turku and Vaasa:

- A group of students created visual anti-bullying material for children in grades 1–3. The result was an anti-bullying poster and activity cards aimed at children in the after-school activities of Barnavårdsföreningen r.f. (Children's Welfare Association).
- Another group of students chose to focus on young people's sleep habits and created a solution-oriented tool for school coaches to use in their work with students in upper elementary school. The tool includes cards with true and false statements about factors affecting sleep, causes of sleep problems, and possible solutions. It also features a visual model designed to support young people's evening routines and a follow-up form to help them become more aware of their sleep habits.
- As a pair project, students developed a process description for Barnavårdsföreningen (Children's Welfare Association) to support group dynamic development in group activities. The process description demonstrates how various group-promoting activities can be coordinated into a cohesive whole that fosters a sense of belonging, participation, and cohesion in family support groups.

A thesis can take many different forms. For example, it can involve small-scale development projects resulting in podcasts, vlogs, handbooks, brochures, training sessions, methods, or applications.

What are the advantages or benefits of practice-based theses? Universities of applied sciences aim to strengthen the connection between education and working life. Close collaboration with stakeholders in the relevant field also enhances your opportunities to build and establish connections with potential employers. In turn, this benefits the professional field itself, as you, together with the university of applied sciences, contribute to developing new relationships or deepening existing ones with actors in the industry.

The handbook defines what a practice-based thesis is or could be. It is also designed to help you reflect on who your most important collaborators are within the framework of your writing process, whether you are working alone or in a group. It explains how to build a knowledge base for your project. The handbook also highlights various models for the development process itself, as well as research and development methods that may be relevant to you. It addresses important ethical considerations and discusses factors that can decrease or increase the reliability and usability of the thesis and its product. Finally, an example is provided on how a practice-based thesis can be structured and what the different chapters may include.

The purpose of this handbook is to provide you with practical tools and tips for completing a practice-based thesis. Read it from your own perspective and make use of the sections that are relevant to your project. You can skip other parts if they are not applicable to your thesis. This handbook is not comprehensive – you might not, for example, find the exact development method that suits your project, and in such cases, you will need to consult other sources. The data collection methods presented in this handbook are merely suggestions, and to learn more about them, you may need to refer to one of the many books on research methodology available at the library. Use this handbook as a flexible resource tailored to your needs and your thesis project.

We hope you enjoy your reading!

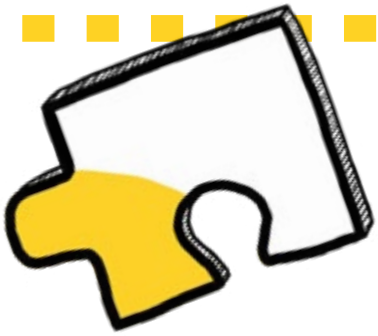
2 WHAT IS A PRACTICE-BASED THESIS?

A practice-based thesis (in Finnish *toiminnallinen opinnäytetyö* and in Swedish *utvecklingsinriktat examensarbete*), is a project aimed at developing working life. Development work involves using knowledge from research or practical experience in a systematic way to create something new or improve existing products, production processes, methods, or systems etc.

The purpose of a practice-based thesis is to develop, instruct, or organize practical activities. It results in a product, a service, a process, a concept, or an environment. Examples include a book, instructions, a handbook, an information package, a development plan, a portfolio, an exhibition booth, an event, a podcast, a workshop, or further training. It could also take the form of a radio program, a TV program, an artistic production, or a work of art. Examples of processes include an admission or discharge process in healthcare or a check-in process in tourism. In this handbook, the term product is used to refer to all outcomes of practice-based theses.

Practice-based theses differ in many ways from research-based theses, particularly in terms of materials and sources, research and development methods, and outcomes. There are also differences in the structure and layout of the reports. Despite these differences, the thesis should be characterized by an investigative and reflective approach, grounded in a research-oriented methodology.

Adopting a research-oriented approach means starting with an idea that is refined and defined, creating a timeline, planning the content and methods to be used, gathering data, investigating and evaluating, and finally writing the report.



3 COLLABORATION AND DIVISION OF RESPONSIBILITIES

The work on the thesis can be described in many ways. It has been compared to a journey, an adventure, and a creative process. It has also, admittedly, been referred to in less flattering terms. But above all, one could say that it is a “tool for thinking”, which it truly is, as the process of working with the text and mapping out the various components provides greater clarity and a deeper understanding of what you are investigating. In this way, you also gain expert knowledge. Regardless of how one describes the process of writing a thesis, your studies take on a different character when you enter the thesis process. The schedule no longer consists of many courses; instead, there is suddenly time reserved for you to work independently and be even more self-directed in your studies than before. This may also place entirely new demands on your work routines.

3.1 Collaboration with Yourself

Regardless of whether you are writing your thesis alone, in pairs, or as part of a group, you need to establish good work habits and actively take responsibility for moving your own writing forward.

How one writes and progresses with their text is a personal matter. Every student needs to find their own way. Writing is a craft, and to get better, you need to practice. But what can we do to get started? On the next page, you will find some tips and ideas that can support you in the thesis process:

An important part of the writing process is accepting that you often work in a fragmented and unsystematic way at the beginning. The thesis is a creative process, something that develops over time, and so does the overall picture.

Choosing a topic is a key motivation factor. Most students know what they are interested in, and often it is something that personally engages them. Having a personal commitment to your topic can be a good thing, but if the engagement and interest in the topic are too strong, objectivity, neutrality, and openness can be jeopardized. It is also important to remember that interest and motivation for a subject often grow during the process.

Regardless of whether you are writing alone or in a group, it is important to reflect on the relevance of the topic and how feasible it is in practice. Writing a thesis often involves revising the original ideas, sometimes multiple times, to avoid various obstacles. The time aspect is one factor that can affect the feasibility of the project. Together with your supervisor, it might be a good idea to create a timeline that considers how long different stages are likely to take.

3.2 Collaboration Within the Group

In some programs, you can write your thesis in pairs or as a group. A group consists of three or more people who collaborate to achieve a common goal, and within higher education, working in groups is a common learning method. Whether it is for completing courses or writing a thesis together, the purpose remains the same. You work in a group to develop competence and expertise together and with combined effort.

The fact that we learn so much in a group context during our studies is also linked to the instinctive and natural way humans learn. Learning to share and develop ideas in a group is an interesting way of learning. At the same time, university students also have plenty of experience with group work from previous levels of education. Sometimes group work has been successful, and sometimes it has been less constructive. We carry these experiences with us, both good and bad. Working in pairs or groups is not something we can or cannot do. It is something we learn through practice.

But how can we improve our group work skills? What aspects should we consider and discuss before starting the actual work? In this context, group collaboration refers to when a pair or group of students work together to write their thesis.

There are several things to reflect on regarding group collaboration. The advantage of writing a thesis together with fellow students is that there is an opportunity to discuss the topic, as multiple students bring ideas, and the group can advance the thesis together. More people can also conduct larger literature reviews, handle a greater volume of data, and distribute the workload more efficiently throughout the writing process.

However, there are also disadvantages. There needs to be a willingness among students to express what each of them wants, to clarify what each person wants for the different sections, and to establish the direction for the entire project. There is also a certain risk that you may not agree on some aspects. A good starting point is to formulate the purpose of the project as early as possible and to continue writing together. This way, it becomes easier for each member to evaluate where the project is headed. If the group gets stuck for any reason, it is helpful to involve the supervisor, who can act as a discussion partner and offer perspectives on the process. A common “mistake” is when the group members divide the thesis too early and start writing separately. Problems arise when the different parts need to be combined into a coherent whole. It may happen that group members do not have the same understanding of the overall structure. It is also possible that the sections become disjointed, making it impossible for the reader to discern a clear thread running through the thesis.

Smaller conflicts can always be resolved by maintaining good relationships and open communication within the group. Unfortunately, conflicts can also become insurmountable, and as a last resort, the group may have to split, with each member working individually.

Being able to work in a functioning team, where the group members are engaged and work purposefully toward the shared goal, is a rewarding experience.

Before starting the work, it is worth raising, for example, the following points for open discussion within the group:

What can you do and what should you do to create a good team spirit within the group? Perhaps you could do a pleasant activity together to get to know each other and start building a strong sense of belonging.

Discuss which principles are important for each member of the group to make the collaboration work in the best way. Collect previous group work experiences, both the good and the bad, and note the preferences of the group members.

What do you do if someone in the group is too passive or if someone dominates? And how do you handle a situation if someone is always late to meetings or stops responding to the group's attempts to contact them?

Is it important for the group to be organized and structured? Should the group have a convener, a chairperson, and a secretary? Does the group need to establish fixed working hours for when the work should be done?

Discuss the level of ambition as well. Should the main goal be to get approved, receive a very good grade, or something in between?

With the support of the questions mentioned above, it's a good idea to create a group contract. Below in Figure 1, you can see what such a contract might look like. The group contract is also available in the appendix (Appendix 1) where it can be filled out or printed.

Contact information of group members:	
Plan for the group's internal communication:	
Meeting schedule:	
The group's meeting routines:	
The group's internal rules:	
Consequences for rule violations:	
Date for evaluation and update of the contract:	

Signatures of group members:

Name **Name**

Name **Name**

Figure 1. Group Contract.

A group contract is an agreement that regulates the internal communication and collaboration among group members. The contract should also undergo a mid-term evaluation, where the purpose is for the group members to evaluate their work together during the process. In addition to evaluating the work itself, the group also needs to evaluate their group contract, which serves as the agreement for their collaboration. How has the collaboration worked so far? Is there a need to make any changes to the contract? The group contract is primarily a matter for the group itself. Only in exceptional cases should the supervisor be involved in the group's internal agreements.

3.3 Group Members' Roles and Resources

One possible way to get to know each other well at the beginning of a collaboration is to have a group discussion about the group members' strengths and resources. Consciously making use of the group members' resources can be a valuable starting point when it comes to solving obstacles that have arisen or simply advancing the thesis. Working towards open and honest communication from the beginning of the collaboration also ensures that individual group members feel secure in sharing their thoughts and opinions. But how can you identify your group members' resources?

Discuss as a group
Organize an open discussion where each group member can share with the others what they believe to be their own strengths and resources. These could include knowledge, skills, prior experiences, and even personal traits. This group discussion simultaneously fosters awareness of each other's competencies.

The introduction round can also be used for group members to specifically describe their strengths in relation to the thesis assignment the group is about to undertake, as well as their thoughts on what they can personally contribute to the thesis process.

Conduct a SWOT analysis
A SWOT is a four-field diagram where each member of the group identifies their strengths, weaknesses, opportunities and threats. Based on the completed four-panel diagram, the whole group can discuss the group's strengths together.

Provide feedback
Once the work and writing have started, you can give regular feedback to each other based on the contribution made by each of the group members. In this way, the group's members are also made visible both as individuals and based on work effort. The group can also request feedback from the supervisor and the external commissioner, especially if the group finds it challenging to assess the level of the work performed. Regardless of the source, feedback can be used to improve or completely revise the group's working methods and roles.

In some cases, tasks within the group can be allocated based on the strengths and resources of its members. Overall, it is important to maintain open and honest communication, and for group members to remember to encourage each other, actively acknowledge one another's contributions, and highlight strengths and resources. This fosters a positive collaborative environment and makes the thesis process more productive. Utilizing various tools and resources from the beginning, such as communication platforms that facilitate collaboration and information sharing, makes it easier to provide feedback on each other's work and creates a more transparent process. Good collaboration is characterized by reliability and mutual support, not competition.

3.4 Collaboration with the Supervisor

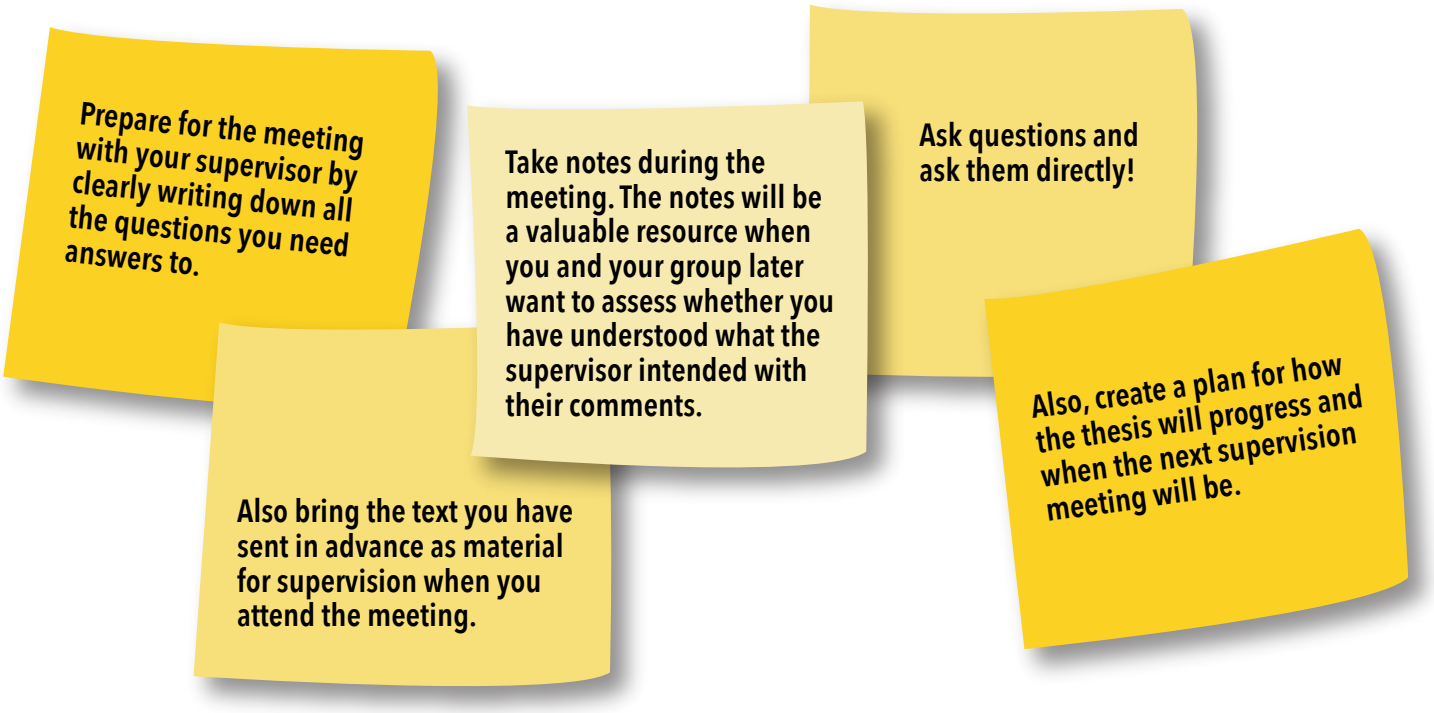
Students are entitled to receive supervision, and the purpose of supervision is to aid and support their professional development process. The supervisory role can take on multiple forms. Your supervisor may alternate between being an advisor, coach, consultant, or mentor, and at times, may directly teach and inform you about how something should be done. Supervision should actively create learning opportunities and challenge students to advance their professional development. In today's university of applied sciences pedagogy, student-centred supervision is commonly applied. Supervision serves as a support for learning, with the goal of providing structure, guidance, and encouragement to support the thesis process.

