Collaboration: A Pre-Study

ITE500

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Abstract

This thesis explores the factors contributing to successful collaboration within the Quadruple and Quintuple Helix frameworks, with a specific focus on the active involvement of students as stakeholders. A qualitative research approach was adopted, utilising interviews, questionnaires, and action research documented in a diary form, to gather data. The study examines the Creative LAB, an innovation lab initiated by students in the Innovation and Design master’s program at Mälardalens University, as a base for the collaborations with which the data is inquired from.

The research employs the Quadruple and Quintuple Helix models as theoretical frameworks to understand collaboration dynamics. Phenomenographic analysis was used to categorise and analyse the experiences of collaboration. The interviews and questionnaires, both addressing the same topic, were transcribed, and subjected to systematic extraction and analysis. The findings are presented in the form of categories, supported by direct quotations and perspectives from the respondents.

The research diary served as a reflective tool throughout the thesis, documenting and analysing the obtained results and the work conducted within the Creative LAB. It provided valuable insights into the collaboration dynamics, success factors, and the role of students as active stakeholders in the Quadruple and Quintuple Helix models. By capturing observations and personal reflections, the diary contributed to a deeper understanding of the research findings and enhanced the overall validity of the study.

One of the projects, WellBot, is also presented as a case study.

In summary, this thesis provides insights into the key success factors for collaboration within the Quadruple and Quintuple Helix frameworks, while also highlighting the significant role of students as active stakeholders. The results shed light on the perceptions and experiences of the participants, offering valuable implications for fostering effective collaboration in the context of academia, industry, and society. In the end, success-factors identified within the study is presented, as well as a questionnaire to identify perceptions on potential collaborations.

Keywords: “collaboration”, “quadruple helix”, “quintuple helix”, “phenomenography”, "phenomenographic action research", “action research”, “innovation lab”, “student innovation system”, "innovation system"
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Creative LAB

This thesis is one out of three theses that are having Creative Lab as a partner. The other students involved, both from MDU, are Cornelia Alenbring and Inés Acinas. Our goal is to create a synergy between academia, industry, and society, fostering a collaborative, innovative workforce committed to creating sustainable solutions. My thesis focuses on the experiences and perceptions of good collaboration, and how these can be used to identify success factors for future collaboration. The other thesis has been done by Cornelia Alenbring, on the investigation of the students’ role in an innovation ecosystem with Creative Lab as boundary object; and Inés Acinas' thesis studies and promotes collaboration between academia, civil society, and industry through a student-driven innovation lab.

Glossary

**Triple Helix**: Triple Helix refers to the collaborative relationship between academia, industry, and government in driving innovation and economic development.

**Quadruple Helix**: Quadruple Helix is built on the same logic as the Triple Helix, it incorporates academia, industry, government, as well as civil society to foster innovation, economic development and address societal challenges.

**Quintuple Helix**: Quintuple Helix, is the next step after Quadruple Helix, it involves the relations between academia, industry, government, civil society, media, and culture and lastly the environment. Looking at both the relations, as well as the context.

**Social Innovation**: Social innovation is the process of finding solutions to social and environmental challenges for the betterment of society. It involves developing new ideas and strategies to address pressing issues and create positive social change. Social innovation finds value in more than just economic development, it adds the social factor, the humans.

**Open Innovation**: Open innovation is a collaborative approach that involves external stakeholders in the innovation process, promoting the sharing of ideas, knowledge, and resources to drive creativity and value creation.

**Industry 4.0**: Industry 4.0 refers to the integration of advanced technologies in manufacturing and industrial sectors, such as IoT, AI, Digital Twins, 3D printing, enabling smart factories, improved productivity, and new business models.

**Industry 5.0**: Industry 5.0 combines advanced technologies from Industry 4.0 with the humans in manufacturing, emphasising collaboration and enabling a more human centred approach for more sustainable production.

**Education 4.0**: Education 4.0 is the transformation of education systems using digital tools and technology to enhance learning, fostering 21st-century skills such as creativity and innovation, as well as promoting lifelong learning.
Third Mission: The Third Mission refers to the societal role of universities beyond teaching and research, involving activities like knowledge transfer, community engagement, and partnerships for innovation and development, social, economic, and ecological.
Introduction

Collaboration is an essential element of success in many aspects of life, from personal relationships to business ventures. In the context of the modern world, the concept of collaboration has taken on new meaning as we enter the era of Industry 5.0 and Society 5.0. In this new landscape, collaboration is more critical than ever as we work to navigate the complex challenges facing all of society and industry. (Cabinet Office, n.d., Carayannis & Morawska-Jancelewicz, 2022)

But what makes a good collaboration? Is it simply a matter of bringing together talented individuals and letting them work their magic? Or is there more to it than that? Successful collaboration requires effective communication, a shared vision, a willingness to compromise, and a commitment to achieving common goals (Gino, 2019). This thesis will explore this through the experiences and perceptions of students involved in projects connected to Creative LAB, a student focused innovation lab.

Collaborating will be critical to success in Industry 5.0 and Society 5.0. Industry 5.0 is characterised by the integration of human skills and technology. It also has a focus on creating value for society. Society 5.0, on the other hand, centred around the idea of a human-centric society that balances economic growth with social welfare and sustainability. Both movements require a high degree of collaboration among individuals, organisations, and communities to achieve their goals.

With the changes in society and industry, the future of work is changing, requiring students to have key skills such as creativity, critical thinking, collaboration, and problem-solving to succeed in their careers. Oktradiksa et al. (2021) lift the importance of the 4Cs, Critical Thinking, Collaboration, Creativity and Communication. These skills become even more essential with Industry 5.0, where the focus is on developing highly customised and flexible solutions using new technologies like the Internet of Things (IoT), big data, and artificial intelligence (AI) (Oktradiksa et al., 2021). Combining the new needs, with the approach of transformative learning (Mezirow, 1978) where the individual's learning occurs when it changes how the individual behaves, acts, or thinks, could be a way of creating future-ready students.

**Transformative learning, key concepts:**

- *Change in psychological pattern, how a person thinks*
- *Change in convictional pattern, how a person defines*
- *Change in behavioural pattern, how a person behaves*  
  *(Nino, Cuevas & Loya, 2011)*

The transformative learning theory by Mezirow (1995), defined into four phases:
Having experiences, making assumptions, challenging perspectives, and experiencing transformative learning. Transformative learning then becomes a new experience.

This leads to an assumption that the learning should not only be built on experiences but on experiences that build on and to the 4Cs. However, accomplishing this task is not simple, and designing the structure of learning has been a continual and evolving journey for humankind. An approach that can be taken is to focus on activities that are encouraged to take place within the zone of proximal development (Vygotsky, 1934), activities which learners can do with guidance. This zone encourages learners to think and act independently by making use of the skills and knowledge they already have, while still being supported and guided by a more experienced individual. This way, they can develop new skills and knowledge within their comfort zone. Keeping the future in mind, learning should focus on what the student can use, and the zone of proximal development provides a safe and supportive environment for learners to practise and develop skills while still having the support they need. It allows them to be challenged in a way that encourages growth and allows them to learn and practise at their own pace. This type of learning could fit, as it aims at helping the learner become an independent thinker and problem solver and possibly prepares them for the challenges of the future.

![Vygotsky's Zone of proximal development](image)

The learning experience, as described by Finger & Asun (2001) is something that grows, and it follows an iterative cycle model. The cycle begins with the learner being presented with a task or challenge, which they must then analyse and comprehend to make sense of it. This is followed by the learner attempting to solve it, receiving feedback from their teacher or mentor, and then reflecting on what has been learned. The cycle then iterates as the learner is presented with another task or challenge.
Reconnecting to the 4Cs, creative thinking and engagement are formulated in PISA 2021 (2019) as a structured and continuous circle of doing and undergoing, acting with the environment, and taking in the reactions of this. This formulation is remarkably like the iterative process of learning presented by Finger & Asun (2001). As an educational institution, it is not only focused on having projects that are important and fun but also the knowledge creation in said projects, PISA 2021 (2019) explores how creativity can be taught in a school environment. Scardamalia & Betner (1999, 2002, 2006) lifts how a creative school environment and organisation leads to students who can contribute with ideas to their community. By doing this in a collaborative form, teams can develop new answers to complex problems that are beyond the individual's capabilities (Warhuus, et al., 2017).

The students can play vital roles within the university's organisation. Karolinska Institutet presented last year a project called Third task (Sönö, 2022) which let students lead a project whose focus is to fulfil the university's role of presenting information and research to the public and society. Here the students take on one of the university's roles and succeed. This again is connected to what Scardamalia & Betner (2002) present, that a creative environment and trust in the students can lead to students who make real contributions to society as well as help the university with its responsibilities.

According to DeCoker (2000), educational testing systems that prioritise standardisation and accountability have limited the opportunities for students to exercise their creative thinking abilities. This trend has led some scholars, such as Berliner (2011), to argue that current educational approaches and assessment methods are so narrow that they are causing a 'creaticide' among young people going through the education system. On the other hand, through the practice of cross-fertilization, which involves exchanging thoughts, ideas, and concepts between different fields and industries (Gonzalez-Piñero et al, 2021), there is potential to enhance creativity by directly challenging and breaking down traditional barriers between academic faculties and subjects. This is well connected to the formulated goals of MDU for the future:
"We need to review higher education pedagogy in order to create progressive, collaboration-oriented programs with a focus on contributing to a sustainable future. We want to promote multidisciplinary and challenge-driven education." - Action plan in five points from the university management, MDU. (Cedervall, 2023)

University of Michigan's Center for Socially Engaged Design (2023) brings together students, faculty, and community members to design solutions to complex social problems. These solutions include affordable housing and clean energy. The centre partners with local organisations and stakeholders to identify challenges and then works with students to develop innovative solutions. This approach not only helps solve pressing social issues but also provides students with real-world experience in solving complex problems in collaboration with others. Another example of this approach is the Social Innovation Collaboratory at Fordham University in New York (2023). The Collaboratory is an initiative that brings together students, faculty, and community members to address social and environmental challenges. The Collaboratory provides resources and support for students to develop their ideas and turn them into impactful projects. By empowering students to take the lead, the Collaboratory fosters a sense of ownership and commitment to the projects, resulting in more effective solutions. In addition to these examples, many universities have established innovation hubs that encourage collaboration and innovation among students, faculty, and industry partners. These hubs provide resources such as workspace, funding, and mentorship to help students develop and launch their projects. The hubs often facilitate connections between students and industry partners, enabling students to work on real-world problems and gain practical experience. The Social Innovation Collaboration at Fordham University is part of AshokaU (2023) a global network of universities dedicated to social entrepreneurship. AshokaU is committed to advancing the field of social innovation and empowering students to create positive change in their communities.