However, a supervisor does not hold your hand throughout the thesis process. The supervisor's role is rather to assist with defining the purpose, monitoring the process, and providing advice on how to structure it. The supervisor helps lay a foundation for the thesis process so that potential interviews, observations, and outputs are built on a solid base. Starting these activities too early can complicate the development process.

Since the thesis is an independent project for which the student is responsible, it is not the supervisor's task to dictate exactly what should be done. The supervisor can offer guidance and act as a sounding board but also has the role of issuing warnings if the thesis appears to be heading in an unproductive direction. Supervision does not guarantee that the thesis will pass; instead, it serves as a resource for the student during the process. The student always bears responsibility for the outcome.

Strange as it may seem, the student bears significant responsibility for ensuring that supervision functions well. It is the student who needs to actively make use of the supervision offered. It is also the student's responsibility to ensure that the supervisor has the necessary conditions to provide effective guidance. A good way to support the supervisor in this role is to provide the necessary materials for feedback. Ideally, this material should be in written form. By submitting written material within the agreed timeframe, the supervisor can better prepare for the supervision session.

Just as completing a thesis is a process, supervising a thesis is also a process. At the beginning of the process, the supervisor typically focuses on the purpose, goals, and content of the theoretical framework or the knowledge base of the thesis. Subsequently, the focus shifts to selecting a model for the development process and data collection methods. As the supervisor's focus evolves, the feedback provided to the student may also change. It is only toward the end of the supervision process that the supervisor can assess whether the thesis forms a cohesive whole. Some practical tips:



Supervision can also consist of "learning clinics" or seminars where the writers are guided through a group context. The supervisor's task is to encourage and ask questions, doing so alongside the other seminar participants. Different projects require different levels of supervision, and for the same reason, the supervisor must assess the level of support needed.

The supervisor's role, together with the examiner, is to ultimately evaluate the thesis with a grade. At many institutions, group cooperation among students may result in different grades if the workload has been unevenly distributed. One way to make this visible is for the group members to evaluate both the group's contribution and their individual contributions.

Providing good supervision is truly an art. But receiving supervision is, in many ways, equally challenging. The right kind of guidance helps the writer in the writing process, while the writer's primary task is to lead their own process and fill the thesis with content.

3.5 Collaboration with the External Commissioner

It is often the students themselves who find their assignments. During internships or in connection with individual courses, ideas for both topics and collaborators may arise. It may also be the case that an external commissioner wants different types of surveys or development work related to a specific theme. The students can, in turn, find subtopics related to these. Supervisors may also have ideas or be involved in projects where there is room for multiple students. The university may also apply a model where it offers students different thesis projects to choose from. In these cases, either the external commissioner or the university's teachers have initiated the assignments.

It is also worth reflecting on any potential costs associated with the thesis and what these might be. If the thesis is written on behalf of an external commissioner, it is a good idea to bring this up for discussion in a meeting with the supervisor and the external commissioner before the process begins.

The responsibility for ensuring the progress of the thesis process primarily lies with the students themselves. External commissioners rarely play a guiding role in the process. Their task is fundamentally to formulate a purpose or a need for the product itself, if it concerns a product. The external commissioner's role is also to define the criteria for a good product. The collaboration between the student and the external commissioner is influenced by the nature of the assignment. When the collaboration begins, a contract should be made between the student and the external commissioner. There are also strong reasons to discuss intellectual property issues. The student is responsible for maintaining contact with the external commissioner. Many external commissioners also wish for the students to request research permission from the relevant organization.

It is a good idea to have a discussion with the external commissioner regarding what will happen to the product after the thesis has been completed. Questions such as who owns the product, and if the external commissioner is the owner, do they have the right to revise or develop the product? Such intellectual property issues are also worth addressing in the initial stage of the project.

Table 1 summarizes the responsibilities of the students, supervisors, and external commissioners.

Table 1. The responsibilities of the students, supervisors, and external commissioners.

PARTY	RESPONSIBILITY
Student	▪ Investigate and analyse material based on the project's purpose. ▪ Communicate with the supervisor and external commissioner. ▪ Document and report on the development work. ▪ Clarify the rights regarding the material used and intellectual property concerning the product in the future. ▪ Meet deadlines and quality requirements.
Supervisor	▪ Provide guidance and support throughout the process. ▪ Ensure that the student has the necessary resources and tools. ▪ Give feedback on the thesis. ▪ Inform the student about copyright issues. ▪ Follow up on the project and evaluate progress.
External commissioner	▪ Clarify the project's goals and expectations. ▪ Provide necessary information and resources. ▪ Inform about the rights regarding the product being developed, such as ownership and licensing. ▪ Give feedback that can help the student move forward in the process through discussions on how the results of the thesis can be used in the future and any potential limitations. ▪ Be available for meetings and communication as needed.

It may be a good idea for the external commissioner to also provide an assessment of the product, while the task of the university is to evaluate the thesis, both the product and the written report. In many cases, an external commissioner may have a different opinion regarding the quality and usability of the product compared to the supervisor and examiner at the university. It is natural that the perceptions differ, as the criteria for the thesis may vary between the two parties. An external commissioner may, therefore, consider the thesis to be of higher or lower quality than the university's evaluator does. However, it is the university's evaluator who is responsible for assessing and evaluating the final thesis (including the product). A statement from the external commissioner can complement the school's statement, where the external commissioner describes how the results of the thesis can be used in future activities.

4 KNOWLEDGE BASE

For a development project to be credible and reliable, it must be based on knowledge. The sources that make up the knowledge base depend on the context in which the thesis is done, what is to be developed, and how it will be done. The sources used for the knowledge base should be versatile and purposeful. This means that the knowledge base should only contain necessary information, that is, the information needed to realize the practical part. Anything not necessary for the development of the product should be excluded.

When the thesis process begins, and throughout the entire process, it is important to consider what kind of knowledge is needed, why it is needed, where the knowledge can be obtained from, how it should be collected, and how it will be used.

The sources for the knowledge base can be divided into two main categories (see Table 2):

Existing data: Already published data.

Collected data: Data that arises because of the students' data collection.

Existing data is data that is already published, created by someone other than the students writing the thesis. This data provides, for example, background information on the subject, the environment in which the development work will take place, and the target audience. In Chapter 4.1, the types of data that it consists of are presented.

In addition to the existing knowledge base available from previously published data, students can collect their own data for their development work. This data arises because of the students' own data collection. The types of data in this category are presented in Chapter 4.2. In Chapter 6, data collection and analysis methods that can be used when collecting data for the knowledge base are discussed. Table 2 provides examples of different data for a practice-based thesis.

Table 2. Different data for the thesis (based on Kostamo, Airaksinen, and Vilkka, 2022, p. 47).

Existing data: already published data	**Collected data: data that arises because of the students' data collection**
For example **Theories** **Scientific publications** Scientific articles Research reports Theses Books, book chapters **Materials produced within the organization where the work is conducted** Vision, mission, values Strategies Operational, business, and communication plans Governing documents Annual reports Instructions Protocols Handbooks Surveys, investigations **Materials regulating the activities** Legislation Curricula **Materials produced by national institutions** Statistics Registers Handbooks Instructions Governing documents	Data collected through methods such as **Research methods** Participatory observation Systematic observation Surveys Thematic interviews Structured interviews Focus group interviews Feedback surveys **Development methods** User panel Documented discussion Expert panel Future workshop Learning café MeWeUs SWOT analysis Generative techniques Drama Photos and drawings Mind and concept maps Benchmarking Diaries, such as from experimental activities

In this example (Figure 2), literature that can be used in the knowledge base for a practice-based thesis, which aims to result in a visual anti-bullying material for after-school activities, is listed.

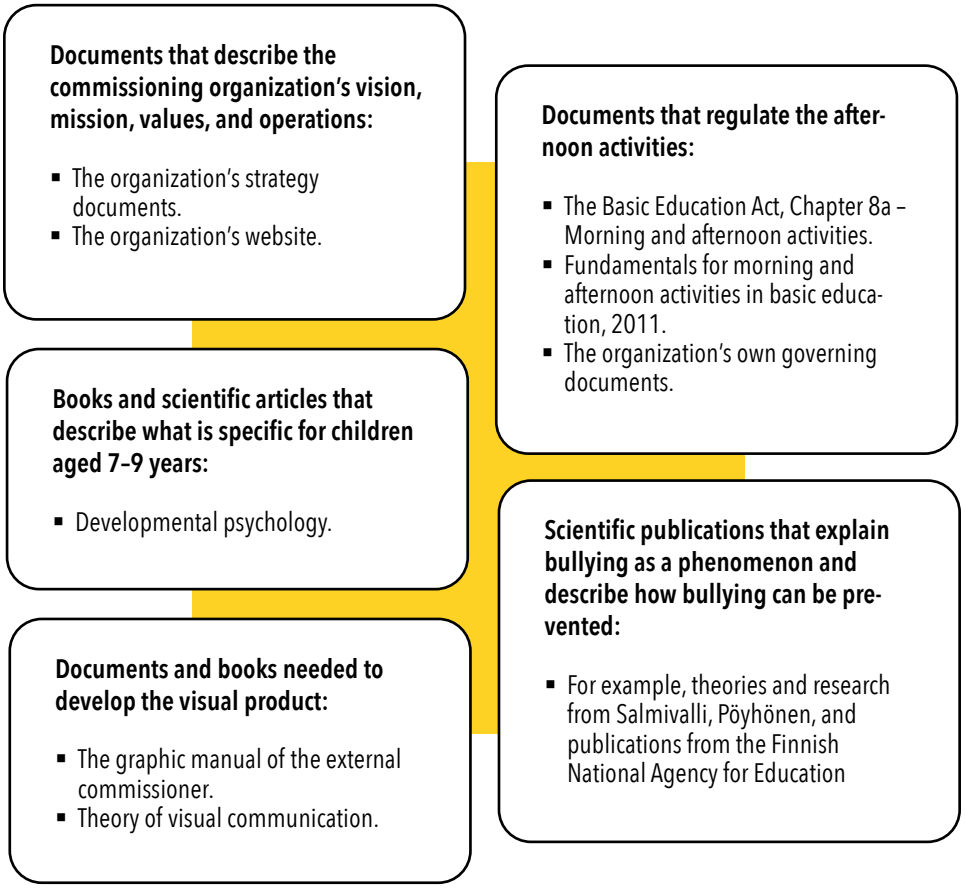


Figure 2. Example of a knowledge base for a practice-based thesis.

4.1 Existing Data: Already Published Data

Existing data refers to data that has already been published. This data can take various forms and may have been produced in different contexts. Within the scientific community, scientific evidence is held in the highest regard. When conducting a practice-based thesis, the task at hand determines what should be included in the knowledge base.

4.1.1 Theories

A scientific theory is an explanatory model used to investigate and explain reality. Erkell (2019) defines a scientific theory as "a model that can summarize the results of observations and experiments and explain the causes of the phenomena being studied [translated by the authors]." Theories emerge because of practical research activities and are subsequently applied in practice. Thus, a theory is knowledge derived from research that can serve as a basis for decision-making.

In practice-based theses, theories can be used to examine and justify the choices made. A theory functions like a pair of glasses through which the subject is examined. The theories that can be used depend on the purpose of the work. Ideas about which theories may be applicable are gained by reviewing previous research to see which theories researchers have used in their studies. Theories presented and discussed during the education program may also prove useful in the thesis.

4.1.2 Scientific Knowledge

Scientific knowledge, together with material produced in the operational environment where the thesis will be conducted, forms a solid foundation for the knowledge base. Scientific knowledge relevant to the area being developed can be found, for example, in:

- Scientific articles
- Doctoral or licentiate dissertations
- Research reports
- Books and book chapters.

4.1.3 Materials Produced by National or International Institutions

To conduct development work, it can be helpful to know, for example, who and how many people use a service or whether there have been changes in the behaviour of the target group. In such cases, registry and statistical data can be important material for the knowledge base. Some activities are also regulated or influenced by governing documents, directives, standards, definitions, guidelines, instructions, and manuals produced at the national or international level.

4.1.4 Materials Regulating the Activities

There are materials that regulate activities within the context where the thesis is conducted, which may be important to include in the knowledge base. Examples of such materials include:

- Laws, regulations, and statutes
- Curricula.

4.1.5 Materials Produced within the Organization where the Work is Conducted

To contribute to the development of materials, services, or the improvement of operations in a specific context, it is essential to familiarize oneself with the operational environment. To do this, materials produced in the operational environment where the thesis will be implemented are important. Such materials may include, for example:

- The organization's vision, mission, strategy, and/or values.
- Business, marketing, communication, or operational plans.
- Instructions, manuals, regulations, and other documents or materials used in the organization.
- Various materials available on the organization's website.
- Meeting minutes, memorandums, and annual reports.
- Studies, surveys, and investigations conducted within the operational environment.

These materials may be in written form, but they can also take the form of videos or audio materials.

4.2 Collected Data: Data that Arises Because of the Students' Data Collection

Collected data, or data that arises because of data collection, can take various forms. It can be written, resulting for example from transcribing interviews, observations or taking notes during a learning café. It can also be visual data, collected, for example, when staff participating in the study photograph their daily work.

There are several reasons why students should collect their own data for the development work. These reasons might include:

- The thesis is intended to result in a product or event for a specific target group, and the needs of that group are not well-known.
- There is very little published information on the subject.
- The design of the final product requires that users or the external commissioner test it and provide feedback.

Students themselves plan which data, in addition to the already published data (see chapter 4.1), they need to carry out their development work. They also plan and carry out the collection and analysis of data. This data can be collected and analysed using research methods and/or various development methods or tools. These methods are further discussed in Chapter 6.

5 THREE MODELS FOR THE DEVELOPMENT PROCESS

In this chapter, three possible models for structuring development processes are presented. These models are based on a common approach: co-creation. When writing a practice-based thesis, one must choose a model to apply. In all three development process models presented in this chapter, the user plays a crucial role. Note that there are several other models that can be used to structure development processes, but they are not included in this handbook.

Today, co-creation is becoming increasingly common in both the private and public sectors. Customer interaction and understanding are emphasized, and the user's role is central. By engaging users (patients, clients, or customers) throughout the entire development process, the solutions developed become more relevant, attractive, and useful for the target group. Here are some of the principles formulated for complete co-creation:

1. **Together.** Co-creation is based on equal collaboration between all internal and external parties.
1. **Progressive.** Users and other relevant parties collaborate throughout every phase of development.
1. **Productive.** Co-creation results in the developed solution being implemented.
1. **Transparent.** In co-creation, all relevant information is accessible to all parties.
1. **Supported.** All parties support the development process.

As a student, it is your responsibility to lead and coordinate the development process. It is not always possible to engage the end user during every phase of the process. You may not be able to apply total co-creation, but you can still use co-creation as an approach. You need to decide when and how users should be involved in the development process.

Having accurate information about the target group for whom you are developing a product or service is crucial. Building a product or concept solely on assumptions and guesses is problematic. There is a risk of making incorrect assumptions about the needs and interests of clients, patients, or customers. It is also possible to have a completely inaccurate perception of how usable and accessible the product is for the target group. Some of our assumptions may be correct, but they are often very general. By testing these assumptions with real users, we

can obtain specific information that is essential for developing a product that meets the target group's needs and interests.

To develop products, concepts, and operations, cyclical processes that are repeated can be used (these processes are referred to as iterative in some sources). The build – measure – learn feedback loop is one example of a cyclical process.

Next, three different models for implementing development processes are presented: the build – measure – learn feedback loop, service design, and the implementation process. The advantage of using a model in a development process is that it provides structure to the work. For students, following a model with concrete steps makes it easier to carry out the development process.

5.1 The Build-Measure-Learn Feedback Loop

In his book *The Lean Startup* (2011), Eric Ries describes the build-measure-learn feedback loop (see Figure 3), a model for development work. The original purpose of this model was to enable rapid product development in newly established companies. In a constantly changing world, we cannot design a perfect product at a desk; instead, it is more effective to validate the need and interest for the product through experiments and feedback from real users.

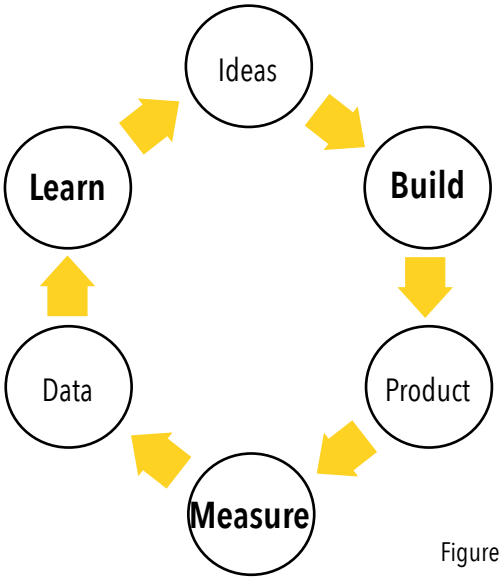


Figure 3. The build-measure-learn feedback loop according to Ries (2011).

The development process begins with a collection of ideas that are transformed into a product. The goal is to create a Minimum Viable Product (MVP) and test it as quickly as possible on customers or clients to gather feedback that can be used to further develop the product. The Minimum Viable Product is a version of the product that allows for the execution of a feedback loop with minimal effort and time. At this stage, the product is not perfect and often lacks several key features.

The purpose of the Minimum Viable Product (MVP) is to initiate the learning process by removing all features that are not essential for the specific test being conducted.

We need to measure how the MVP is received and used by customers and clients. This measurement is done using data collection methods such as observation or interviews. When developing a product, we make assumptions – these may relate to how appealing, user-friendly, or age-appropriate the product or service is. These assumptions need to be clearly defined; otherwise, the feedback we receive from the target group may be difficult to interpret.

One way to ensure clarity is to document the assumption before conducting the test. Inspired by Strategyzer's *Test Card* (*The Test Card*, n.d.), the following test card has been created for testing an assumption (see Figure 4). The test card is also included as an appendix (*Appendix 2*) in this handbook.

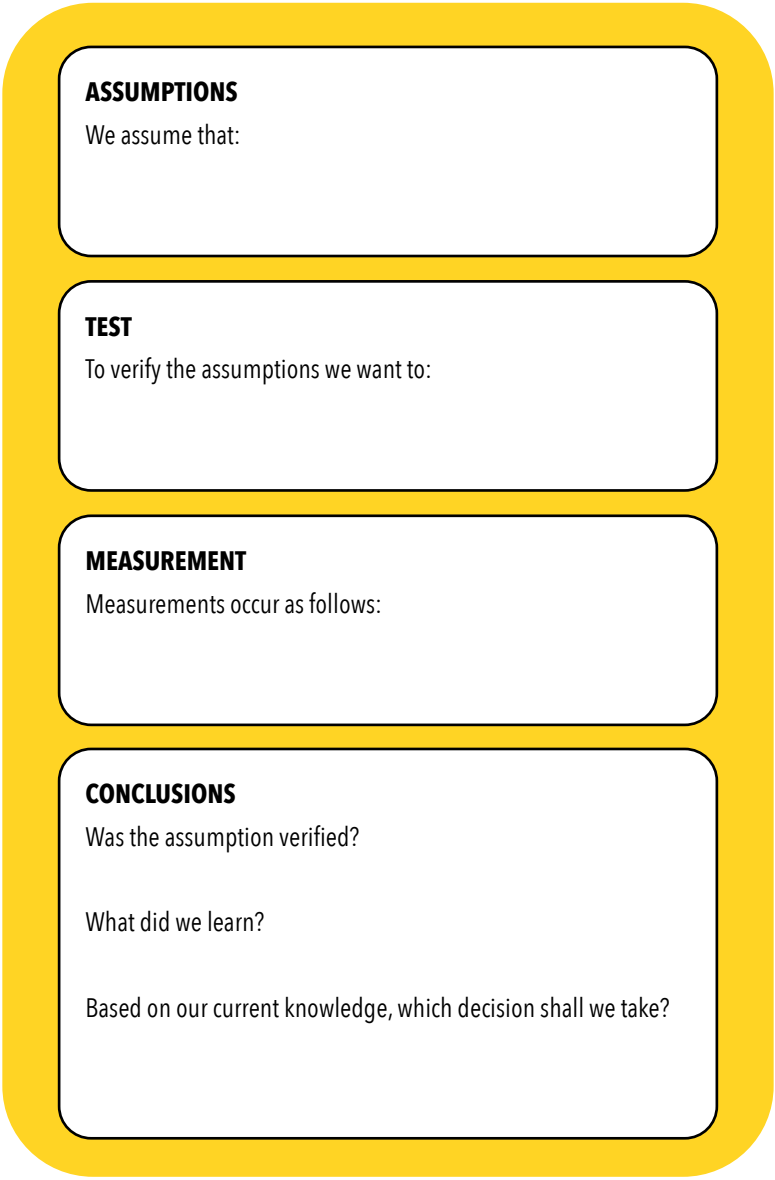


Figure 4. Test card for testing assumptions.

At the end of the build-measure-learn feedback loop, we face a decision. Based on what we have learned from the loop, we need to make a choice. Should we continue developing the product in the same direction, or should we change course? Making a U-turn, a significant change, is also known as making a pivot. In business economics, this could mean targeting a different customer segment or choosing a different revenue model. In the social and healthcare sector, it might involve changing the approach to reaching the target audience — for example, abandoning the idea of using a brochure and instead reaching the audience through a short video. During a thesis project, multiple loops are carried out to test different assumptions. The product is developed using the knowledge gained as a result of these loops.

Recommended literature for the build – measure – learn feedback loop

Ries, E. (2011). *The Lean Startup: How Today´s Entrepreneurs Use Continuous Innovation to Create Radically Successful Businesses*. New York: Crown Business.

5.2 Service Design

The second model for structuring a development process presented here is service design. The focus of service design (human-centred design) is to develop services and service experiences based on the user's or client's needs. In service design, the human is placed at the centre. The development is based on understanding the user, the service itself, and its context. The model can be used in different ways depending on the nature of the project, and there is a variety of methodological approaches depending on the goal. The goal can be to change existing services or develop new ones, but also to reorganize operations. The starting point is to explore needs or problems, then find solutions, which are finally tested and evaluated.

Development processes realized with the help of service design can be described using the double diamond model (see Figure 5). The double diamond model has its roots in Béla H. Bánáthy's (1996) model for designing social systems and the British Design Council's model for design processes. At the beginning of the process, there is a challenge. The first diamond shows how the development process begins by opening up, by gathering information related to the challenge, and by exploring the needs of the target group. At this stage of the development process, it is not exactly clear what problem to solve. To identify the needs and get a clearer picture of the problems, various data collection methods, such as interviews and observations, can be used. Data collection can take place within the framework of an interactive workshop or with the help of generative techniques. It is important to give the exploratory phase a sufficient amount of time. In the following step, the focus narrows; it is now time to conduct an analysis that results in a definition of what the problem is. In other words, the information and identified needs are used as a basis for the analysis. Now the problem to be solved has been pinpointed.

The second diamond shows how the idea generation phase involves opening up to many different solutions to the problem and then choosing the concept to work further on. Idea generation can, for example, take place through brainstorming. As part of the development of the concept, the build – measure – learn feedback loop can be used. Choosing a concept to refine involves narrowing the focus and making it more specific.

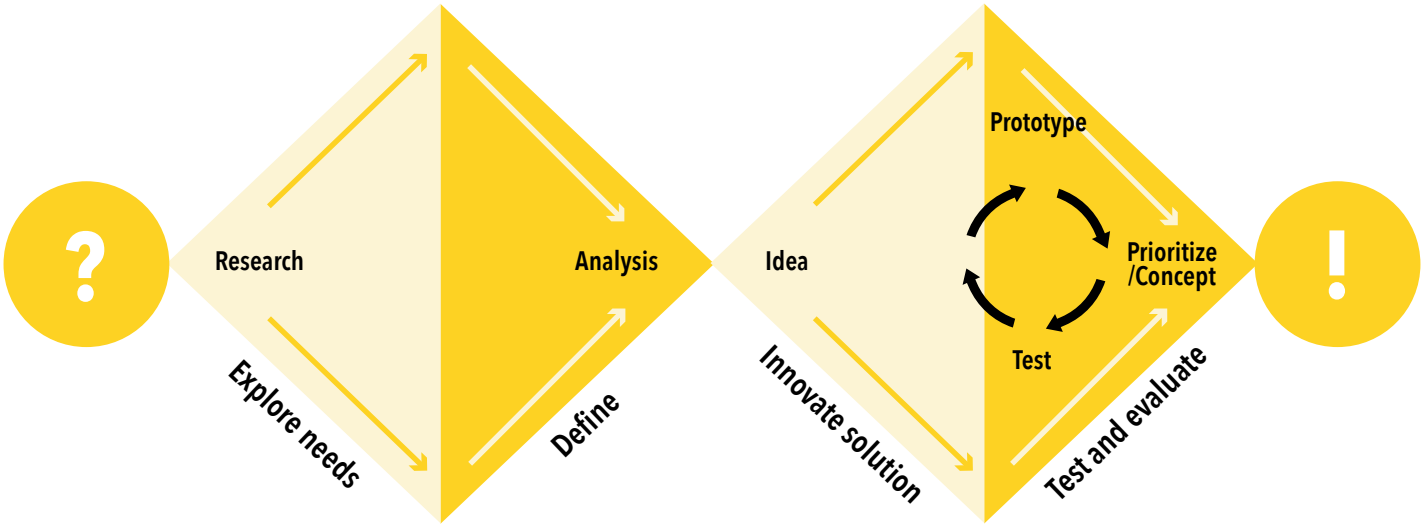


Figure 5. Diamond model inspired by the double diamond model applied by Produktboard (n.d.).

Service design can be described as a path consisting of different steps. The number of steps varies slightly depending on the source referenced (see Figure 6). The focus is on having a problem to solve. Examples of steps in service design: Pinpointing the problem; Examining the problem more closely; Focusing; Generating ideas; Testing and developing; Realizing and describing the solutions. Students may not have time to complete all the steps in the service design process during a thesis project. The important thing is that students are aware of which steps are realized within the framework of the thesis process and that the choices made are clearly reflected in the written part of the thesis.