Ellström (1999) points out that wicked problems need competent solvers, which can work intuitively. To reach this, the individual needs to be experienced. Säfström, formerly a professor in pedagogics at MDU, states that there is a development myth within education, if the goals for education are put in the future, this can be formulated as the urgency for change in the present will always be put in the future, if the goal for change is put in the future (Ellström, 2010).

Stier (2004) professor and Chancellor’s council at MDU, presents three different focuses on the reason for internationalisation in higher education, being idealism, instrumentalism, and educationalism. These are from the University's viewpoint, and in the conclusion, more cooperation with students is one point suggested for discussion and collaboration.

Lahdenperä professor emerita at MDU, wrote together with Ledin (2007) that democracy itself is a value, and that democracy itself has value. That the school system is built upon this, the idea of democracy, and the value of democracy. They argue that the school must implement and live by this.

Using inclusion as a method and tool, both by nature of who makes the projects (diverse groups, including international students) as well as the diversity of the projects made, can help to create a campus and university which creates belonging (Nunn, 2021). MDU has
several well-functioning platforms for collaboration, but none have the focus on students as stakeholders in collaboration. It is beneficial to connect the goals of MDU to the goals of Region Västmanlands Affärsplan 2030 (n.d.), where attracting talents, as well as increasing internationalisation are important pieces, as well as to goals which the government has set up with attracting, integrating, and keeping international competence and highly skilled talents (Regeringen, 2020. Vinnova, 2022. Arbetsförmedlingen, 2016). Creating progressive, collaborative, international students which are competent and capable of tackling complex problems and challenges.

In the following thesis, I will explore what makes a good collaboration. This will be done in a phenomenographic action research project within Creative LAB, a student focused social innovation lab created by Inés Acinas, Anna Khofman and Simon Lindblom. The projects which will be examined, will be conducted by five teams of students which all are participating in a course on project management. The experiences will be compared to explore different approaches to team collaboration. I will also examine the importance of team dynamics and communication in successful collaborations. I will use a combination of phenomenography research specialisation and participatory action research to look closer at the experiences of the different collaboration approaches.

Research question and objectives

Collaboration plays a role in achieving success across various domains. In our modern, interconnected society, its significance has only grown, given the intricate and complex challenges faced by industries and the society. These challenges cannot be tackled by any individual or organisation alone. Therefore, understanding the factors that contribute to successful collaboration is a topic of interest. The research question is as follow:

What are the experiences and perceptions of good collaboration for students at Mälardalens University?

This thesis, and the research question specifically examines the dynamics of collaboration within and in vicinity of Creative LAB, focused on student groups, individuals, the Creative LAB and the Quadruple/Quintuple Helix as a whole.

Structure of thesis

This thesis will research first through a literature review, this is done through several search strings, which later is screened in a systematic way. The literature review uses the tool Covidence to provide structure in some of the steps.

After the search and screening, a literature overview on the field of Quadruple and Quintuple Helix is presented, as well as social aspects of collaboration and students as stakeholders in collaboration, all within the fields of Innovation, social innovation and open innovation.
Thereafter, a presentation of the thesis's methodical approach and research specialisation is presented, Phenomenography, as well as Action research funnelling down to Phenomenographic action research. The thesis uses research methods connected to pedagogical tradition, looking into students as well as university employees’ experiences of collaboration within Industry-university collaboration.

The data collected from interviews and questionnaires are presented according to the Phenomenographic analysis framework, presenting both the progress of finding themes and patterns, as well as perceptions and experiences of the respondents. The work with data collected was done in several iterations, diving deeper into the phenomenon and experiences.

After the Phenomenographic analysis, the next part of the thesis follows a diary method, where the researcher themself reports the experiences of conducting or coordinating projects together with students involved in Creative LAB projects. This part, the Phenomenographic action research, also includes reflections on interviews, workshops as well as preparatory work for the different actions in the projects.

One of the final projects, WellBot, is presented as a case-study, whereas the project members as well as the researcher implemented lessons learnt from the other projects, as well as prototyping and testing a project where students themselves are the most active and responsible stakeholder. The project involves several stakeholders, from the University, Municipality, Industry, and different students from different universities.

Lastly, reflections, results and recommendations for future research are presented.

Narrative review

The following literature review is to map and describe the research that exists within the quadruple and quintuple helix, but also to show and place this in the context in which it is located. One of the aspects investigated throughout is the role of university students in these models, both how they are mentioned and what they do. The review will be done with a systematic approach, but also with an explorative nature, to find borderline articles. The review will follow a narrative approach, where some aspects of the work are systematic, but some are exploratory in nature. (Green et al., 2006)

Choice of search engine

The selection of the literature search engine was made based on convenience and strategic considerations. MDU Library, with Primo, being the chosen search engine, was deemed appropriate due to its familiarity and accessibility for students at MDU. This choice was made with the intention of minimizing additional efforts while ensuring the reliability and
quality of the retrieved literature. The goal with the review of literature is to map out university students’ involvement within the Quadruple- and Quintuple Helix Model research.

Search and first screening
The first search was a combination of eight different search strings, all of them based on the results of the earlier. This both led to a funnelling down in the search strings, but also in the end searches to strings that were too broad. (Green et al., 2006)

The iteration of search strings provided a huge number of articles and books, as a search strategy the results which resulted in big numbers, the searches were scanned the first 8-10 pages (80-100 articles), the later into the searches, the articles fit less into the search terms, The results with fewer results such as “Quintuple helix” with 206 results, all articles and books were screened. Articles chosen were the ones connected to Quadruple/Quintuple Helix and collaboration. In the search Civil Society Community, many of the results which were discarded were about how to rebuild communities after disasters. In Building Community, many of the results were connected to architecture or how to build in public spaces for inclusivity (Green et al., 2006). The screening resulted in 223 articles and books, which nine were duplicates, resulting in 214 after these were removed.
The search strings and amount of literature found:

- **Building community**: 230 882 results
- **Social Industry 5.0**: 1571 results
- **Education 4.0**: 25 387 results
- **Civil society community**: 36 130 results
- **Open innovation society**: 11 580 results
- **Collaborative innovation**: 88 237 results
- **Quintuple helix**: 206 results
- **Quadruple helix**: 746 results

When choosing the articles for further exploring, a screening of titles as well as abstracts was done. The focus and criteria for inclusion was articles and books about Collaboration,
Innovation and Quadruple/Quintuple Helix, many of the excluded articles were clearly not the subject, as shown in picture below. The first screening was generous in inclusion, something that led to more work in the later screenings.

![Image](image.png)

*Result in the literature search which was excluded.*

Second to third screening and Covidence

After the first screening, which resulted in 223 articles and books. The next step was a deeper screening, of the abstract and then of the text. When conducting a systematic literature review, it is important to choose a tool that can help streamline the process and ensure that the review is conducted in a rigorous and transparent manner. After conducting a thorough search and evaluation of various tools, I chose to use Covidence. My decision to use Covidence was based on its ability to facilitate collaboration among researchers, streamline the screening and data extraction process, and provide a clear and transparent audit trail. In addition, the tool has been successfully used in previous systematic reviews, as demonstrated by McKeown & Mir (2021). By using Covidence, the tools nature will help to make the systematic literature review conducted in a more efficient and rigorous way.

The first thing that happened when importing the library to Covidence, was the removal of 9 duplicates. After this, the second screening of the articles was done, a deeper screening of abstracts. When importing into Covidence, books were imported with chapters individually, as many of the books were compilations of different papers. Now also with the keywords from the searches highlighted. Within Covidence, the articles have abstracts. You can choose what to do with the articles, keeping (Yes) or discarding (No) and to choose again later (Maybe), shown on Screenshot.
The criteria-terminology for inclusion when using Covidence were, quadruple helix, quintuple helix, civil society, open innovation, and innovation. These terms were highlighted green by the tool, as well as used by the tool to make a hierarchy in how and when the articles were presented. Covidence uses machine learning to extract keywords, as well as present the articles in a coherent way, the articles which are written about the same or connected subjects will be presented after each other. This makes it easy to quickly see patterns and similarities, on the other hand, it could narrow down your view, as the similarities are based on machine learning it is possible that it is not finding deeper connections so-called “between the lines.” The articles you choose between will adjust according to if you choose to keep, discard or to check again later.
Screenshot from Covidence, how the screening of stages two to three went. Some extraction features were not used, such as ongoing or awaiting classification studies, some of the features are more suitable for medical studies.

During the different stages of screening, it is possible to invite another person to become a team member, in that case, you both can vote on every article at each step. This was not done in this literature review.

The choice to use Covidence, and the way it was used, was to screen all the literature in a systematic way. In the end, it is possible to upload every article in pdf format to Covidence and to create criteria as to why the article should or should not be used. This function was not used. The pre-defined settings for these stages are set up for medical studies, so I chose to not use the last step but instead read the 80 studies included myself and summarise them in my own document.

Second Literature Search, Connected papers.

During my meeting with my supervisor, I received valuable feedback on improving my thesis. One suggestion was to use a tool called Connected Papers to visualise how my paper connects through citations to others (Chris Ivory, personal communication). This tool helped to identify the most relevant and influential papers in the field, as well as identifying if there were potential gaps in the literature review so far. The choice to use this tool, Connected Papers, was based on further exploring and enhancing the rigour and depth of my research, as well as to check if the literature I found was representing the area of the literature study.
Connected papers use a simple and clear visualisation, the connections between different articles and how they connect and interconnect. Using this tool made it clear that Elias Carayannis is one of the most influential writers within the space of quadruple and quintuple helix connected to innovation. When searching for “carayannis helix” in MDU’s Library search, it results in 136 results. When looking through the 80 articles which I already found and had chosen for the next step, several of the articles had Carayannis either as author or co-author.
Reflections

The results of the literature searches point to the conclusion that the screening for articles within the Quadruple/Quintuple Helix area was successful in mapping out the area, as well as finding the most influential authors. This even though the search strings were not iterated according to a classical systematic research. The result of the search on Carayannis as well as the Quadruple and Quintuple Helix, shows research areas which are new or small, with just a couple of hundred of results, the other searches such as open innovation society and social industry 5.0 could be reasons for this, on the other hand it could be a lucky coincidence. If this subject should be researched further, yet another literature review would be beneficial, using results from the study to find and iterate the keywords for search strings.

Literature

The following narrative review will focus on Quadruple and Quintuple Helix, Open Innovation, Social Innovation and how Universities and Students roles as stakeholders in the Quadruple and Quintuple Helix. It will also go into some aspects of Triple Helix, Industry 4.0, Industry 5.0, Education 4.0 and Society 5.0.

Collaboration between different parts of society

When approaching complex problems, it is important to have a variety of views (Lindhé & Sülau, 2021), and have a broad systematic view of what the problem areas are. Nordberg et al. (2020) present how a social innovation project came to a level when a student was involved, while the student was writing their thesis, they saw the potential and created a business model for the project.

The quadruple helix model provides a framework for collaborative projects that address complex problems in Industry 5.0 and Society 5.0 (Bellandi et al., 2021). This approach can contribute to the development of more innovative and sustainable solutions in the new landscape of Industry 5.0 and Society 5.0 (Franco & Tracey, 2019). Bellandi et al. (2021)
discusses the quadruple helix model of collaboration for social innovation, with a focus on what has not been explored. They point out how the quadruple helix has few studies which show all participants/stakeholders' views or approaches to the work. Within the quadruple helix, they list four types of contributors/roles to a project: research providers who offer scientific solutions, mediators who facilitate interactions, operatives who engage in functional activities, and brokers who provide access to wider knowledge networks (Bellandi et al., 2021). On the other hand, Abhari et al. (2019) propose to classify social actors in the sharing economy based on their motivation to participate in co-innovation, divided into three different roles – ideators, collaborators and networkers – based on what motivates them. Arvaniti et al. (2022) analyse the role of open innovation (OI) and value co-creation in the transition from Industry 4.0 to Society 5.0, emphasising the importance of collaboration and ecosystem creation, proposing to use of Research Loop as a method within the Quintuple helix. This is to have a more organised way of collaborating with different partners.

Barcellos-Paula et al. (2021) highlight the potential for Quintuple Helix to be an analytical framework to explain interactions among actors in society.

Triple Helix and Quadruple Helix models can be used together to foster sustainable innovation, the Quadruple Helix is more focused on democratisation and Bottom-up initiatives, and the Triple Helix works better for Top-down initiatives (Cai & Lattu, 2022). In 'Mode 3' and 'Quadruple Helix': toward a 21st century fractal innovation ecosystem (2009) Carayannis & Campbell emphasise the importance of multi-layered innovation networks and knowledge clusters for knowledge creation and diffusion and introduce the Triple Helix model with the addition of a fourth helix, the media-based and culture-based public, the Quadruple helix.
Carayannis et al. (2021) present the co-evolution of ideas and development of the Quadruple and Quintuple Helix innovation systems. These systems integrate multiple stakeholders in knowledge and innovation production and emphasise the importance of interdisciplinary research and human-technology collaboration in Industry 5.0. The article also introduces the concept of Society 5.0, which aims to put human beings at the centre of innovation and highlights the importance of democratic and ecological aspects in these innovation systems (Carayannis et al., 2021). Carayannis et al. (2022) discuss the concept of Society 5.0 and Industry 5.0, proposing a model of a socially and digitally engaged university to strengthen its functions within a modern regional innovation system. Carayannis et al. (2022) also highlight the importance for Universities to be part of Quadruple/Quintuple Helix collaborations to increase sustainable collaborations. Grundel & Dahlström (2016) introduces the concepts of bioeconomy and quadruple and quintuple helix models to democratise policymaking and innovation systems, address sustainability concerns and involve civil society in innovation processes. Crilly et al. (2020) propose a quintuple helix model for higher education and discuss the importance of collaboration with a wide range of stakeholders to improve the effectiveness of education as well as the importance of having a common language when talking about sustainability. Bartoloni et al. (2022) proposes a conceptual model for designing human-centric solutions that integrate the Design Thinking approach with Quintuple Helix, to enable Society 5.0.
Del Giudice et al. (2017) looks at quadruple helix as a platform for knowledge sharing in knowledge-intensive enterprises and point out how social aspects are important for sharing, which then affects innovation as well as knowledge transfer. Fukuda (2020), as well as Aquilan et al. (2020), states that both the technology of Industry 4.0 and collaboration is vital for both Industry 5.0 and Society 5.0. Cloitre et al. (2022) examine the role of institutions in the entrepreneurial dynamics of the space industry, stating how the industry is defined by its constant change, and the wider view on collaboration is vital for continuous changes. Hasche et al. (2020) looks at Robotdalen, a smart specialisation initiative, through a quadruple helix framework and conclude that collaboration is important for creating value in a quadruple helix setting, but with no consensus on what the fourth helix is composed of. It is complex and a clear definition of how to do it is not formulated, but (Hasche et al., 2020) lift the importance of interdisciplinary collaboration and innovation for addressing societal challenges and transforming regional innovation systems. A Quadruple/Quintuple Helix-Based Social Innovation Ecosystem, (Carayannis et al., 2021) proposes an integrated framework linking social business model innovation with the quadruple/quintuple helix innovation models and discusses the roles of different actors in a social innovation ecosystem. Carayannis & Campbell (2021) point to the quadruple/quintuple helix innovation model as a means of promoting social innovation by bringing together innovation, entrepreneurship, and democracy, and emphasise the importance of a collaborative approach to addressing complex societal challenges.

In 2019 (Carayannis & Campbell) discussed the relationship between ecology, innovation, and economic development in the context of the Quintuple Helix innovation systems, emphasising the coevolution of knowledge and innovation modes as crucial for advanced economic and social development. Carayannis, Campbell & Grigoroudis (2021) compare the Quadruple and Quintuple Helix Innovation Systems with the Triple Helix model and emphasise the importance of democracy and ecology for knowledge production and
innovation, they also discuss the importance of interdisciplinary approaches for digital transformation and the involvement of the "human" component.

Litardi et al. (2020) describe how Italian universities are embracing the "Sustainable University" model which includes traditional missions of education and research, as well as the third mission of collaboration with the quintuple helix model and public engagement, supported by four pillars: sustainability, social responsibility, innovation, and territorial integration. The third mission has been shown to be partially effective in allocating funds for extra-university projects, and third-sector organisations play a fundamental role in the transition towards a sustainable and resilient "Open Knowledge Society."

At Mälardalens University’s collaboration with external stakeholders in achieving value co-creation in social innovation and education has identified tensions that can hinder successful collaboration, such as lack of funding, organisational culture differences, and past relationship experiences (Öberg et al. 2021). Another finding was that student voices were not being fully heard as stakeholders (Öberg et al. 2021). Höglund & Linton (2017) paper on Robotdalen, which originally focused on diffusing knowledge to SMEs through academia, shows how Robotdalen now conducts more applied research in collaboration with industry, and the offering for students is course material and turning them into consumers of university services (Höglund & Linton, 2017).

Social aspects of collaboration
Miller et al. (2018) studied social networks in an urban technological university and how they can be used to foster collaboration and innovation, the study highlights the importance of collaboration in fostering innovation and proposes. It also provides a model explaining the importance of intrinsically motivated individuals, as well as a network which enables innovation, in a resilient innovation network.
Ziker & Fulk (2018) looking through the glasses of social innovation, highlight the importance of collaboration and social relationships in sustaining Indigenous communities in the Arctic and suggest that sharing strategies should be viewed in the context of local socio-ecology. The study also found similarities in some of the patterns of sharing behaviours identified in online communities and those found in the study, indicating that collaboration and sharing are fundamental human behaviours that transcend cultural and societal boundaries (Ziker & Fulk, 2018). Kimura et al. (2018) propose a method for generating societal visions based on the social systems theory, which considers society as an autopoietic system whose elements are communication and provides a worksheet for practising the method.

The method Kimura et al. (2018) present enables users to think about the network of functional systems of society and imagine the influence or spreading diffusion of innovation to various areas outside the target domain of the innovation. Dowin Kennedy (2021) points out how bottom-up community capacity-building is crucial for sustainable development and a more inclusive sustainable future. The nature of this collaboration can be driven by place-based personal relationships, shared vision, identification of complementary assets and
investment, creation of opportunities for new entrepreneurs, and curation of space and culture. The context is important for entrepreneurship (Dowin Kennedy, 2021).

Creating social wealth, Dowin Kennedy (2021)

Students as stakeholders and actors

In a study by (Carlsson et al., 2022), students’ experiences as part of a research team interacting with senior researchers were dependent on indirect experiences and feedback from a significant other. However, the research environment was also perceived as highly competitive, leading to feelings of exclusion among students. The study also highlighted the impact of the learning environment on students' motivation to learn, which has been previously documented in the literature. The authors suggest that inviting students to participate in existing research groups can support the creation of positive learning environments. Kimbrough and Cooke (2011) point out that it is important to build and create traditions with students within the campus community, with changing student demographics and the fact that many students have varied cultural expectations and experiences (Kimbrough, Cooke, 2011). This can also be connected to how Petitt & McIntosh (2011) points at international students as a very linkage that should be explored to ensure multicultural competence in institutions. Kimbrough & Cooke (2011) also lifts the importance of intra-collaboration, collaborating with other student affairs offices and forging creative partnerships with colleagues on the academic side of the institution proved to be the key to successful multicultural student services programming. As noted by (Frogett, 2015), collaborative cultures within organisations can be fostered through various dimensions of peer-led practices, including lateral peer relationships and flat internal structures that enable ground-level decision-making. However, the authors highlight a common oversight of the role of vertical leadership within community sectors, whose democratic credentials rely on these flat structures. While a collaborative ethos can be promoted through peer-led approaches, it is important to recognize the role of vertical leadership in supporting effective collaborations (Frogett, 2015).
VIP (Vertical Integrated Projects) where students engage as researchers and the view on University learning is connected to a student-centred perspective (Carlson et al. 2022). When implementing the VIP in collaboration between Malmö Högskola and Uppsala University, they saw students finding great value in “gaining real-life experience” as well as the importance of self-efficacy (Carlson et al., 2022).