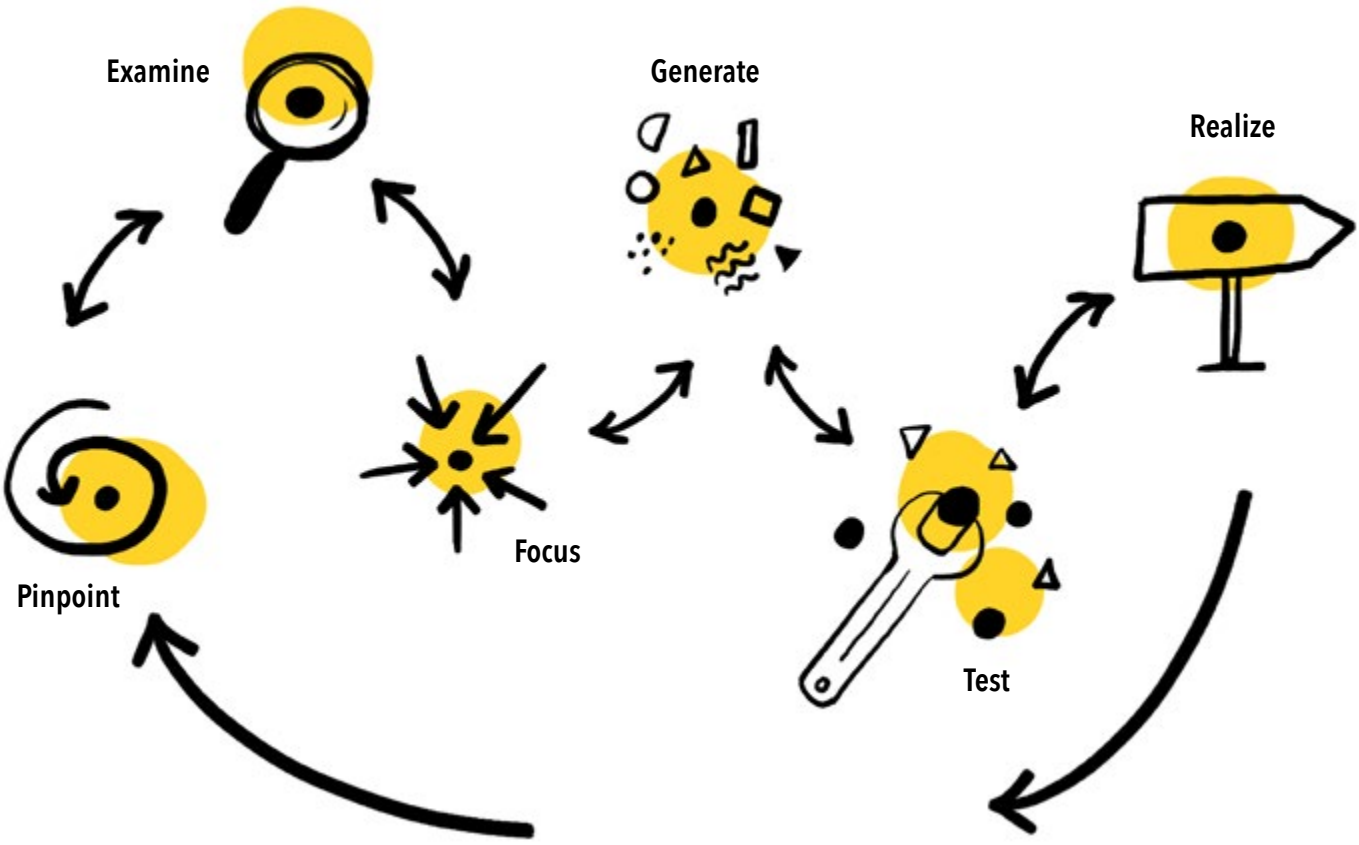


Figure 6. The service design process (Sveriges kommuner och regioner, u.å./ Swedish Association of Local Authorities and Regions, n.d.).

PINPOINTING THE PROBLEM:
Consider a problem or need within an organization from the perspectives of different stakeholders. Describe the problem (discover and capture it).

EXAMINING THE PROBLEM MORE CLOSELY:
Investigate the problem by interacting, observing, and asking various stakeholders to understand the problem. To carry out this step, you need to use data collection methods. Find out the needs of the different stakeholders or the target group. This lays the foundation for the solution proposals developed in the next step.

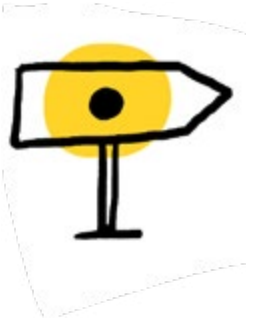
FOCUSING:
Based on the material collected in the previous steps, choose and prioritize what to work on further. Identify one or more development areas that feel relevant and manageable to focus on in the continued development work.

GENERATING IDEAS:

In this step, many ideas and solution proposals are developed for the focus areas chosen in the previous step. It's not about finding the "right" idea at this stage but rather thinking broadly and generating a wide range of possibilities. What ideas do you have, how could the problem you are focusing on be solved? Write down all the ideas you come up with during this phase.

TESTING AND DEVELOPING IDEAS:

In this step, ideas and solutions are tested, evaluated, and further developed. Physical prototypes of the solution proposals are developed, which are then tested on users and performers to develop the best possible solution. A prototype can be anything that takes a physical form, such as a simple sketch, a wall of post-it notes, a role play, a Lego model, a series of images, or a film. Prototypes do not need to be advanced or take a long time to create. It is more important to quickly create something so you can test, get feedback, make changes, and test again. A physical prototype makes it easier for users to provide feedback on different ideas and solution proposals, to assess advantages and disadvantages, and to discover flaws before the solution proposals are realized.



REALIZING:

Realizing: from idea or vision to reality. In this step, the solution proposal(s) are realized. Tips for testing include starting on a small scale, informing and involving all stakeholders, and developing a plan for how the change will be realized. Examples of questions to consider in this step are: What resources are needed to realize the idea? What key questions should be answered during testing? How to involve all stakeholders? Present and describe the solution proposal. How does it work? What are the advantages and disadvantages? Costs? How does it affect the target group/stakeholders? How is the change implemented?

Recommended literature for Service design

Stickdorn, M. & Schneider, J. (eds.). (2012). *This is Service Design Thinking: Basics, Tools, Cases*. Amsterdam: Bis Publishers.

Stickdorn, M., Lawrence, A., Hormess, M. & Schneider, J. (2018). *This is Service Design Doing. Applying Service Design Thinking in the Real World*. Sebastopol: O'Reilly Media, Inc.

5.3 The Implementation Process

The previously mentioned models for the development process involve developing new or improving existing methods, tools, products, and operations. A practice-based thesis can also involve planning and realizing the introduction of an already existing method. The model for the implementation process (see Figure 7) is used when introducing a new method within an organization and consists of four different phases: needs assessment, anchoring, usage, and maintenance. The process serves as support for a change effort aimed at introducing methods that are evidence-based and meet the needs of the target group.

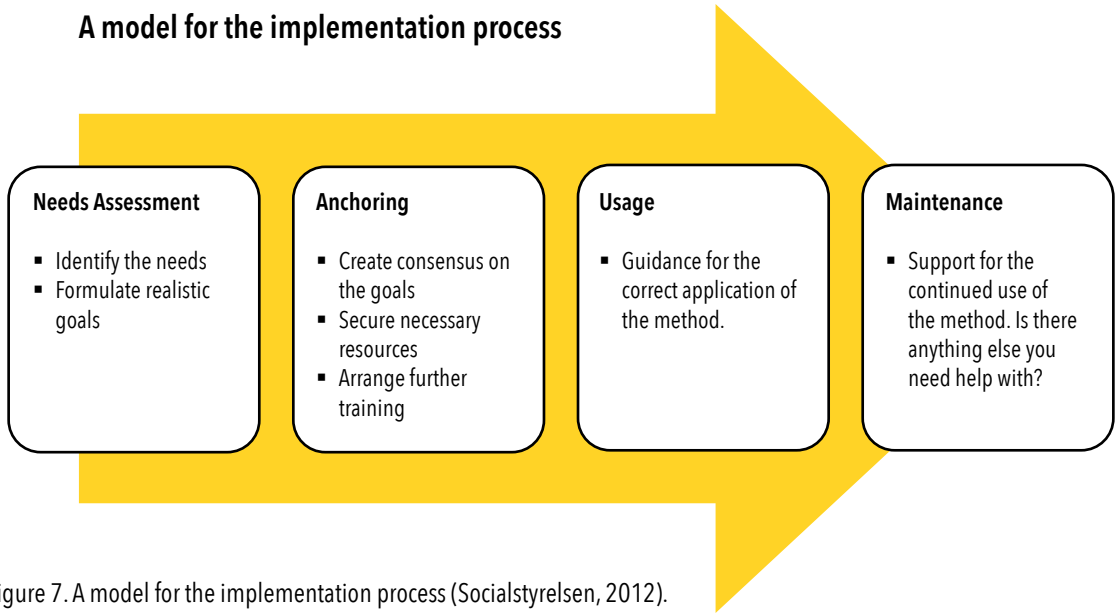


Figure 7. A model for the implementation process (Socialstyrelsen, 2012).

Needs assessment is necessary to form an understanding of the needs within the organization or among the organization's customers/clients/patients. It may turn out that the method intended for introduction is not the most suitable considering the needs. In such cases, it is essential to find another method that is more appropriate. It is also possible that there is no need to start applying a new method. In any case, it is important to ensure that the method intended for introduction truly meets the needs of the organization and the target group. To identify the needs, some form of data collection is often required. The first phase also includes goal formulation. The goals should be concrete, realistic, and time-bound.

The second phase involves **anchoring**. The students conducting the thesis need to ensure that all parties embrace the goals. It also involves key personnel supporting the implementation process and providing the necessary resources (such as time, premises, and materials) to the students. During the second phase, it is important that all parties are involved, as involvement fosters commitment to the goals and motivation to realize the change effort. During this phase, questions such as why the method should be implemented and how it should be done are addressed. At this stage, it is necessary to check that the chosen method aligns with the organiza-

tion's mission and values. During the anchoring phase, further training for the organization's staff is carried out. The staff learn how to apply the method. As a rule, it is the students conducting the thesis who plan and implement the further training.

In the **usage** phase, the most crucial aspect is the correct implementation of the method. The staff easily starts to apply the method in ways that differ from the original idea; they may omit a step or add an activity. The problem is that if changes are made, the original method, which has evidence, is no longer being applied. Against this background, it is important that the staff receive guidance when they start using the method. In other words, the staff needs more support than just one or two training sessions in connection with the change effort.

The fourth phase involves **maintaining** the change. When half of the staff uses the method, it can be said that it has been implemented. The challenge then is to avoid routine use of the method or the staff abandoning the method for the wrong reasons. Few theses can extend to this phase in terms of time. The students can support the organization in developing a plan for how the staff will continue to apply the method correctly even when the method's use has become part of the work routine.

Recommended literature for the Implementation Process

Bertram, R. M., Blase, K. A., & Fixsen, D. L. (2015). Improving programs and outcomes: Implementation frameworks and organization change. *Research on Social Work Practice*, 25(4), 477–487. https://doi.org/10.1177/1049731514537687

Rogers, E. M. (1983). *Diffusion of innovations* (3rd ed.). Free Press. (See Chapter 5)

6 METHODS FOR DATA COLLECTION AND ANALYSIS

This chapter describes various methods for collecting data and analysis techniques that can be used in practice-based theses. In such theses, multiple data collection and development methods can contribute to the development process that leads to a product, service, or concept.

The development plan outlines a strategy for data collection and analysis. The study must be systematically planned and executed. It is also important to be well-read on the subject before planning data collection so that you know what to ask, how to do it, who to ask, and why.

To gather material, you can use the research methods typically employed in scientific studies. The choice of method (quantitative or qualitative) is determined by the knowledge needed to carry out your development work. It is often advantageous to use both existing data (published sources) and data resulting from your own data collection (e.g., through observations). Chapter 6.1 describes how to collect existing data, while Chapters 6.2 and 6.3 present various methods for collecting your own data.

6.1 Collection of Existing Data or Information Search for the Knowledge Base

To find relevant sources such as theories, research articles, and other published material (see Chapter 4.1) that can form the foundation of the knowledge base, information searches must be conducted. To identify current and relevant sources, searches should be carried out in a structured manner. The type of data and sources sought, as well as where the searches are conducted, always depends on the nature of the task.

What is always important is to take a systematic approach to your searches. Being systematic means:

- Conducting searches in relevant forums (e.g., databases, search engines, catalogues, archives, and websites) based on the purpose and objectives of the work.
- Clearly explaining and documenting where and how the information was searched, what keywords were used, and any limitations (e.g., language or combinations of keywords) that were applied.

When starting your work, it can be helpful to begin by planning your information search and creating a work plan. Start by identifying key themes based on the purpose of the work. After that, formulate keywords and search phrases. More information on how to conduct information searches can be found in library guides for information retrieval on university library websites, such as Arcada's and Novia's LibGuides.

Before starting your search, it is important to consider the type of information needed, where to find it, and which search tools to use. Figure 8 provides an example of how a work plan might look. A blank version of the work plan, which can be filled out or printed, is available in Appendix 3. The work plan is a tool for your own process and can be updated and revised as you work, and it does not need to be included in the thesis report.

The text in red font in the figure below is intended as instructions and examples.

Work Plan for Data Search – Update It Throughout the Process

Your Topic/Assignment **(you can update it and add new rows to document changes made during the work process)**:

Identify key themes based on the purpose of the work and formulate search terms for each of them:

Theme 1		Theme 2		Theme 3
Keywords Synonyms, similar terms, broader terms, narrower terms, English, Swedish and Finnish terms	AND	**Keywords** Synonyms, similar terms, broader terms, narrower terms, English, Swedish and Finnish terms	AND	**Keywords** Synonyms, similar terms, broader terms, narrower terms, English, Swedish and Finnish terms
Type of information you think you will need, for example:				
Background information, information on working methods, scientific information, etc.				
The type of information sources you think you will need, for example:				
Encyclopaedias, books, journal articles, scientific publications, statistics, patents, websites, the external commissioner, experts, etc.				
Search tools you intend to use, e.g.: databases (which ones?), Google, Google Scholar, etc.				

Figure 8. Example of what an information retrieval work plan might look like. The image is a modified version of a work plan for searching for material that the library at the University of Borås (n.d.) has prepared.

When you have planned which themes to base your work on, the search terms, and where to look for information, you can begin searching, evaluating, and selecting sources. It is advisable to document your searches to keep track of where and how you searched, and the results obtained. The search process should be reported in a way that makes it easy for the reader to understand how the sources used in the knowledge base were identified and selected.

The description of how the sources were searched for and chosen must be transparent and honest. A clear description makes it easy to follow the thought process. It should be so detailed that someone else can understand how the search was conducted. This description can be effectively illustrated with a search table. Table 3 provides an example of how the search process can be documented in a table. The text in red font is intended as instruction and an example. A blank version of the search table that can be filled in or printed out is included in Appendix 4.