Summary

In open innovation, social innovation, Society 5.0, and Industry 5.0, in triple-, quadruple and quintuple helix, all of them focus on different forms of collaboration. The triple helix is often discussed within academia and the university, but many times the triple helix does not take into consideration the students as individuals, participating in several helixes. The triple helix model traditionally refers to the collaboration between universities, industry, and government, but often fails to recognize the importance of the individual student’s role in the research process. In some of the papers, students were seen as actors, such as Höglund & Linton (2017), when presenting the project, in the beginning, students were seen as an active part, but later they were rationalised away from the project. Also, Öberg et al. (2021) take up the aspect of students, where they are mentioned as stakeholders, but here they are specifically not taken into consideration. Interestingly, both articles are describing collaborations with Mälardalens University, when scoping the literature in the area, they stick out and are not part of the centre of the literature regarding the Quadruple helix. The ones who are in the centre of the area, are often co-written or connected to Elias Carayannis, but they do not mention the students in the same way. The articles which discuss students on the other hand, many of them come from Sweden (Höglund & Linton, 2017, Öberg et al. 2021, Nordberg et al. 2020) but also articles from Italy (Litardi et al., 2020, Bellandi, 2021). This could be because articles regarding Quadruple and Quintuple Helix are new (from 2009 onwards), and the area of student involvement has not been thoroughly investigated.

By fostering a culture of innovation and collaboration, universities could prepare their students to become agents of positive change in their communities and beyond, contributing to social and environmental sustainability and helping businesses and organisations stay competitive.

Research methods and specialisation

This thesis will use a diversity of methods for conducting interviews and other activities connected to acquiring data, and instead of a methodology, it will use the research specialisation Phenomenography. Phenomenography is from the pedagogical tradition and was originally developed in Sweden, it is still most common in Sweden and Australia, but Australians produce more research in the specialisation (Tight, 2016). So there has been an active choice, using a pedagogical research specialisation in a study of the field of Innovation and Design, the pedagogical field today is a dynamic and complex process which involves recognizing learners as intentional agents, considering the learning context with its affordances and constraints, and acknowledging the web of relationships, values, and
meanings surrounding the context (Curtin & Hall, 2018). These strengths of the pedagogical traditions have the potential to make it a strong partner in exploring new fields of Innovation and Design, especially connected to fields which are at the fuzzy end, such as Society 5.0, Industry 5.0, and Quadruple/Quintuple Helix, which all are focused on the humans involved and their subjectivity, experiences and relationships.

**Phenomenography**

Phenomenography is a pedagogical qualitative research specialisation developed in the 1970s at Gothenburg University by the INOM group with Ference Marton at the forefront (Marton & Booth, 1997). Phenomenography aims to describe people's perceptions of phenomena and to explore their experiences. The starting point and birth of phenomenography are in practice, where it is used to describe phenomena by categorising the differences, similarities, and specific distinctions between individuals' perceptions and experiences of phenomena (Marton & Booth, 1997). What phenomenography is interested in, is how individuals describe their perceptions of the aspects that make up the phenomenon. Phenomenography does not compartmentalise learning and knowledge into distinct categories or hierarchical levels but rather views knowledge as an organic entity that emerges from personal experiences. Consequently, understanding derived from this perspective is not dichotomous but more nuanced and complex (Marton & Booth, 1997). The process of understanding, learning, and gaining knowledge is a continuous and ongoing one.

Phenomenography does not start from any ontological or epistemological point of departure but is instead an empirical research specialisation for processing data (Marton & Booth, 1997). This means that it extracts first-hand from the empirical data collected and does not proceed from philosophical assumptions about how the world is designed. Phenomenography formulates the starting point as a second-order perspective. The second-order perspective is based on people's qualitative, that is different, perceptions of situations and is in the opposite relationship to the first-order perspective. First-order perspectives are statements about how the physical world is, according to scientific tradition (Kroksmark, 2011). In phenomenography, individuals' perceptions of how a phenomenon expresses the most important, by this are means of experiences, perceptions, and awareness about phenomena (Marton & Booth, 1997). Individuals perceive the same phenomenon in different ways, and within phenomenography, there is a logical hierarchy for these perceptions, something that the early research gained insight into (Marton & Booth, 1997). Within phenomenography, the word quality is used, meaning on which abstraction or levels of complexity a person builds their perceptions (Kroksmark, 2011). People base their perceptions on taken-for-granted assumptions about the world, meaning that people not only have different perceptions but also different assumptions on which these are based. This means that people's interpretations of their environment are based on their own experiences and beliefs, which can lead to different mental models of the world and different perceptions of the same phenomenon. The concept of quality is employed in phenomenography to demonstrate the levels of abstraction or complexity that individuals use to construct their perceptions (Kroksmark, 2011). Consciousness refers to an individual's perceptions based on their experiences, which are
categorised into themes and thematic fields that are shared with others. The margin refers to what exists in consciousness but is not connected to the theme or thematic field (Marton & Booth, 2000).

Variations in perceptions about a phenomenon are described by the outcome space (Dahlgren & Johansson, 2015). To structure perceptions and ways of experiencing phenomena, the researcher categorises these perceptions into descriptive categories and ranks and values them hierarchically. The researcher groups and names the variety of perceptions and experiences in the outcome space into various categories. When analysing these categorizations, statements can be divided into two different orientations: surface orientation and depth orientation. Surface orientation means that the individual only creates a superficial understanding of the phenomenon, while deep orientation implies that the focus is on the phenomenon itself, creating a deeper understanding (Dahlgren & Johansson, 2015). Another phenomenological concept is the natural attitude, which refers to the perception that reality is self-evident and will never change (Dahlgren & Johansson, 2015). Relevance structure refers to an individual's experience of what a situation requires (Marton & Booth, 2000).

The phenomenographic view on ontology and epistemology will be used throughout the thesis since it is focused on the experiences of participants within Creative LAB.

**Participatory Action Research**

The approach of Participatory Action Research, like Phenomenography, does not originate from ontological or epistemological assumptions or beliefs, but Participatory Action Research comes from inquiring and influencing (Khanlou & Peter, 2015). Some of the strengths which can be connected to PAR are listed by Khanlou & Peter (2015):

1. A mutual sharing of knowledge, skills and experiences among the participants and researchers.
2. Support of action and development of specific skills, such as leadership, by the participants.
3. Positive evaluation and support of the process by the youth participants. Specifically, these included new learning regarding the self within a social context, the acquisition of new skills, and an increased sense of empowerment. Khanlou & Peter (2015)

To solve problems and transform society, cross-border collaborative research must bridge complex issues and integrate different types of knowledge and interests. Action research could do this by integrating action, problem-solving, transformation, research, and science (McPhee, Hoppe & Lindhult, 2019).

The ethical aspects of PAR are especially important, as the researcher themselves are participating and in that sense, directly influence the participants, Khanlou & Peter (2015) presents seven ethical aspects to take into consideration when conducting PAR:

1. What is the Scientific or social value?
2. Scientific validity
3. Fair selection of subjects/participants,
4. The favourable balance between risks and benefits
5. Independent review
6. Informed consent
7. Respect for both potential and enrolled participants

The answers on how all these aspects have been implemented into the research cannot be answered before the thesis is done. All participants in the thesis are affiliated with Creative LAB voluntarily. The thesis is of an explorative nature, and the scientific value lies in the experiences within the target group, students that are active within a Quadruple/Quintuple Helix collaboration. It is not the researchers but the participants themselves who have made the selection to participate. Due to the innovative and exploratory nature of both the thesis and the collaborative platform, it is difficult to predict potential risks. Throughout the study, an iterative and reflective approach will be employed to identify and address any potential risks that may arise.

**Phenomenographic action research**

Combines PAR (Participatory Action Research) with Phenomenography, or as Beaulieu (2017) formulates phenomenographic action research. The setting of this study is within academia, and Phenomenography comes from a pedagogical tradition (Beaulieu, 2017). Action research explores diverse perspectives by addressing competing approaches and responding to a rich variety of outcomes, and Phenomenography is a research process that uses thematic analysis to highlight this diversity of perspectives (Beaulieu, 2017).

Phenomenography has highlighted the importance of investigating the diversity of students' perspectives and experiences to improve educational practice. However, the potential of using phenomenography findings to complement action research in addressing diverse needs and educational disparities is missing from its history. Combining phenomenography's perspective analysis with action research's agenda coalescing can be a powerful approach in participatory action research where stakeholder voices are integral to planning, implementation, and evaluation (Beaulieu, 2017). Cherry (2005) reflects on her own experience coming from action research and joining a phenomenography project that phenomenography is particularly good for constructing meaning from text, especially for action researchers dealing with complex and controversial issues. It's a useful approach to unhook from deeply held perspectives and stimulate critical thinking, integrating complex conceptual alternatives, and it can help surface and consider meta-themes that define the story of all of us (Cherry, 2005).
Gathering of data

Conducting interviews

Ten interviews were conducted with participants who were selected based on their involvement in Creative LAB projects within the Project Methodology course. Not all students who were part of the projects were included in the study, but all the participants were invited to participate.

It is important to note that the student who served as the project coordinator for these Creative LABs projects is also the individual writing the thesis. This unique perspective allowed for a more in-depth exploration of the impact of adding a second-year student as a project coordinator on the collaboration experience.

Overall, the selection of participants in this study focused on individuals who were directly involved in the Creative LAB projects. The inclusion of the project coordinator as the primary researcher in this thesis may have also provided a valuable and unique perspective on the collaboration experience.

While the interviews were not fully semi-structured, they did have a broad theme - what makes good collaboration - which also was used as the first question for every interview. However, it became apparent during the interviews that some respondents did not provide authentic responses or what could be considered textbook answers or answers which follow the norm, this could be to please the researcher or appear more favourable or credible. To address this issue, spontaneous questions were asked and added to guide respondents into discussing their own experiences in more depth, questions which rerouted the interview back to the respondents' experiences (Alvesson & Sköldberg, 2018)

And how's your experience been with collaboration now during the master's?
What is your experience if you compare your earlier work life and your earlier studies to university now?
So, what's been your experiences so far?
What have been your experiences of collaboration going to the university?

But also building on the answers, mirroring their answers, and summarizing what they have told, to clarify the message (Alvesson, 2010)

R: Maybe that didn't go well. And also, when I started, there were plenty of group works. Some did go well, very well, because of the parallel mindset and you’re understanding. And the work distribution and the idea exchange went well. And in some cases, because of, I think, the backgrounds, or maybe I'm just looking at through a technological perspective, the other partners were not into that technology, they worked into mainly business or theoretical focuses.
Simon: So that didn't go that well.
R: Yeah.
Simon: What do you think could make or can make a collaboration with this, when you say that you work with, you know, external partners, what could be something that makes the external partnership go better or make it
have the best possibilities or best, like, what would be the best scenario to start with in a collaboration with an external partner?

And other times the summary could also be a question.

Simon: So, you think that meeting a person first and then continuing digitally is something that works?  
R: Yeah, yeah, yeah. Most probably.

Overall, this loosely structured interview approach was well-suited to the exploratory nature of the study (Kvale & Brinkmann, 2014) and allowed for a deeper exploration of the experiences of collaboration. The use of spontaneous questions helped to mitigate the risk of superficial or overly positive responses and allowed for more authentic insights to be gathered (Bryman, 1988). The goal was to explore the different qualities of understanding of the phenomenon, by adding the follow up questions, it made it possible to let the respondents reach a deeper orientation in the questions (Dahlgren & Johansson, 2015)

My own experiences and involvement in the Creative LABs projects proved to be valuable tools in conducting the interviews and developing questions that explored the experiences of collaboration between students, academia, and industry partners. Having first-hand knowledge of the projects, the researcher was able to ask questions that probed deeper into the various experiences, including any challenges or problems that arose during the collaborations. It allowed for a more nuanced and contextualised understanding of the responses given by the participants (Cherry, 2005). This understanding was particularly helpful when analysing the data collected through the interviews and questionnaires.

In summary, the researcher's own experiences and involvement in the Creative LABs projects provided valuable insights into the processes and projects, which in turn provided some knowledge for conducting the interviews and developing questions that explored the experiences of collaborations which were connected and relevant to the experiences.

The participants in the interviews were informed about their involvement in the thesis and how the study would be conducted in a scientific way. The participants were told that the purpose of the study was to investigate the collaboration process between industry and university and to gain insight into their experiences with such collaborations. They were informed that their participation was voluntary and that they could withdraw from the study at any time without consequence. Additionally, the participants were informed that their integrity and confidentiality would be maintained throughout the study and that their personal information would not be shared with anyone outside the research team. The aim is to use the data collected analysing through several iterations of extraction, to try to find patterns and themes, using established methods for data analysis and interpretation. Overall, the participants were fully informed and aware of their role in the study, and the approach aims for the results of the study to be reliable, according to the participants' experiences as well as trustworthiness.
Questionnaires

To gain more information, and to widen the group of participants, surveys were also distributed. The questionnaires were first distributed to two classes of Innovation and Design students. After a couple of days, it was also distributed to all employees of the IDT department. When the questionnaire was sent to the department employees, some of them asked if it was appropriate for them to answer. As a result, an additional questionnaire was created specifically for employees. Some of the employees forwarded the questionnaire to other programs and some PHD-students.

The student version

The Teacher/Employee version

The questions in the survey were formulated to elicit personal experiences and insights from the participants. By asking about both successful and unsuccessful collaboration experiences, the survey aimed to gather a range of perspectives on collaboration. Additionally, the question about the benefits of collaborating with industry partners during a university course aimed to uncover the perceived value of such collaborations. By asking about changes to the
current process, the survey also aimed to identify potential areas for improvement. The questions were designed to encourage participants to share their own views and experiences, without being influenced by the interviewer. This approach allows for a more diverse range of perspectives to be gathered, as participants can answer in their own words and without feeling pressure to conform to the interviewer's views. The format of the questionnaire was designed to ensure anonymity, as it was created using a Google Form. This meant that the identity of the respondent was not revealed, ensuring that the participants felt comfortable sharing their honest opinions and experiences without any fear of repercussions.

The questionnaire was distributed to a large group of participants, including approximately 350 employees and seventy students. Despite the large number of participants, the response rate was low, with only twenty-two responses received in total. This represents a response rate of approximately 6%. The answer rate for students was approximately 20% (14 out of around 70 students). The answer rate for employees was around 2% (8 out of around 350 employees). Out of the total number of responses received, fourteen were from students and 8 were from employees. While the number of responses was small, they could still provide valuable insights into the experiences of students and employees when it comes to collaborating with industry partners. The answers from the surveys varied in quality and in depth, but many had long and articulate answers, formulating both own and other experiences and perceptions.

The answer rate between the two groups, students, and employees, differed significantly, with a higher response rate from students compared to employees. This may be due to several reasons, such as students being more engaged in the subject matter and having a more immediate interest in collaborating with industry partners for their future careers. On the other hand, employees may have felt less inclined to participate in the questionnaire, as they may already have established networks and collaborations with industry partners, or they may have felt that their experiences were not relevant to the research question. However, it is important to note that even with a lower response rate from employees, their input is still valuable and can provide a different perspective on the collaboration process. The data from both groups will be used together with the interviews to provide a more comprehensive understanding of the phenomenon being studied. Despite the low response rate to the questionnaires, the data collected from them can still be valuable when combined with the interviews. The questionnaire responses provide a different perspective on the phenomenon of collaboration than the interviews, as they are anonymous and not influenced by the interviewer's presence. Additionally, the questionnaires provide a larger sample size, even if only a small percentage of the total population responded. By combining the interviews and questionnaires, a more comprehensive understanding of the phenomenon can be achieved. The interviews allow for an in-depth exploration of experiences and perceptions, while the questionnaires provide a broader overview of opinions and experiences. This multi-method (Creswell, 2003) approach can lead to a more nuanced and well-rounded understanding of the phenomenon of collaboration between industry and academia.
Even though the response rate was low, it could be many potential reasons for this. It is possible that the questionnaire was not distributed effectively or that some potential participants did not feel comfortable responding. Addressing these issues in future studies may increase the response rate and allow for a more robust data set.

Transcribing

The interviews were conducted through Zoom, an online video conferencing platform. The participants were informed about the interview in advance and provided with a Zoom link to join. The interviews were conducted in a conversational manner and were recorded using the built-in recording feature in Zoom. During the transcription process, several tools were assessed to find the one with the highest accuracy. One of the tools tested was Google Speech to Text. However, after testing several options, Cockatoo was chosen as the most accurate tool for transcribing the audio recordings of the interviews. Cockatoo allows users to upload audio files and generate transcripts in real time using automatic speech recognition technology. The transcripts were then manually reviewed and corrected for higher accuracy.

It is important to note that Cockatoo is a paid tool, which means that it requires a financial investment to use. Despite this, the accuracy of the transcriptions was of high importance for the research project, and therefore, the decision was made to invest in the use of Cockatoo.
The use of Cockatoo as a transcription tool proved to be highly effective in this study. Cockatoo allowed the reader to both listen and read the transcript and set time stamps on the transcribed text. This made it easy to navigate and cross-reference the transcription while also ensuring its accuracy. Even though the participants came from diverse backgrounds and had different accents, Cockatoo managed to transcribe the material with extreme accuracy, requiring minimal correction. The transcription process was streamlined and efficient, allowing the research team to focus on analysing the data rather than spending significant time and effort on transcribing the interviews manually. Additionally, the high accuracy of the transcriptions allowed for a more reliable and robust analysis of the data.

In summary, using a digital platform like Zoom and a transcription tool like Cockatoo allowed for the interviews to be conducted remotely and efficiently, without the need for the administration of in-person meetings or the manual and time-consuming task of transcribing.

Thematic analysis
First iteration, Making themes using Industry 5.0 approach.

Wordtune Read is a text analysis tool that can help identify themes and patterns in written content. In this case, it was used to analyse both the transcribed interviews and the answers from the Google forms. The tool can quickly provide an overview of the text by identifying commonly used words and phrases, as well as sentiment and tone. This tool was only used initially, to familiarize with the material. The transcripts which were entered into Wordtune, was already de-personalized, with names and places removed.
As the first iteration of themes in this study, Wordtune Read was used as a tool for quickly analysing data. This tool was particularly useful in identifying recurring themes and patterns within participants' responses. By this categorization and by creating a framework for analysis, a quick and comprehensive understanding of the participants' experiences could be gained.

It's important to note that while Wordtune Read was able to provide valuable insights into the data, it is not a substitute for in-depth analysis and interpretation. The themes and patterns identified by the tool had to be examined and contextualised to draw deeper, meaningful conclusions. Wordtune Read was chosen due to its ease of use and the fact that it is a free tool. However, the free version does have limitations, so the team had to carefully select the texts to be analysed to make the most of it. Although there is a paid version available, which offers more advanced features, it was not necessary for the scope of this study and the first iteration of data. Despite the limitations of the free version, it provided a quick overview and helped identify some key themes in the transcripts.

The first definition of themes and categories that emerged from the interviews and google forms is:

Communication.
- Lack of
- Good
- problems communicating outside of the “bubble.”
- Not getting answers while emailing

Clear roles
- Defining the roles within the group
- with the partner

Clear goals
- Well-defined goals/scope from the partner
Set the goals together.
Set goals according to both the partner and the skills of the students.

Openness
- Openness about problems or situations happening in the team.
- not being open, not expressing difficulties

Learning from each other

Customer Mindset
- Service mindset
- Reaching the goals set by the customer/ordering part.

Collaboration is two way.
- Win-win situations
- Students want to bring value to the companies.