Table 3: Example of a search table.

Date of search	**Database/ search tool**	**Search terms**	**Boolean search**	**Number of records**	**Limits (filter)**	**Number of records**	**Articles included in the study**
		Example: youth, adolescent, young people, teen, bullying, harassment, teasing.	Synonyms are given in brackets separated by the word 'OR' and the different search terms are separated by the word "AND" Example: (youth OR adolescents OR young people OR teen OR young adults) AND (bullying OR harassment OR teasing).		E.g. peer review, publication type, year of publication.		I.e. sources found from the current search and that you used in your work. Indicated in the form of text refer-ence e.g: (Smith & Anderson 2021).
Date of search	**Sources found by means other than database/search tool searches** E.g. via reference lists in previously found publications. Describe how you found them.				**Sources used in the report** Indicated in the form of a text reference e.g.: (Smith & Anderson 2021).		

6.2 Data Collection Methods

There are many different methods for collecting data for a thesis. The primary source of information is data collected based on the experiences and perceptions of various stakeholders through, for example, interviews, surveys, or observations. Interviews can be conducted in various forms such as discussions among stakeholders, meetings, focus groups, or using the Delphi method. Furthermore, data can consist of self-documentation, which is often used in ethnographic studies. In self-documentation, the respondent produces, for example, pictures, videos, or diary entries, which the student then analyses. It is also possible to use existing autobiographical data such as blogs or vlogs. Some development methods and tools are described in more detail in Chapter 6.3.

The recommendation is to have as broad data material as possible. If the data material is one-sided, there is a high risk that the understanding of the subject will be narrow and superficial. One should also consider whether the participants should provide their answers individually or as a group. The choices made are discussed with the external commissioner. Efforts should be made to ensure that data collection disrupts the target group as little as possible, but that the experiences of various stakeholders (patients, clients, relatives, staff) are considered. A difficulty can be that experiences and perceptions can vary greatly between the different stakeholders. The starting point is always that the purpose governs the data collection method.

Traditional data collection methods that can be used include various types of surveys, observations, and interviews.

This may involve collecting quantitative data through a survey that can be distributed, for example, via email, in a Facebook group, or handed out in paper form among participants at an event. Surveys are most often used as a data collection method either when you want responses from many respondents or when the respondents are spread over a large area or are difficult to reach for an interview. Surveys also provide standardizable data suitable for quantitative or statistical processing.

Additionally, surveys are well-suited if the questions asked are expected to elicit honest – and brief – answers. In practice, this means that surveys are better suited for factual questions and "facts" than for experiences or opinions. It is also possible to collect qualitative material using surveys if open-ended questions are used.

A survey as a data collection method can be used, for example, when students, as part of an implementation process, want to assess the needs for the introduction of a new working method. This could involve finding out what type of guidance method the staff at a child protection unit believes could benefit the clients. It is also conceivable that when students arrange further training for the staff as part of the implementation process, they can evaluate the training using a survey.

Observations can be a meaningful data collection method in many respects. Observations can be structured according to certain themes or a schedule, but they can also be unstructured observations of events. Observations can be participatory or non-participatory. Participatory observation means that the observer participates in what is happening along with those being studied. Non-participatory observation means that one is more of an external observer. This raises ethical questions, including the observer's role and how it affects those being observed, as well as whether the observer is known or not. Generally, observation should be open, meaning that those being observed are aware that they are being studied.

When students implement a development process using the build-measure-learn feedback loop, they need to choose a data collection method to realize the measurement phase. If the students have assumed that the minimum viable product is easy to use for the target group, observation can serve as an appropriate data collection method. It is possible through observation to see if the minimum viable product is easy or difficult to use. If it takes a long time for the target group to start using the product or if the target group starts asking questions about how the product works, it is a sign that the minimum viable product is difficult to use. If, on the other hand, the target group quickly starts using the product correctly, it can be concluded that the product is easy to use.

Observation can also be a relevant data collection method when implementing a development process using service design. Observation can be used, among other things, to learn more about routine work performed without a high degree of awareness. Additionally, observation can be used to collect data on what happens when multiple different actors interact. For example, observation can be used to collect data on the admission process at a hospital or the check-in process at a hotel.

Qualitative data can be collected, for example, through thematic interviews with individuals or groups, either on-site or via telephone. Interviews can thus be conducted as individual and personal interviews, group interviews, or focus group interviews. They can be structured (all questions are predetermined according to a specific schedule), semi-structured (some questions are predetermined that you want answers to, but there is the possibility to ask additional questions based on the situation), or unstructured (in-depth interviews where the interviewer does not guide the interviewee, such as narrative or storytelling interviews). Interviews are particularly well-suited when the sample is a small number of people, and you want deep and detailed information. Interviews offer flexibility during the interview process (especially with a semi-structured or unstructured format) and do not require particularly advanced equipment.

Interviews can be used, among other things, to investigate the problem at an early stage of the service design process to understand what needs to be changed. This involves asking various stakeholders questions to get different perspectives. Interviews also function as a data collection method in the build-measure-learn feedback loop's measurement phase to find out

how members of the target group perceive the product. This could involve finding out how the target group perceives the product's visual design.

6.3 Development Methods and Tools

There are many different development methods and tools for collecting material, and they are suitable for different purposes and can be used at various stages of the development process. In literature, there are several ways to structure and name these methods and techniques. In this handbook, we have taken inspiration from the classification by Salonen, Eloranta, Hautala, and Kinos (2017) into methods and tools that promote discussion, activating methods, and visual methods and tools. In our classification, methods that promote discussion and activating methods have been combined into one category. In addition to these methods, generative methods will also be presented in this chapter.

Methods that promote discussion and are activating can be used, for example, to highlight the viewpoints of different entities and stakeholders. Examples of such methods include documenting discussions, brainstorming, workshops, MeWeUs, buzz groups, SWOT analysis, user or expert panels, future workshops or dialogues, and Learning Café. The common feature of all these methods is that they promote participation by including multiple actors who actively contribute to producing new ideas and knowledge.

Learning Café & World Café

The goal of a Learning Café or World Café is to create a collaborative dialogue. A Learning Café is organized with at least 12 participants distributed at three different tables. Participants discuss and brainstorm ideas related to different perspectives or aspects of the theme they want to develop. During the discussion, participants write down their ideas on large sheets of paper. After a certain period, for example, 20 minutes, participants switch tables and simultaneously change perspectives. Each table can have a table host who supports and summarizes the discussion. Before a table group starts brainstorming ideas related to the table's perspective, they hear the table host's summary of what the previous group came up with. Things to consider:

- Formulate a purpose for the café. The purpose influences who are invited and what questions are asked.
- Create a welcoming space. The room should be safe and inviting.
- Questions matter. Formulate questions that are relevant to the participants.
- Participation. Encourage everyone's participation. Also, show that it is possible to just listen if a participant prefers to do so.

The café concludes with something called the "harvest." The idea is to view the conversations as a whole and identify prominent patterns. The café leader invites the participants to a few minutes of silent reflection on patterns and themes, which the table groups then share with the larger group. Be sure to note what emerges during the harvest.

Benchmarking

Benchmarking originally referred to a development method where a company compares itself with other companies in the same industry. The company chooses what it focuses on: product, process, or organizational strategy. Benchmarking is about learning from others and avoiding the same mistakes that someone else has already made. The public sector can also benefit from benchmarking. Work methods and processes within the organization are compared with those of other organizations. Strengths and weaknesses are identified. The goal is to come up with possible improvement measures that can be implemented in the organization's operations. The comparison becomes clear if presented in tabular form. In the example below, the students have been tasked with producing the content and layout for a tourism company's website. The content should be tailored to the target group and stand out in a positive way. The students have chosen to compare various existing websites to learn from them (see Table 4).

Table 4. Fictional example of a comparison between different tourism companies' websites.

	Visual Appearance	**Clarity**	**Information Value**	**Amount of Text**
Sea and Breeze	Appealing	High	Low	Small
Cliffs and Islets	Neutral	Low	Moderate	Moderate
Waves	Boring	Moderate	High	Large

By making a comparison, students can form an understanding of which product they can use as a good model and which mistakes to avoid. Another advantage of making a comparison is that it allows them to become familiar with the methods, services, or products that already exist in the field. This way, they can ensure that they are truly developing something new that differs from previous methods, services, or products.

Visual methods and tools that promote creativity can also be used to visualize ideas. Examples of visual methods include drama, photos, drawings, mind maps, and concept maps. In service design, several visual methods are used, such as actor maps, service blueprints, and customer or patient journey maps.

Generative techniques involve the respondent creating an object and then discussing their experiences, feelings, wishes, and dreams related to the object. By ”object,” we mean a collage, drawing, or model. The object can also be made from Lego or clay. The idea behind generative techniques is that the creative process leading to the object helps respondents become aware of their experiences and desires. The recorded experiences, feelings, and wishes can then guide the development work.

In addition to these methods, there are many other methods and tools that can be used to gather knowledge for developing an activity or concept.

6.4 Choice of Data Collection Method

To choose an appropriate data collection method, one should consider the type of knowledge being sought. Table 5 shows knowledge at different levels and which data collection methods can be used to capture this knowledge. Interviews are suitable when you want to gather knowledge that the respondent can articulate in words. Observations, on the other hand, are best when you want to learn more about how people use a service or product. Observations are also suitable for gaining insight into how professionals perform their work; for example, you can observe the tasks involved in the production of a service. Generative techniques can be used when you want to uncover motivations, dreams, and desires.

Table 5. Levels of knowledge, experiences, and data collection methods inspired by Sleeswijk Visser et al. (2005).

SURFACE ↓ DEPTH	**What people:**	**Data Collection Methods:**	**Knowledge:**
	Say and think	Interviews	Explicit
	Do and use	Observations	Observable
	Know, feel, dream, wish	Generative techniques	Tacit, unspoken

6.5 Analysing Data and Materials

When analysing material collected for a practice-based thesis, the methods for data analysis are not followed as strictly as in a scientific study. Material collected through the methods mentioned above should still be analysed, but the analysis is at a basic level using appropriate analysis methods.

Before conducting data collection and analysis, one should read about how to conduct a study, using the literature recommended in research methodology courses at your university. During data collection and analysis, research ethics and GDPR aspects should be considered. These are addressed in Chapter 7 of this handbook.

For quantitative data (mainly numbers), statistical processing and analysis methods are primarily used. There are two main types of quantitative methods. Descriptive statistics means describing your data in a clear and understandable way, either using tables and diagrams or numerical measures. Analytical statistics (hypothesis testing) involve analysing and comparing your data using various test methods and generalizing your results, for example, if you want to compare different groups or study relationships between different variables within a group. In practice-based theses, quantitative data (from, for example, surveys or observations) can be reported by indicating percentages and illustrated with figures and tables.

For the analysis of qualitative data material (mainly texts), there are many different data analysis methods. The most used are content analysis or thematic analysis. A compilation, grouping, or comparison of the data material can be done in various ways. Most involve first transcribing your material and then reading the transcribed data material several times. Then, what you have found or observed in the texts is compared. The material is then coded and compiled into different categories or themes based on the purpose and/or questions. The prerequisite for a reliable analysis is that you are familiar with the subject area. When conducting a practice-based thesis, data collected using qualitative methods (observations, interviews, and other methods) do not necessarily need to be transcribed verbatim. It is often sufficient to write down the most essential parts in more detail.

In the example below, the student has collected material on children's experiences of loneliness. The student has used a simplified version of content analysis to analyse the collected material (see Table 6). Start the analysis by finding quotes from the text that are relevant to the purpose of the thesis. Place all the quotes that deal with the same thing under each other in the leftmost column. When all the quotes are in place, it is time to derive a code from the quotes. Deriving a code involves compressing the content of the quote into a few words. Several quotes should have the same code if they deal with the same thing. Now look at the codes that have similar content and try to come up with a theme that encompasses the meaning of the codes. In the rightmost column, write the theme.

Table 6. Fictional example of a simplified version of content analysis.

Quotes	Code	Theme/Category
"I have no one to play with during the brakes. I would like to have a best friend."	No one to play with.	**Involuntary loneliness.**
"No one asks me if we could do something fun after school."	No one wants to be with me after school.	
"Sometimes I ask one of the neighbours if they want to come out and play, but they rarely have time or want to come out."	No one to play with.	
"I need time for myself when I get home. I get so many impressions at school that I prefer to take it easy when I'm off."	Needs time for oneself.	**Voluntary loneliness.**
"I prefer to be by myself in my free time. I read books or listen to music when I get home from school."	Wants to be alone.	

There are several methods for analysing images, such as image analysis and visual analysis. Image analysis focuses on a specific image or artwork and involves studying and interpreting the visual elements within that image. This can include observations of colour, form, composition, perspective, light, shadows, and symbolism. Image analysis also considers the context of the image, such as its historical and cultural background, the purpose of the image, and how it relates to the artist's intentions.

Visual analysis is broader than image analysis and involves how we interpret visual impressions in general, not necessarily limited to a single image. It can be used to analyse various types of visual impressions such as images, sculptures, architecture, advertisements, and even different environments. It is a general visual interpretation of a variety of visual phenomena, focusing on how people perceive and react to visual stimuli. This can involve psychological, cultural, and social factors in interpretation. Image analysis and visual analysis are not synonymous, even though both involve studying and understanding visual elements.

Images or visual material can be collected in various ways, depending on the purpose of the study. Children often choose to express themselves through images rather than words. For example, if you want to investigate how children experience care, you can give children a clear

but open task, such as: “Can you draw how it was when you were in the hospital? It can be what you think about or something you remember.”

When analysing these drawings, the focus can be on interpreting, for example:

- Theme: Identify recurring themes or symbols.
- Content: Focus on specific objects or figures in the drawing, such as family members, other people, or objects.
- Colour: What colours are used and how can they be related to emotions or symbolism?
- Composition: How is the drawing structured? Are there certain objects that are central or marginalized?
- Combine data from drawings, interviews/conversations, and observations to gain a deeper understanding of the child’s experiences, perceptions, and expressions.
- Be cautious with interpretations, especially if a child, for example, draws something that seems to indicate trauma.