Not conveying value
- Partner not conveying value to the students.
- students not conveying value to the partner.
- teacher/academia not conveying value to the students.
- academia not conveying value to the industry.
- different/contradicting goals between grades and practical parts of the project
- Industry not ready for the knowledge

Lack of understanding between parties
- between academia and industry
- between students and teachers
- between cultures, Swedish/international
- between team members

Hierarchy
- Flat hierarchy leading to lack of agency.
- hidden hierarchy,
- hidden structures,
- power imbalance
- different agendas
- lack of agency
- culture of hierarchy hidden

Defining roles
- expectations between stakeholders
- expectations between team members
- expectations between mentors/teachers and students

Lack of supporting structures
- No clear framework
- No were to reach for help.
- Teachers not having the agency to act.
- students not having the agency to act.
- lack of funding
- complicated to find help.
- Being forwarded to the next person, over and over again
Will to build on earlier, or project to live on
  ● No clear red thread between projects
  ● Want to continue with projects between courses, years.
  ● No information on earlier projects
And some identified goals by students:
  ● Money, students see the industry partners wanting financial gain.
  ● networking
  ● social impact, making something good for others.
  ● distribution of power, getting some agency to act.
  ● insights of “real” work or different industries' practices
  ● Work on “real” projects, which can have real effects.
  ● Growing as a person
  ● Using Theory in Practice
  ● Having fun

Second Iteration

After the first iteration, defining themes with the help of Wordtune, a second distillation and merging of themes was made, this resulted in themes with sub-themes. Here are some potential themes or categories that emerged from the second iteration:
1. Communication:
   - Problems with communication outside of the group
   - Lack of clarity around roles and goals
   - Openness about issues and situations

2. Customer Mindset:
   - Focus on reaching goals set by the customer
   - Collaboration leading to win-win situations
   - Conveying value to and from partners, students, and academia

3. Understanding between Parties:
   - Misunderstandings between academia and industry
   - Lack of understanding between team members and cultures
   - Power imbalances and hidden hierarchies leading to a lack of agency

4. Defining Roles and Expectations:
   - Roles and expectations between stakeholders, team members, and mentors/teachers
   - Lack of supporting structures and framework for help

5. Continuation and Red Thread:
   - Lack of clear red thread between projects and courses
   - Willingness to continue working on projects and building on earlier work
   - Desire for real-world experience and insights

6. Goals:
   - Focus on financial gain and networking
   - Desire for social impact and agency to act
   - Opportunity to use theory in practice and personal growth
   - Importance of having fun in the work

Third iteration, Thematic analysis according to Phenomenography

The first two iterations enabled an overview, and an external view on the themes. This led to the work in the oncoming iterations easier, since the Familiarization (Han & Ellis, 2019) already was done thoroughly. Doing this third iteration, I used the steps defined and connected to Marton, from this table.
Identification: I began by identifying themes that emerged from the interviews, using an iterative process to refine and consolidate them into fewer categories.

Sorting: After this initial stage, I printed out all the transcripts and carefully read each one, highlighting and cutting out relevant citations and grouping them together.

Contrasting and categorising: This allowed me to identify themes and insights that were not immediately obvious from a single reading, as well as capture moments of reflection and deeper insight that emerged later in the interviews. This was done yet another time, in similarity to the earlier iteration using Wordtune, to verify the themes.

I noticed that some of the respondents initially struggled to articulate their thoughts on what makes good collaboration, but as the conversation progressed, they were able to reflect more deeply and provide more nuanced answers. In fact, some even commented that they had not considered certain aspects of collaboration before, or that they had gained new insights from the interview process.

R: ... So, I think for me, it was a learning process for me. I just realised that fine, I need to carry people better along in doing assignments... ...I expect people to read and figure it out that, okay, I can fit in here, I can fit in there by myself. But sometimes maybe as a leader or maybe as a facilitator, you need to direct people and let them know, okay, you guys can come in here or anyone can come in at this point. And basically, emotional intelligence is just understanding your group members and knowing what works well for them.

The interviews were structured around an open-ended question about good collaboration, but the nature and depth of the conversation varied depending on the respondent. Some had very textbook responses that aligned with the established themes, while others provided more
unique and personal perspectives. Overall, the interviews were characterised by an open and reflective nature that allowed for rich insights to emerge.

In the third iteration of the analysis, I used a hands-on approach to go through each transcript and read the text on physical paper. This allowed me to highlight, cut out, and tape together citations from the same transcript to find themes and answers that were not obvious. I found that some of the interviewees often started a sentence and came back to the subject later in the interview, using the process of continuing the conversation as a method of reflection to give a deeper answer. Often, the second part of the answer had a more reflective nature, even though it appeared to come from nowhere.

As a result of this hands-on approach of the third iteration, I identified themes which included Experience, Building Good Projects, Balance of Stakeholders, Communication, "Connection", the "Meeting", Empathy, Cross-Competence, Building Team, Roles, Responsibilities, Supporting Structures, Expectations, Goals, Values, Transgenerational Work, "Real" Projects, Contracts of Trust, and Conveying Value.

The fourth iteration, merging the themes.

I then began the fourth iteration, creating themes to capture the overall experience of the interviews and distilled them down to fewer categories. After another iteration, I sent the categories to Ines and merged the themes from the third iteration together. This led me to identify two intertwined aspects: time and experiences. I realised and started reflecting on that depending on when on the timeline the experience occurred, it would affect the outcome. The different time periods identified were before/establishing, starting, during, and after. The
whole-time aspect is circular, as the after can become the before in a new project, which the respondents also mentioned.

Fourth iteration, using the same approach as the third, even more themes emerging, diverging and merging.

For the experiences categories, I established five themes by merging earlier iterations. These themes are a consensus of value, structure, roles and personal expectations, effort in meeting the other, and balance between challenges and hindrances.

When talking to Ines, she had seen similar themes, but she was using different words and defined the themes a little bit different, such as external expectations (Inés Acinas, personal communication).
Fifth iteration

During the fifth iteration, the data was analysed through the steps of Marton (1992).


1. **Identification:** Data which is related to the phenomenon being described are identified.
2. **Sorting:** The identified data are sorted into ‘pools of meaning’ according to similarities.
3. **Contrasting and categorizing:** The ‘pools of meaning’ are contrasted, and categories are generated with descriptions.
4. **Reliability checking:** The reliability is checked by having a portion of the data coded by independent researchers and the inter-coded reliability is calculated.
5. **Articulating:** The essence of similarities are extracted, categorized, and described.
6. **Labeling:** The categories are represented linguistically.
7. **Contrasting:** The categories are contrasted.

The first step, identification had already been done several times through the first iterations of the analysis, the second step was redone. All citations were put in a pile and read one after the other. When reading the citations, they were put in piles which had similarities. The third step, the citations and the different categories were written down and described throughout the sorting. When the citations were sorted into categories, they were re-read, one category at the time. During this step, the fifth, key citations and similarities were found, they will be
presented later in this text. After this a description text about each category was formulated as, following:

1. **Bridging the other**: Bridging the other refers to the ability to understand and work with people from different sectors. Effective collaboration within the quadruple helix model requires bridging the other and understanding the perspectives of each sector. This theme is the most common in the interviews and questionnaires.

2. **Power**: Power dynamics can affect collaboration within the quadruple helix model. For example, industry may have more power than civil society, which can lead to unequal collaboration. Understanding power dynamics is important for achieving equitable collaboration within the quadruple helix model.

3. **Motivation**: Motivation is important for driving collaboration within the quadruple helix model. Each sector may have different motivations for collaborating, such as economic gain or social impact. Understanding these motivations can help to align the goals of each sector and drive successful collaboration.

4. **Structure**: The structure of collaboration within the quadruple helix model can affect its success. For example, having clear roles and responsibilities, communication channels, and decision-making processes can help to facilitate effective collaboration.

5. **Expectations and experience**: Assumptions can affect collaboration within the quadruple helix model. Each sector may have different assumptions about the other sectors, which can lead to misunderstandings and miscommunication. Understanding these assumptions is important for building trust and effective collaboration.

The categories are presented in a hierarchical order, with the most prevalent first. The last step was to reiterate one more time, now the categories were contrasted and ensuring that the categories were distinct and unique was a priority. Following the completion of categorization, another comparison was conducted with Inés. Since Inés was not doing the same sort of analysis, the categories or themes were not formulated as the same, one the other hand, the analysis and perception of the phenomena was similar.

**Data analysis**

The data extracted from the interviews and questionnaires have been analysed and organised in a hierarchical order, reflecting the participants' perceived perceptions in the study.

<table>
<thead>
<tr>
<th>Theme</th>
<th>Characteristics</th>
<th>Number of citations</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bridging the Other</td>
<td>Collaboration,</td>
<td>38</td>
<td>So, they know what we are</td>
</tr>
</tbody>
</table>
Openness about issues and situations, Understanding between parties

| Power          | Hierarchy, Power imbalances, Hidden structures, Lack of power | 36 | And through the university, it helps because it’s like an official channel versus if I go on my own, they’d be like, who are you? Why are you talking to us? |
|               |                                                              |    |                                                                 |
| Motivation    | Financial gain, Social impact, Personal growth, Experience   | 28 | I think that is the hardest part, because I feel like some of the already existing collaborations with the university tell them to do it, so the project doesn’t feel genuine…. I feel like it’s a bit distance working with some projects, and they are almost forced to do it. |
| Structure     | Structure, Defining roles and expectations, Lack of supporting structures, A clear framework for help | 23 | So, we already have a second plan, like preparing for a risk ahead of time. |
| Expectations and experiences | Experiences, Beliefs, Expectations, Assumptions | 10 | I think people are using the word collaboration in a way of washing like they’re washing with everything else today to make it sound fancy, but instead it’s something else. Like a sponsorship or whatever. |

Some of the themes have had similar names throughout, or names which has had similar or close meaning. Many of the interviews have different parts, where the interviewee goes between the reflection of their own part, as well as finding reasoning outside of self. Many have assumptions of how or why collaboration may be as it is (Dahlgren & Johansson, 2015), and one of the demonstrations of this is through looking for an answer in power or conflict for negative results or experiences, as well as looking into group performance, communication, and motivation for positive results. This reflects especially on the balance of citations, where Structure only has 23, in contrast to bridging the other 36 and Motivation 28.

**The Outcome spaces**

The themes will be presented in a hierarchical order within the outcome space, the different perceptions within the phenomena (Dahlgren & Johansson, 2015). The hierarchy is based on
surface versus depth orientation of the statements about the phenomena (Dahlgren & Johansson, 2015) but also on the frequency of the perceptions.

**Bridging the other**

Communication and teamwork, but also a willingness to get their own and others’ needs met. These things are some of the characteristics of the theme. The theme mostly focuses on the positive aspects of collaboration, and how the experience of these been perceived.

*And then from my experiences, I mean, I think that communication is super important, both in terms of what we are doing and how we're doing things, and also along the way, if something happens, or if we have to change plans, or if a person is not feeling well and we have to change things. So just to talk and let people know what's going on. And then I think also to listen to each other is very important because I have been in collaborations where people are not listening to others and just kind of having their own vision and not taking in what other people are saying or want to achieve and that has not ended very well.*

The collaboration needs several pieces to function, a communication which is open, and understanding for the others included in the collaboration.

*…empathy has been the thing that's been helping us. Empathy. We got to understand each other. And also, time. There are times like things are not convenient for me, like decisions are not, in my own view, it's just not it. I have to compromise, so things just move forward.*

The respondent’s experience when working with others highlights how it is important to try to understand their perspectives and be willing to compromise. This can help move the project forward and create a more positive and productive working environment. It also emphasises the role of time in collaboration, recognizing that not everything will be convenient or ideal, but compromise and understanding can help overcome obstacles.

*Everything for me has worked out well, even with obstacles along the way. It's important for us to be flexible and to understand the others point of view and time. With mutual respect and trust, there is no reason for arguments etc…. …Be transparent, have trust in everyone involved and have fun! We're all in this together and working towards a common goal, so let's show that.*

The importance of flexibility and mutual respect in achieving successful collaborations is seen in this quote. By being transparent and trusting everyone involved, the respondent believes that there is no need for arguments or conflicts. Moreover, the respondent emphasises the importance of having fun while working towards a common goal. This mindset can help to create a positive and productive atmosphere for all members of the collaboration. The differences between the group members are also a factor to take in account.

*…because that's another thing that I'm facing. I think because we're coming from different backgrounds, I keep on telling them, guys, talk, let's talk together, discuss, speak out. Not many do that, and I hope that's kind of the fantasy for students, kind of push for collaboration, doesn't have to be with someone outside, but with each other as well.*

The importance of communication and collaboration is emphasised once again in this text block. However, the focus here is on the challenges of collaboration due to different backgrounds and the need for open discussion and speaking out. This highlights the
importance of actively pushing for creating a supportive and inclusive environment where everyone's voice is heard and valued. The willingness to engage in such conversations is a key to building trust and fostering a collaborative culture. The quote also raises the question of how to encourage and motivate students to collaborate effectively.

Collaboration with external partners is a critical component for many projects, particularly in fields such as innovation, design, engineering, and technology. By working with industry partners, students and researchers can gain valuable experience and insights into real-world applications of their work, as well as access to resources and expertise that might not otherwise be available.

It's long-term project to build good industrial contacts and collaboration setups.

However, building these connections and collaborations is often a long-term process that requires patience, persistence, and a clear understanding of the needs and expectations of all parties involved. It's not enough to simply make contact and hope for the best; successful collaborations require ongoing communication, mutual trust and respect, and a willingness to work together towards common goals. With the right approach and mindset, however, these collaborations can be incredibly rewarding, both personally and professionally. By doing this, it can be easier to understand the partners and the purpose of the collaboration and their roles in it.

What made it successful was the partners awareness of that this was a course and not some consulting job that the students had to accomplish. We were allowed to make mistakes, learn, and focus on the actual educational aspect of it all.

By allowing students to learn and make mistakes, the collaboration became a learning experience that went beyond simply accomplishing a task. This highlights the importance of clear expectations and understanding of the goals of collaboration in achieving success.

...it went well because the external partner was very helpful, they were very willing to give information and also learn from us. So, it was not a one-sided knowledge. They learned from us, or we learned from them because they wanted information, they wanted research from us, so we did that. And all the time we had to get information from them. They were very helpful; they were willing to do it.

Overall, the collaboration experience between the students and the external partner was remarkably successful. The willingness to learn from each other was crucial in making the project perceived as successful. The mutual exchange of information and ideas allowed for a well-rounded project outcome. This makes a great example of how collaborations are expected to be, where there is a willingness to share and learn from one another.

When starting a collaboration project, it's important to set clear expectations and goals. Miscommunication can lead to confusion and wasted time, which can hinder the success of the project. It's also crucial to establish the limitations and boundaries of the project, so everyone involved knows what is expected of them.

First thing is to understand their expectations. Like what is exactly required from our side and what are the limitations. So, if that is clear, then I think the project will go very smoothly. Otherwise, it is not clear what they are expecting from us and
what is the actual plan to achieve that process, then it will be very difficult. But it is not clear, it will be very difficult to
move together because they will do something, and we will do something so it will not be aligned with their requirement so
it is very complicated and I don't think if it is not a good collaboration then we will not be able to be successful or achieve
the goals that's why I think it spin.

By ensuring that everyone is on the same page and has a clear understanding of the
expectations and limitations, a collaboration project can run smoothly and effectively. When
both parties are willing to learn from each other and contribute to the project, it becomes a
two-way street of knowledge exchange. This type of collaboration leads to a successful
outcome and ensures that both parties achieve their desired goals.

Sometimes they only send a text and we students have to figure out many things on our own. It gets worse if we have to wait
for their replies and clarification when we have deadlines to meet.

The email conversations have been a theme that many students have mentioned, a feeling of
misunderstanding, lack of communication and lack of will to answer. Many of the
respondents talked about this, how they sent many emails, without replies or replies which
were too late to matter. This can be seen as a crack or a gap between the stakeholders, where
miscommunication or misunderstanding could occur. The differences in communication
methods, styles or even the perceived urgency.

Social capabilities, as well as empathy, are some of the skills which respondents connect to
collaborative behaviour, meeting the others, being flexible and listening to differences, both
in opinions and in ways of communication. On the other hand, are all of these based on
themselves, and few reflect on other reactions to each other, or own behaviours influences of
others, beyond the self-assessed positive and collaborative behaviour.

Like the new generation will expect responses very fast and it's not like that for the older.

This citation, which is short, but still filled with a deeper understanding of others, is a good
example of one of the students. The respondent talks about their own experiences, where they
saw themselves as something in between, and where they saw their team members being
impatient and disappointed in external partners, and pointing out that it could be a
misunderstanding. The respondent is also taking a generational view on collaboration, one
that few did during the interviews.

Communication, empathy, and a willingness to compromise are crucial in the perceptions of
a successful collaboration among the interviews and questionnaires. Additionally, building
connections with external partners is critical for many projects in fields such as innovation,
design, engineering, and technology. However, establishing clear expectations and goals is
crucial for successful collaboration. Building connections and collaborations with industry
partners is often a long-term process that requires patience, persistence, and mutual trust and
respect. The quotes also raise the question of how to encourage and motivate students to
collaborate effectively. The willingness to engage in open discussion and speak out is
important for creating a supportive and inclusive environment where everyone's voice is
heard and valued. Finally, it is essential to allow students to learn and make mistakes, which
can help foster a true learning experience and create a more positive and productive working environment.

**Power**

Power or rather lack of power, an imbalance between stakeholders and feeling of helplessness are themes that have emerged in most of the interviews and many of the questionnaires. This theme is focused on the experiences in this area. The power imbalance can be between different stakeholders and affect the project in different ways. In theory, collaboration should be a mutually beneficial partnership that leads to innovation and progress. However, in practice, it is often more complicated than that and challenges arise.

I would not say that I have been satisfied with the outcome or results, even though the partner or academia might have been... Most of the collaborations have been on the brink of being unsuccessful, usually do to as mentioned before, ambiguous instructions and bad communication or expectations from academia and industry that does not go together...The more structured collaborations today are not actually suited for all students, for example those within innovation management are wildly left behind.

The citation points out an interesting aspect, that even though several stakeholders are satisfied, it does not mean all stakeholders are. The student formulates an in-between position, where expectations are not aligning, and projects are not suited for them. The expectations or here defined as deliveries can also be filled with external partners, but then as the following citation explains, not by the academia.

I cannot recall a successful collaboration, the experiences from academia and industry usually don’t go well together and therefore you often fall short in deliveries either to the industry or the academia. One example that would be the most successful is a collaboration with PARTNER. We had a really well collaboration and good communication with our contact person, however, our teacher did not agree with our results and ideas, even though PARTNER highly appreciated them.

The respondent mentions that their teacher did not agree with their ideas and results, even though the partner appreciated them. This could indicate a potential disconnect between academia and industry expectations and could be a barrier to successful collaborations in the future.

The goals of a company/organization and the learning objectives we have in a course at the university can be difficult to reconcile. If the company only wants a project completed at a cheaper rate than on the open market, I think they should reconsider whether they should collaborate with a university. There must be a giving and taking and learning process for all parties. Students must have the right to experiment, test, and fail, not necessarily "deliver" a finished product/service. Time constraints for companies/contacts are common.

The same theme reoccurred several times, as with this. It is a common experience that companies and universities have different goals and objectives when collaborating on a project. This respondent uses the example of a company which simply wants to complete a project at a lower cost than on the open market, on the other hand, university may have learning objectives that they want to achieve. They also lift the importance of balance between all stakeholders, and let it be a learning process for all, not only students.

Collaborating with industry is not only a challenge for students, but also for academia. The process of convincing the industry to engage with academics is not always straightforward.
There is a need to highlight the potential benefits of such collaborations, not only for the two parties involved but also for society.

The biggest challenge is to convince industry that collaborating with academics is a good idea. It is very easy for industry to keep doing their own things without engaging academia. But it takes a common understanding on both sides that this collaboration has benefits, not only for the two sides but for the society as well… Sometimes the expectations on each other capabilities and resources are not aligned. Secondly the pace of solution development is not the same in academia as in industry. It takes a lot of understanding and patience on both parties and a medium to long term collaboration commitment… I think the onus is largely on academia to do the most to keep industry engaged. Continuous engagement, presence onsite and putting your best resources to work with them usually yield good results. On industrial side, you need a champion who understands academic limitations and who can think out of the box.

Despite the challenges, the benefits of collaboration between academia and industry cannot be overstated. It requires a common understanding and patience from both sides to achieve a successful partnership. Additionally, it is important for academia to continuously engage with industry and provide their best resources to work with them. Similarly, it is essential for the industry to have a champion who can understand academic limitations and think creatively. By working together, academia and industry can create innovative solutions that benefit everyone.

Some respondents have expressed confusion and a lack of agency.

…and I saw that all the groups had come together, and I was very confused like what am I supposed to do and who am I supposed to be in group with and I just saw the subjects. I had no idea about the industry, I had no idea about the companies, I had no idea about the people.

Often, projects with external partners are framed as finding solutions to real-world problems faced by companies. They worked hard on their projects and were proud of what they had created. However, many were left feeling disappointed when their solutions were not taken seriously by the companies and there was no follow-up after the project was completed.

Yes, I was happy with what I had created. But it feels like it wasn't taken seriously and not follow up after working on solutions for the companies. Which made it feel like it was just a credit to get and then it's done and no actual impact within the organisation or society.

Many of the students expressed their frustration at the lack of control and information about what happened with their projects. It made them feel like their work was just a credit to get and then it was done, without any actual impact on the organisation or society. The lack of follow-up also made it difficult for the students to learn from their mistakes and improve their critical thinking skills. They believed that if the companies had taken their solutions seriously, it could have led to meaningful change and positive impact.

Feeling powerless, or not being able to do anything without help from another, is something that was a recurring theme. The respondent expressed frustration with a situation where they felt like no one was cooperating or acting. They expressed a desire for more power or influence to affect change.