For more information on how different methods are used, refer to the course literature specified by the course coordinators for research methodology courses.

7 ETHICS AND DATA PRIVACY, GDPR AND ITS REQUIREMENTS

Ethical considerations in practice-based theses must adhere to national ethical guidelines for research. Students should always take ethical aspects into account regarding the choice of topic, selection of methods, impact on participants, and how results are presented and interpreted. In addition to this, students should also follow the ethical codes of their own professional field and explain how these are considered in the practice-based thesis.

The initial ethical considerations are made during the idea phase and topic selection in collaboration with the external commissioner and the responsible teacher from the school or supervisor, ensuring the feasibility of the thesis in terms of topic and methodology. If the external commissioner's and the target group's wishes or needs do not align, a discussion about prioritization takes place. The student, as the person conducting the assignment, bears the primary responsibility for ensuring compliance with ethical guidelines. At this stage, it is also discussed whether parts or the entire thesis should be classified as confidential.

During the planning phase, ethics are considered in methodological choices, including selection, data collection, and data analysis. If participants are involved, their wishes and needs should be prioritized over those of the external commissioner's. The student is responsible for ensuring that the study follows good scientific practice (see TENK, 2023). After discussions with the external commissioner, an application for research permission is submitted where required. The process of applying for research permission varies depending on the organization or company involved. During data collection, participants are informed about the process, how the data will be used, and that the collected material will be handled securely and confidentially.

Ethical Principles to Consider in Data Collection and Reporting:

All participants must be informed, both in writing and verbally, about the study and what participation entails, and they must give their consent to participate.

Clarify to participants why their experiences are important for the development work. Also, explain how the collected data will be used, stored, and eventually destroyed.

Ensure that participants understand what they are taking part in and are aware of the timeline.

Inform participants that all material will be anonymized (handled confidentially) and ensure they understand what this means.

Collect only the data that is necessary. Choose data collection methods that minimize impact or harm to participants.

Participation is always voluntary, and participants can withdraw at any time without providing a reason.

Higher ethical requirements apply if the participants are children (under 15 years old) or adults with reduced decision-making capacity. For children under 15, a guardian must provide consent for the child to participate in the study.

Report the findings in a way that ensures participants, or the target group cannot be identified. If the target group has not given permission for the organizations or institutions' name to be disclosed, this must be respected.

Follow the guidelines of the Finnish National Board on Research Integrity (tenk.fi).

All collected data must be treated confidentially, meaning that the material should be handled in a way that prevents unauthorized individuals from accessing it. The European Union's General Data Protection Regulation (GDPR) serves as a legal framework governing the processing of personal data across the EU and is supplemented by national legislation. When handling personal data, the guidelines outlined in the GDPR must be followed. In research, GDPR is particularly important to ensure that personal data is managed in a way that protects participants' privacy.

Reporting should be honest, transparent, and free from concealed details. However, results must be presented in a way that prevents the identification of individual participants. To avoid plagiarism, it is important to refer correctly to the sources used in the thesis. The text should be rewritten to ensure it does not resemble the original too closely. Clearly indicating when using others' texts is important to ensure that the rightful author receives recognition for their research findings and to allow readers to locate the original source and form their own understanding of the content.

The **Ethical Recommendations for Thesis Writing at Universities of Applied Sciences**, published by Arene rf (The Rectors' Conference of Finnish Universities of Applied Sciences), serves as a key reference for students when addressing ethical issues in their theses.

It is important that students do not uncritically adopt the external commissioner's perspective. The external commissioner's routines or attitudes may sometimes conflict with the ethical codes of the sector or the principles of research ethics. Different perspectives should be seen as both a challenge and an opportunity, which should be discussed in the work. In scientific research, participant consent is required. In development work, however, it is important to be aware that even if a key person has initiated a development process, not everyone in the work community may have agreed to participate. These aspects need to be clarified and discussed in the work. Overall, the work should be characterized by honesty, accuracy, and transparency, as well as a commitment to objectivity.

Recommended literature for the Implementation Process

Arene. (2024). *Ethical Recommendations for Thesis Writing at Universities of Applied Sciences*. The Rectors' Conference of Finnish Universities of Applied Sciences Arene.

TENK. (2023). *The Finnish Code of Conduct for Research Integrity and Procedures for Handling Alleged Violations of Research Integrity in Finland*. Publications of the Finnish National Board on Research Integrity TENK 4/2023.

8 RELIABILITY AND UTILISABILITY

The entire thesis process must be reliable. Another person should be able to understand and replicate the development process based on what is written in the thesis. Students need to be able to identify how their own actions have influenced the outcome.

A thesis must not result in random findings, products, or recommendations. Students should be able to explain which research, theories, and feedback led to the final product so that the reader can follow the logical progression. The development process, data collection, and data analysis must be carried out logically and precisely. Research methodology books provide guidance on what needs to be considered to ensure the reliability of data collection and analysis.

Thorough documentation from the beginning of the development process is essential for the thesis to be reliable. Students often believe they will remember events and sources used early in the process, but it is rare to recall details that have not been recorded.

It is important that the thesis does not contain contradictory or unnecessary information. This requires students to continuously reflect on their choices and ensure consistency in their approach. Overall, decisions made during the thesis process should be guided by relevance and purpose. Every choice must be logically justified with a well-grounded argument. The text should be clear, and misunderstandings should be avoided.

Both the results and the process leading to the results must be critically examined. This means carefully evaluating and questioning whether the conclusions drawn and the methods used are reliable. Reliability also involves honesty – students should not attempt to conceal choices made during the process that might affect the credibility of the work. Instead, these choices should be critically discussed in the discussion chapter.

When evaluating reliability, the following questions can be considered:

Is the process of searching and evaluating the material for the knowledge base explained clearly?

Is the material in the knowledge base current, reliable, and relevant to the assignment? Is the product based on the knowledge base?

Is anything missing from the knowledge base, or is there material in the knowledge base that was not used in the development of the product?

Are the data collection methods appropriate, were they used correctly in relation to the assignment, and are they described in a way that allows the reader to understand how the student proceeded?

Is the development process suitable for the assignment? Have the right people contributed to the development process?

Is the development process described in a way that enables the reader to understand how the student proceeded, how the product was created, and what choices were made?

Is there a clear connection between the feedback obtained during loops/tests and the final product?

Examples of Factors That Increase the Reliability of a Thesis

- Accurate source references.
- A clear connection between the knowledge base and the product.
- Consideration of the assignment, the needs of the target group, the knowledge base, and feedback from the target group in the development of the product.
- Engagement of all key stakeholders in the development process.
- Use of appropriate data collection methods based on the assignment and the purpose of data collection.
- Inclusion of relevant questions in the data collection method to obtain the necessary information.
- Ensuring that the product is tested on individuals representative of the intended target group.
- Careful documentation and consideration of all received feedback.
- Writing clear text to minimize misunderstandings.
- Documentation of all parts of the development process.
- Explanation and discussion of any shortcomings throughout the process in the discussion chapter.

Examples of Factors That Decrease the Reliability of a Thesis

- The student presents a topic without referencing sources.
- The student refers to incorrect sources.
- The student misuses or incorrectly cites sources.
- The connection between the knowledge base and the product is weak.
- Lack of arguments supporting the product.
- Key stakeholders are excluded from the development process.
- The data collection methods used are inappropriate or contain irrelevant questions in relation to the assignment.
- The student tests the product on a group that is not representative of the intended target audience.
- The student ignores or fails to acknowledge some of the feedback given by representatives of the target group.
- The thesis contains unclear or incomplete text, making it difficult for the reader to understand.
- The student fails to document parts of the development process.
- The student hides mistakes made during the thesis process.

In addition to reviewing the reliability of the thesis and the product, the usability of the product should also be discussed. A product is considered usable if it serves its purpose and meets the needs and expectations of the target group. Usability means that the product functions as intended and is easy to use and accessible to the target audience.

The following questions can serve as a basis for discussing the usability of the product:

Does the product meet the assignment?

Does the product meet the needs of the target group?

Is the product sufficiently accessible to the target group? Can it be put into use immediately?

Does the product facilitate operations in the external commissioner's organization?

9 THE WRITTEN REPORT OF THE THESIS

9.1 Suggested Structure for the Development Plan

At the beginning of the thesis process, the student needs to plan how the development process will be carried out. It is very useful to write a development plan for this purpose. The development plan should answer the questions of what is being done, how it will be done, and why it is being done. A timetable for the work is also important to include. The development plan can be seen as a roadmap for the student writing the thesis. Generally, the development plan is a relatively short document, around 6–8 pages.

For the external commissioner, the development plan is of great significance because by familiarizing themselves with it, they can see if the student has understood the assignment. Once both the external commissioner and the thesis supervisor have approved the development plan, the students know they can continue working in the planned direction. At this stage, the students can continue working with the same document to produce the written report of the thesis. In Table 7, you can see a suggested structure for the development plan. However, the headings in the development plan do not have to be the same as those presented in the table.

Table 7. The following sections can be included in a development plan.

The Structure of the Development Plan
Background and Assignment Purpose and Objectives Knowledge Base The Planned Development Process Potential Data Collection Methods Ethical Issues Related to the Development Process Preliminary Timetable

In the development plan, it is natural to initially describe the background of the thesis, the need for the product, the external commissioner's organization, and the assignment. Then, the purpose and objectives of the thesis need to be outlined. At this stage, the purpose and objectives are still preliminary, as it is common for the student to adjust these throughout the thesis process.

The purpose is more abstract and shows the direction, while the objective is concrete and more specific, indicating the expected outcome. For example, the purpose of a thesis could be to develop Pargas into a more attractive tourist destination, while the objective could be to create a model for customer-centred collaboration between tourism entrepreneurs in Pargas. In Chapter 9.2, there is an example of how the purpose and objectives were described in a thesis at the Department of Health and Welfare.

The student also needs to provide an overview of the knowledge base. The knowledge base does not need to be complete at this stage, but it should include relevant theory and research. Often, it also describes how various governing documents influence the operations of the external commissioner's organization when writing the knowledge base.

After the knowledge base, the student should outline the planned development process. Here, the student must describe which model they have chosen for the development process and what data collection and development methods they will use. The ethical aspects should also be addressed at this stage. The student needs to describe the ethical issues that arise during the development process. At the end of the development plan, a realistic timetable should be included. Students rarely follow their original timetable completely, but despite this, the timetable provides support for the thesis process. In Table 8, there is an example of a timetable for a thesis implemented using the build-measure-learn feedback loop. The timetable should not be included in the final thesis. Finally, it is important that all the sources the student refers to in the development plan are listed in the reference list.

Table 8. An example of a timetable for a thesis implemented using the build-measure-learn feedback loop.

Week	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Formulate the purpose and objectives	X	X			X							X					
Find information	X	X	X	X							X	X					
Plan the development process		X	X	X													
Write the knowledge base		X	X	X	X			X	X	X	X	X					
Write about the sampling, the model for the development process, data collection, and analysis			X	X							X	X					
Apply for research permission		X	X	X													
Form the minimum viable product (MVP)				X	X												
Describe the connections between the knowledge base and the product				X	X				X	X							
Test the MVP						X		X			X						
Describe the development process						X	X	X	X	X	X	X					
Write the discussion, abstracts, and finalize the introduction												X	X	X	X		
Create the appendices														X	X	X	
Review the bibliography																X	X
Do the final review															X	X	X

9.2 Suggested Structure for the Final Written Report

A practice-based thesis can be structured in various ways, as shown, for example, by Kostamo, Airaksinen, and Vilkka (2022). This handbook presents one alternative for how the thesis structure might look. Table 9 provides suggestions for the thesis's structure. Even if you decide to follow this structure, you should not use these exact chapter titles. Instead, choose chapter titles that suit your thesis. It is important that the titles accurately describe the content of the chapters.

Table 9. Suggestions for chapters to be included in a thesis.

Structure of the Thesis
Introduction Purpose and Objectives (can also be included in the introduction) Background Knowledge Base (First Version of the Product) Methodology Chapter Development Process The Final Product Discussion

The following is a description of the chapters that may be included in the final written report. The first chapter of the thesis consists of an introduction. The purpose of the introduction is to familiarize the reader with the topic and to spark their interest. The reader is informed about why the topic is relevant.

In some traditions, the purpose and objectives are included in the introduction, while in others, they are presented as a separate chapter following the introduction. The purpose of the work explains why you are undertaking the development project. The objectives describe the concrete and measurable outcomes the project aims to achieve.

It is worthwhile to dedicate significant time to formulating the purpose and objectives, as these provide direction for the thesis. In the thesis by Backlund, Forsström, Lindqvist, and Snickars (2022), the purpose was formulated as follows: "The purpose of the thesis is to promote good sleep habits and prevent sleep problems among students [translated by the authors]." The objective was stated as: "Our objective is to create a concrete solution-oriented tool for school coaches [translated by the authors]."

After presenting the purpose and objectives, it is natural to discuss the background of the thesis. The background introduces the external commissioner for the thesis, i.e., the organi-

zation that commissioned the work. It also outlines the need for the product being developed. Additionally, the background addresses the significance of the thesis for its target group.

Next, the knowledge base is presented. To support the writing of the chapters where you outline the thesis's knowledge base, you can use a concept map. Start by writing down the central concepts related to the thesis's knowledge base on a large sheet of paper. Use lines to show which concepts are connected. Indicate which concepts are overarching and which are subordinate. Which concepts serve as umbrella terms? Which concepts can be placed under a specific umbrella?

The concept map should not be included in the thesis itself but rather serve as a tool to guide you in writing the continuous text. Figure 9 provides an example of what a concept map might look like.

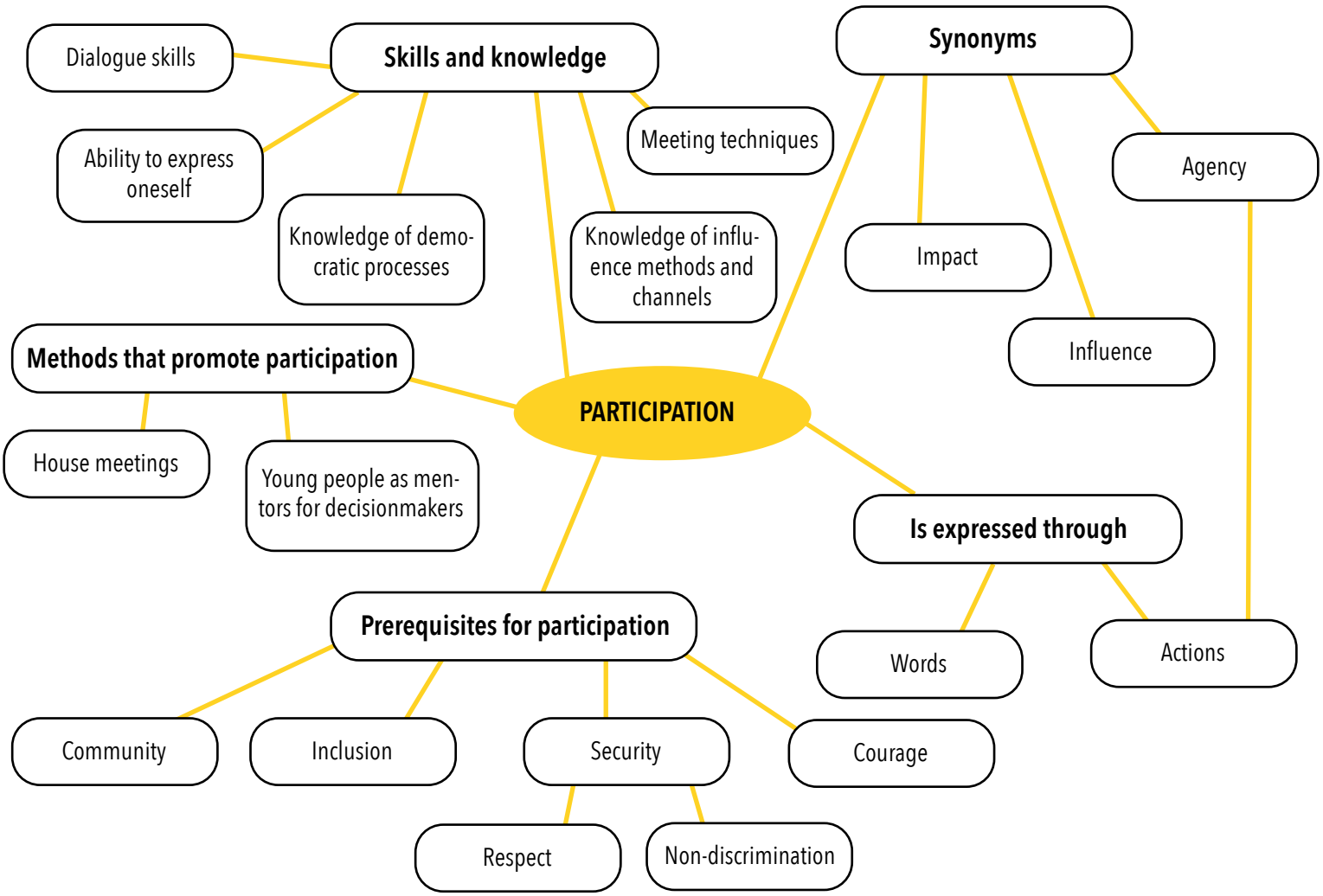


Figure 9. Example of concept map of the knowledge base of a degree project.

It is important that the part of the thesis that describes the knowledge base ends in a synthesis. The synthesis should only include the most important from the theory, research and other relevant literature presented in the chapter.

You should include the knowledge that is relevant to the prototype you are developing. In the synthesis, it is not enough to simply list the key contents of the knowledge base. The different parts of the knowledge base need to be related to each other and described in continuous text. Creating a synthesis of the knowledge base means drawing conclusions, identifying patterns, and creating a holistic view based on the information you have read. By drawing a visual model of the relevant knowledge, the student can demonstrate how the various parts of the knowledge base relate to each other and how they form a whole that is significant for the design of the product or service.

See Figure 10 as an example of a model where the various parts of the knowledge base relate to each other. In this example, the student is developing group activities that promote safe relationships and prevent bullying. In the outer circle, the student has gathered conditions that need to be present within an organization (such as a school) when the goal is to prevent bullying, and in the inner circle, the student has gathered skills that can be practiced in groups and have shown a positive correlation with bullying prevention.

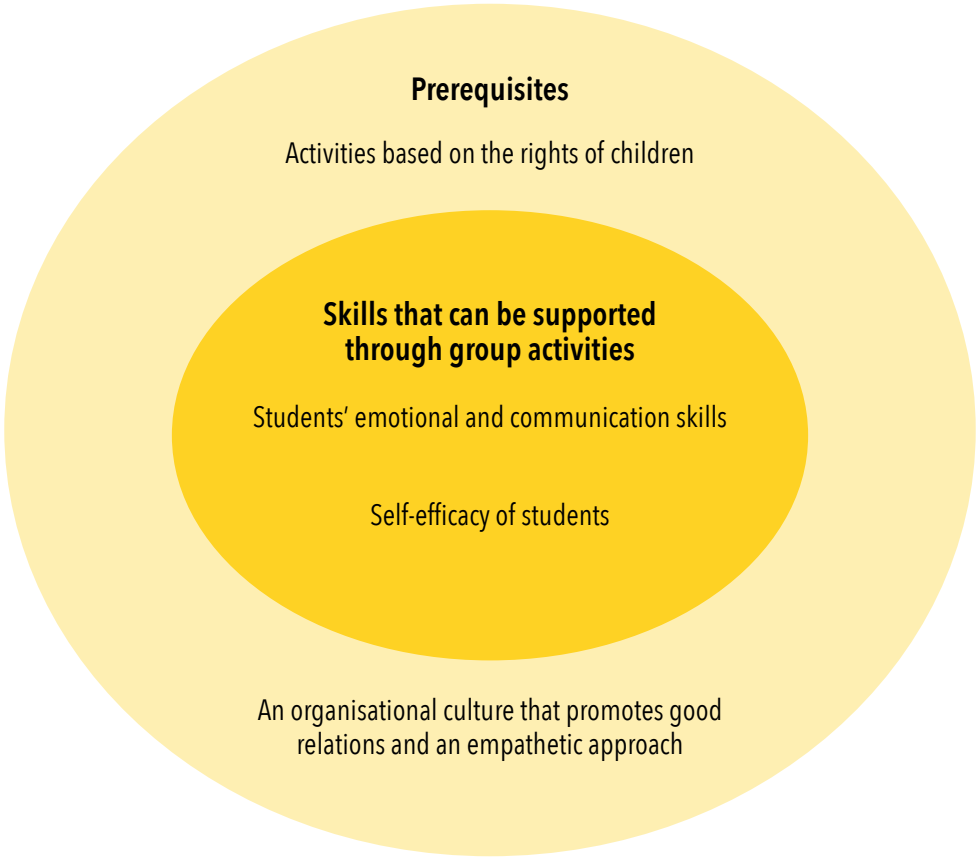


Figure 10. A visualisation of the synthesis of how to promote safe relationships and prevent bullying.

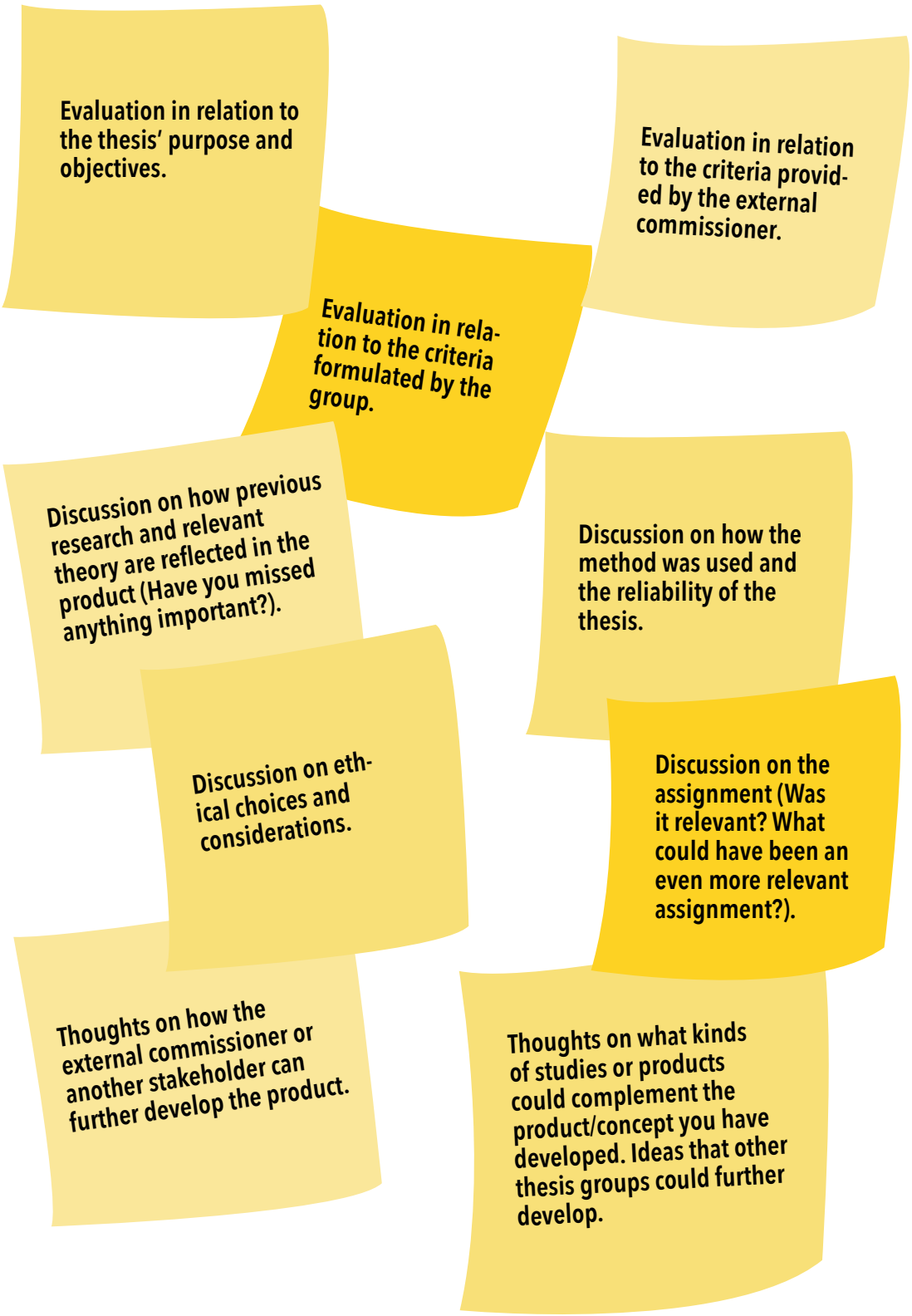
In the following chapter, it could be a good idea to present the first version of the product if you have chosen to implement a development process using the build-measure-learn feedback loop. In this case, you start by producing a minimum viable product, and it can be presented before the methodology chapter. The student should demonstrate how the research and theory they have discussed have influenced the minimum viable product.

A methodology chapter is necessary. In the methodology chapter, the model for the development process, the development methods, data collection methods, and analysis methods chosen for use are described. This chapter also presents the sample, specifying who will participate in the development process. Ethical issues that arise in this development process and how they will be addressed are discussed in this chapter. Throughout, all choices must be justified. It is important to have logical arguments for the decisions made.

In the following chapter, the entire development process should be described step by step. The students are encouraged to use figures, such as images and photographs, to illustrate the development and show how the product has changed because of feedback, among other factors. If you have chosen to conduct the development process using the build-measure-learn feedback loop, it is important to clearly describe each loop. The reader needs to know which assumption was tested, what was revealed by the measurement, and what conclusions you drew from the measurement results. Additionally, the reader should get an understanding of what changes were made to the product after each loop.

In the second-to-last chapter, the student presents the last version of the product. Here too, it is helpful to use figures to give the reader a clear picture of what the product looks like. If the last version of the product is in a format that allows it, it should be included as an appendix to the thesis.

The discussion chapter concludes the thesis. In this chapter, the student evaluates the choices made during the thesis process and highlights opportunities for future development. Ethical considerations and the reliability of the thesis are also discussed in this chapter.
Ideas for what could be included in the discussion chapter:


Evaluation in relation to the thesis' purpose and objectives.
Evaluation in relation to the criteria provided by the external commissioner.
Evaluation in relation to the criteria formulated by the group.
Discussion on how previous research and relevant theory are reflected in the product (Have you missed anything important?).
Discussion on how the method was used and the reliability of the thesis.
Discussion on ethical choices and considerations.
Discussion on the assignment (Was it relevant? What could have been an even more relevant assignment?).
Thoughts on how the external commissioner or another stakeholder can further develop the product.
Thoughts on what kinds of studies or products could complement the product/concept you have developed. Ideas that other thesis groups could further develop.

9.3 Language and Figures in the Written Report and in the Product

A thesis, and the product resulting from a practice-based thesis, is always created within a specific field. Therefore, the style and language should be adapted to the reader or user and the context. You should also consider the traditions of the program when writing. The language in the thesis affects how the work is perceived and evaluated. The language should be correct, formal, and academic, but also understandable to individuals with knowledge of the subject. Strive to write in a way that makes the text as easy to understand and clear as possible but avoid colloquial language.

Academic texts are characterized by an objective language. This means that the focus is on the subject rather than the author, making the text appear more factual. Therefore, you should avoid emphasizing yourself in the text. Passive voice is often used when describing what is being done or has been done. However, the words ”I” or ”we” can still be used, at least when describing the choices you have made during the thesis process, such as in the methodology and discussion chapters.

The language in the product developed as part of the thesis should be professional, clear, and appropriate for the target audience. The product represents both you and the university. Good language shows respect for the external commissioner and makes the product more professional.

Keep the following in mind when writing the text for the product you have developed:

- Write clearly: tailor the language to the target audience.
- Use formal and neutral language: avoid colloquial language.
- Use correct language: follow the rules of written English (refer to writing and language guides).
- Correctly cite the sources used for the product, according to your university’s writing guidelines.

A good language contributes to the accessibility of the thesis and the product. Good language makes the text more readable and engaging, which facilitates understanding and keeps the reader focused. By using clear and simple language, a clear structure, and avoiding complicated jargon, the text becomes accessible to a broader audience. This helps ensure that the message is conveyed clearly and reduces the risk of misunderstandings.

You should check whether, according to your program’s guidelines, the use of artificial intelligence (AI) is allowed in your thesis and in what capacity. Students are always responsible for the content of their thesis, and general ethical principles must always be followed (see more in Arene’s recommendations on the use of artificial intelligence for universities of applied sciences, 2024). You can ask the following questions to your supervisor and program: Is it acceptable to use AI as an idea partner? Is it okay to use AI to structure and delimit the work? Can AI be used to assist in selecting approaches, structuring the knowledge base, or formulating

search queries? Can AI be used to summarize articles? Can AI be used to translate texts? Can AI be used to improve your own text by providing feedback (not by asking AI to generate text)?

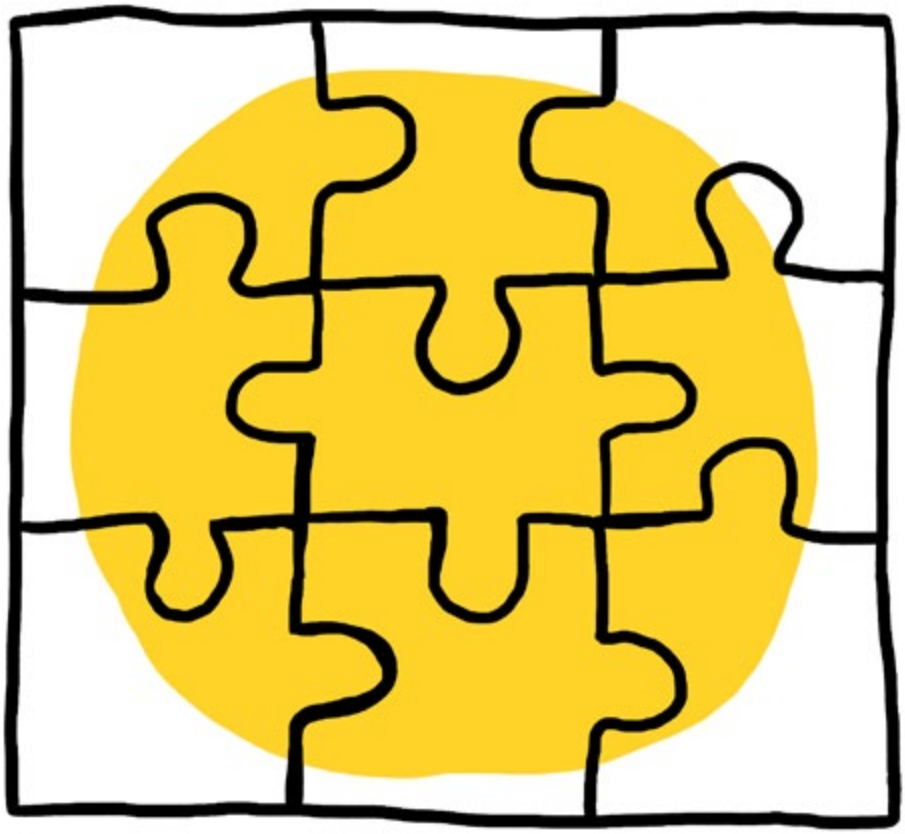
To clarify the different steps in the thesis process, you can use figures (including all types of photographs, images, and diagrams). Written (visual) products that result from the thesis often also include figures or several types of illustrations. Photographs, images, or diagrams that you take or create yourself are copyrighted by you, and you can use them freely. When using images created by others, you need to check if and how they can be used. You can learn more about how others' images can be used in the thesis work, for example, on Kopiosto's website, Kopiraittila (in Finnish or Swedish).

With the help of artificial intelligence (AI), you can also create images for the thesis or the product. When it comes to AI-generated images, it must be clearly stated that the content is artificially generated. There are various tools for creating images using AI. Systems that generate images from text you write should be used with caution, as there may be a risk that the tool has used copyrighted material in creating the image. A better alternative is to use tools where you start with an image you have the right to use and let AI modify the image.

If AI tools are used to create images, good scientific practice must be followed, and ethical aspects must be considered. This means that you must ensure that the image is not offensive or reinforces harmful stereotypes (Arene, 2024). You should also clearly state how AI (and which tool) was used to create the images, for example, in the methodology chapter or the chapter where the development process is described. The image's title (caption) should always include the prompt (text input, such as questions, instructions, that you entered into the image generator to obtain the result).

If you create a physical product that is written/visual (such as a handbook, brochure, poster, or game), or a prototype of such a product, it should be designed. For this purpose, there are various freely available online graphic design tools that can be used (such as Canva).

HANDBOOK FOR PRACTICE-BASED THESES



10 REFERENCES

Ahrne, G. & Svensson, P. (2022). *Handbok i kvalitativa metoder* (3:e uppl.). Stockholm: Liber AB.

Alvehus, J. (2023). *Skriva uppsats med kvalitativ metod* (3:e uppl.). Stockholm: Liber.

Arene. (2024). *Ethical Recommendations for Thesis Writing at Universities of Applied sciences*.

Arene. (2024). *Arene's Recommendations on the Use of Artificial Intelligence for Universities of Applied sciences*.

Bánáthys, B.H. (1996). *Designing Social Systems in a Changing World*. Plenum: NY.

Backlund, C., Forsström, S., Lindqvist, L. & Snickars, J. (2022). *Ta tag i din sömn – Ett lösningsinriktat verktyg för skolcoacher*. Hälsovårdarexamen (YH) och Socionomexamen (YH). Institutionen för hälsa och välfärd. Åbo: Yrkeshögskolan Novia.

Bertram, R. M., Blase, K.A., & Fixsen, D. L. (2015). Improving programs and outcomes: Implementation frameworks and organization change. Research on Social Work Practice, 25(4), 477-487. https://doi.org/10.1177/1049731514537687

Bryman, A. & Bell, E. (2017). *Företagsekonomiska forskningsmetoder*. Stockholm: Liber.

Design Council. (2023). *Framework for Innovation*.

Donnelly, R. & Fitzmaurice, M. (2005). Collaborative Project-based Learning and Problem-based Learning in Higher Education: a Consideration of Tutor and Student Role in Learner-Focused Strategies. I: G. O'Neill, S. Moore & B. McMullin (eds) *Emerging Issues in the Practice of University Learning and Teaching* (pp.87-98). Dublin, AISHE/HEA.

Dynehäll, M.B.S. & Lärk Ståhlberg, A. (2014). *Loopa: affärsutveckling för entreprenörer: så driver du din affärsidé till kundsuccé*. Stockholm: Liber.

Enqvist, J. & Åkerlund, D. (2024). *Sammanhållning i samtalsgrupper. En kvalitativ studie om utvecklingen av gruppsammanhållningprocessen i samtalsgrupper*. Socionomexamen (YH). Institutionen för hälsa och välfärd. Vasa: Yrkeshögskolan Novia.

Ejlertsson, G. (2019). *Enkäten i praktiken. En handbok i enkätmetodik*. Lund: Studentlitteratur.

Ejlertsson, G. (2019). *Statistik för hälsovetenskaperna*. Lund: Studentlitteratur.

Elliot, M. (2022). *Handbok för examensarbeten inom samhällsvetenskap*. Stockholm: Liber.

Erkell, L.J. (2019). Den ifrågasatta vetenskapen – vad svarar man? *Bioscience Explained* vol. 10, No 1.

Forsman, A., Salomäki, J., Dahlqvist, R., Hindersson, W. & Westerlund, W. (2023). *Mobbningsförebyggande arbete inom eftermiddagsverksamhet – Visuellt antimobbningsmaterial för barn i årskurs 1 – 3*. Socionomexamen (YH). Institutionen för hälsa och välfärd. Åbo: Yrkeshögskolan Novia.

Gröndahl, L. (toim). (2023). *Taiteellinen tutkimus*, Teatterikorkeakoulun julkaisusarja 76. Taideyliopiston Teatterikorkeakoulu, Helsinki.

Hakala, J.T. (2004). *Opinnäyteopas ammattikorkeakouluille*. Tampere: Tammer-Paino Oy.

Hakala, J. (1998). *Opinnäytetyö luovasti. Kehitys- ja tutkimustyön opas*. Helsinki: Gaudeamus

Hammar Chiriac, E. & Hempel, A. (red.) (2020). *Handbok för grupparbete – att skapa fungerande grupparbeten i undervisning*. Lund: Studentlitteratur.

Henricson, M. (red.). (2023). *Vetenskaplig teori och metod - från idé till examination inom omvårdnad*. Lund: Studentlitteratur.

Holmlid, S. & Wetter-Edman, K. (2021). *Tjänstedesign: principer och praktiker*. Lund: Studentlitteratur.

Höglund Nielsen, B. & Granskär, M. (red.). (2017). *Tillämpad kvalitativ forskning inom hälso- och sjukvård*. Lund: Studentlitteratur.

Högskolan i Borås. (u.å.). *Planera, dokumentera och redovisa dina sökningar*.

Innokylä. (u.å.)

Jansen, S. & Pieters, M. (2017). *The 7 Principles of Complete Co-creation*. Amsterdam: BSI Publishers.

Karlsson, O. (2017). *Svenska skrivregler* (4:e uppl.). Stockholm: Liber.

Kostamo, P., Airaksinen, T. & Vilkka, H. (2022). *Kirjoita itsesi asiantuntijaksi. Opas toiminnalliseen opinnäytetyöhön*. Helsinki: Art House Oy.

Lankford, W.M. (2002). Benchmarking: Understanding the Basics. *The Coastal Business Journal* (1), 57-62.

Lästips svenska (17.5.2021, uppdaterad 4.10.2024). *Institutet för språk och folkminnen, Språkrådet*.

Myndigheternas skrivregler (8:e uppl.). (2014). Institutet för språk och folkminnen, Språkrådet.

Ojasalo, K., Moilanen, T. & Ritalahti, J. (2015). *Kehittämistyön menetelmät. Uudenlaista osaamista liiketoimintaan*. Helsinki: Sanoma Pro.

Olsson, H. & Sörensen, S. (2021). *Forskningsprocessen: Kvalitativa och kvantitativa perspektiv* (4:e uppl.). Stockholm: Liber.

Productboard. (u.å.). *A guide to using the "Double Diamond" framework to score product home runs*.

Open AI (2024) ChatGPT.

Pauwels, L. & Mannay, D. (2020). *The SAGE Handbook of Visual Research Methods* (2nd ed.). Los Angeles: SAGE.

Ries, E. (2011). *The Lean Startup: How Today´s Entrepreneurs Use Continuous Innovation to Create Radically Successful Businesses*. New York: Crown Business.

Rogers, E. M. (1983). *Diffusion of innovations* (3rd ed.). Free Press. (See Chapter 5)

Salonen, K., Eloranta, S., Hautala, T. & Kinos, S. (2017). *Kehittämistoiminta ja kehittämisen menetelmiä ammatillisessa korkeakoulutuksessa*. Turun ammattikorkeakoulun oppimateriaaleja 108. Turku: Turun ammattikorkeakoulu.

Sandvik, A-H. & Ekebergh, M. (red.) (2022). *Studenthandledning i vårdande verksamhet. Teoretiska utgångspunkter och didaktiska metoder*. Stockholm: Liber.

Seppä, A. (2012). *Kuvien tulkinta: menetelmäopas kuvataiteen ja visuaalisen kulttuurin tulkitsijalle*. Helsinki: Gaudeamus Oy.

Sleeswijk Visser, F., Stamppers, P. J., van der Lugt, R. & Sanders, E. B. (2005). Contextmapping: experiences from practice. *CoDesign*, 1(2), 119–149. https://doi.org/10.1080/15710880500135987

Sjovold, E. (2023). *Teamet. Utveckling, effektivitet och förändring i grupper* (2:a uppl.). Stockholm: Liber.

Socialstyrelsen. (2012). *Om Implementering*.

Sveriges kommuner och regioner. (u.å.). *Innovationsguiden*.

TENK. (2023). *God vetenskaplig praxis (GVP)*.

The Test Card. (u.å.) I: *Strategyzer*.

The World Café Community Foundation. (2015). *Café To Go! A Quick Reference Guide for Hosting World Café*.

Varto, J. (2018). *Artistic research: What is it? Who does it? Why?* Aalto-yliopisto, Taiteiden- ja suunnittelun korkeakoulu.

Vilkka, H. (2021). *Näin onnistut opinnäytetyössä. Ratkaisut tutkimuksen umpikujiin*. Jyväskylä: PS-kustannus.

Vilkka, H. & Airaksinen, T. (2003). *Toiminnallinen opinnäytetyö*. Helsinki: Kustannusosakeyhtiö Tammi.

Wedel, N. (2018). *Kamratlärande*. Lund: Studentlitteratur.

Appendix 1: Group Contract

Contact information of group members:	
Plan for the group's internal communication:	
Meeting schedule:	
Group's meeting routines:	
Group's internal rules:	
Consequences for rule violations:	
Date for evaluation and update of the contract:	

Signatures of group members:

Name **Name**

Name **Name**

Appendix 2: Test card for testing assumptions

ASSUMPTIONS

We assume that:

TEST

To verify assumption we want to:

MEASUREMENT

Measurements occur as follows:

CONCLUSIONS

Was the assumption verified?

What did we learn?

Based on our current knowledge, which decision shall we take?

Appendix 3: Example of an information retrieval work plan

Work Plan for Data Search – Update It Throughout the Process

Your Topic/Assignment:

Identify key themes based on the purpose of the work and formulate search terms for each of them:

Theme 1		Theme 2		Theme 3
Keywords	AND	**Keywords**	AND	**Keywords**
Type of information you think you will need, for example:				
The type of information sources you think you will need, for example:				
Search tools you intend to use, e.g.:				

Appendix 4: Example of a search table.

Date of search	Database/ search tool	Search terms	Boolean search	Number of records	Limits (filter)	Number of records	Articles included in the study
Date of search	Sources found by means other than database/search tool searches				Sources used in the report		

NOVIA
UNIVERSITY OF APPLIED SCIENCES