Not getting any good, like no one has cut your slack at all. No one is like, okay, let's do this, okay, get this… And it's also sad, you know, I think I told you the other day, like, when I see this situation, I feel really powerless. And I wish I had more power or influence on things happening, because why not? I mean, why is it so hard to have something and have people
gather together, talk or chit-chat or whatsoever? It shouldn't be this hard. And so many rules and regulations and getting answers from people just make it a misery for all. It shouldn't be like this.

To not see any possible near future with a solution, that it would or could be so easy, if just anyone met them, or let them act, was something that unfortunately reflected onto several interviews.

It has been hard and a lot of no's. Yeah, and you notice it's not just our team, it's like different teams where we are facing the same issues and the PARTNER keeps on telling us, yeah it will change, we'll fix it but like maybe in 50 years or whatever.

But the same people who aired out frustration and feelings of hopelessness or lack of power, also tried to find solutions, that in similar way to the frustration was out of their power.

I would like to, now I'm thinking of our project again, but I would like that MDU for instance would have a sort of program for applying for a little sponsorship or a little collaboration that shouldn't take forever to apply for. It should be for smaller activities, I'm not talking about asking for a big amount of money, it's more of, oh, we want to apply for a fika for our workshops, or we want to apply for some candy for a stand we're going to stand here, or we're asking for some coffee for this activity. It's like that they should have the option to get a little sponsorship for good things, which is good activities on campus. That is one thing I want to wish.

Another solution which was presented was this:

You know, I wish there was some person or like a student center that you go to and talk to them and ask for things. You go to them, say, hi, I have this idea, I want to do this and do that what's the next step and she or he whoever is replying should answer you on the spot not throwing you at someone else and go talk to that person go email this person it shouldn't be like this or I wish you like more open hands and more support like okay that's great. How can we help? It's not like that really so far.

The experiences revealed that power imbalance, ambiguity in instructions, and poor communication are common challenges faced by the parties. The respondents mentioned that the different goals and objectives of companies and universities make it difficult to reconcile the learning objectives. They suggested that mutual understanding and patience from both sides are crucial to creating a successful partnership, with academia continuously engaging with industry and providing their best resources to work with them. The lack of follow-up and information about their projects was a common concern for the students, who felt that their work had no actual impact on the organisation or society.

Motivation

Motivation both individually and for a group. Without it, team members may lack the drive and enthusiasm needed to work towards a common goal. Motivation can come from a variety of sources, such as personal interest, a desire to learn and improve, or a sense of responsibility towards the project and the team. In the literature regarding quadruple helix, motivation for the individual, or teams working on the areas are not a focus, but in the experiences of the respondents, it is a vital part of working with projects. However, to sustain motivation, it is important to have a clear vision of what we want to achieve and a plan of action to get there. The goal should be challenging but achievable, and we should have a sense of ownership and responsibility towards it. This can lead to a greater sense of accomplishment and a desire to continue to work towards even more significant goals.
As a student it feels great to work with a company and actual problems, it makes me feel like I am legitimate to work on those issues in a way. Moreover, every collaboration is a new professional experience and some of them are very constructive. Those constructive collaborations also made me realize the importance of the courses' topics and the need for them in the industry, and not just in education.

The respondent describes how collaborating with industry partners as a student can be an invaluable experience. It not only provides practical exposure to real-world problems and projects but also helps students to develop skills such as communication, teamwork, problem-solving, and critical thinking. These skills are essential in the professional world and could give students an edge when they enter the job market.

I think it is vital for the students to collaborate with industry partners. As previously mentioned, this was the most learning experience so far. Being able to work in a team with students and lead a project to its goal for a company and present the product was amazing.

Collaborating with industry partners can provide students with invaluable real-world experience that they may not get in a classroom setting. Working on actual problems and projects for companies can give students a sense of purpose and the opportunity to see the impact of their work. Achieving a goal, as well as feeling ownership over the achievement are some aspects which can motivate.

Collaboration for the sake of collaboration, there should be a greater ambition than just collaborating because that is what we do, it should also lead to something in my view.

The respondent questions the reasoning for collaboration or rather the assumptions that collaboration per se results in something. Here again, ambition and goals are set as motivators. This can be seen in different ways, either as the respondent questioning the assumptions and ways of working with collaboration or as the respondent not seeing the social parts or the journey during the collaboration as one of the goals for the projects.

I think the optimal solution would be to come up with an idea of your own project and that would automatically make sense that if it's something that you're passionate about and you think I have this great idea, I want people to get on board with it and kind of try to, trying to find people that have similar interests or have similar attitude towards projects and towards whatever you want to do. I think that's the easiest step.

The respondent’s perspective emphasises the importance of having a shared passion and attitude towards a project. By coming up with an idea for their own project, students can take ownership and seek out collaborators who share their interests and attitude towards the project. This approach can lead to a more productive and efficient collaboration, as each member is invested and motivated to contribute to the project's success. Additionally, having a shared passion and attitude can lead to a more creative and innovative project, as each member brings their unique perspective and ideas to the table. Overall, this student's perspective highlights the importance of personal investment and collaboration in academic settings.

Yeah, because I don't believe in the small things that we are doing every day. I believe in the bigger picture. And I'm sure that in the bigger picture, this project will be a milestone for me… personally, I see it as a bridge for my future. So, I'm doing this project here right now and I'm writing a report about it and I'm gaining experience in networking with people and in researching and in bringing like all the pieces together and this will serve me in the future…

The respondent’s perspective on their project as a bridge for their future and a milestone is very optimistic. They are focused on the bigger picture and how this project will serve them in their future career. This highlights one of the motivational aspects of students' collaboration in academia from a quadruple helix perspective. The experiences gained through collaboration, such as networking and research, can be invaluable for personal and professional growth. The academic setting can work as a sandbox, where the student tests and
polishes their skillset. This quote emphasises the potential long-term benefits of academic collaboration and how it can lead to individual success.

I like to help people and I want to spread out the growth mindset and specifically for women because I've worked with different kind of women in the past. And it was really nice to work with them and help them change the way they thought and the mentality because they were not educated. And they never actually worked a day in the life in like a professional place. And it was very new to them. And it was really nice to kind of work with them and try to change the way you think and switch from being a housewife and show them that they can actually do different things….And if there's a way to connect both aspects, like the creativity part and the women empowerment part, that would be great. But I still haven't found that company that does both. Maybe I can come up with my own startup, and I just hire women. I don't know. Could be, could be.

Based on the quote, the respondent seems to be motivated by a desire to help people and specifically empower women. They have previous experience working with women who were uneducated and didn't have any work experience, the respondent found it rewarding to help others and want to implement this approach in the future as well. The respondent also shows an interest in creativity but seems to prioritise their passion for women's empowerment. The idea of starting their own company that focuses on hiring women and promoting a growth mindset is also mentioned, which suggests a strong entrepreneurial drive. Overall, the quote shows a thoughtful and empathetic perspective on the importance of empowering women, and a desire to make a tangible impact on people's lives. In this quote, the respondent very clearly formulates something that many of the respondents had in their answers, a will to make a positive change, to work with social innovation or entrepreneurship. The motivation for studying and doing projects with different stakeholders is connected to a bigger vision, a vision of making a change.

Like maybe if, this is the point that I mentioned before, like if these things keep on going even outside of the university and students are just informed about it if they want to continue on a project if it's ongoing or if there is a potential of like actually doing something just to keep it going rather than just end it at the end of the course and just bye never see you again so yeah that would be like a good thing.

The respondent raises a valid point about the importance of continuity in academic collaborations connecting to motivation. The respondent and several others see many academic projects to have the potential to become something bigger, but they often end abruptly with the end of the course. From this point of view, it could be beneficial if universities provide students with the opportunity to continue working on projects that they are passionate about beyond the classroom. This could potentially help build long-term relationships between students and industry partners, leading to more meaningful and impactful collaborations. Universities could explore various ways to support ongoing collaborations, such as providing funding, resources, and mentorship. Overall, ensuring continuity in academic collaborations has the potential to lead to more significant impacts and provide students with valuable experiences that extend beyond the classroom.

And it's hard to be passionate about every single thing that you do, but I think to have interest and to have to invest not only time and just get things done, but also like thoughts into things. I think it can make the collaboration smoother because you just kind of jump on off each other's energy and you can get motivated even though you don't really like a task, or you don't really like something that you have to do…

The respondent’s comment highlights the importance of investing thought and interest into collaborative projects. It is natural to not be passionate about every aspect of a project, but the respondent highlights how by investing time and energy into it, the collaboration can be smoother and more productive. By sharing each other's energy and motivating each other, individuals can overcome tasks that they may not enjoy or find challenging. This attitude towards collaboration can be beneficial as it ensures that each person is invested in the project and can contribute to it effectively.
And then when we see other students doing different projects, and seeing their processes also gives us different ideas, like, oh yeah, they're doing that, so, oh, that's interesting, we could do that, or like having different things rather than everyone doing the exact same thing.

The quote highlights how the respondent perceives the importance of diversity in projects, and how it can lead to a variety of different ideas and perspectives. It states that when students are exposed to a variety of projects and processes, they can broaden their own thinking and approach to problem-solving. This external view of motivation not only allows for more creative and unique solutions, but also creates a more dynamic and stimulating learning environment. Additionally, by avoiding everyone doing the exact same thing, students can avoid stagnation.

**Structure**

The lack of clear structure and supporting frameworks can lead to a confusing and frustrating experience for individuals. Without well-defined roles and expectations, people may struggle to understand their place and purpose within a given environment. This can lead to feelings of uncertainty and even anxiety. The absence of supporting structures can also contribute to a sense of isolation and disconnection, making it difficult to feel a sense of community and belonging. Without a clear framework for help and guidance, individuals may feel overwhelmed and unsure of where to turn for support. These experiences can be especially challenging in situations where individuals are expected to take on new responsibilities or adapt to new environments.

So, depending on the time and maybe the students' interests and the experiences, then you can like build your own. It doesn't have to be a matrix. I mean, you can see it as blocks, building blocks, so that you take something from the kids' blue box, and you build your own project based on the needs of the company and your own interests and experiences… the company also has to have some sort of winning in it… So, it's not just going to be like, oh, do whatever you want. But I mean, you can have maybe a few needs or some ideas for projects, but then they can be put apart to smaller projects or put together to a big one and then according to the students' needs…. So, I don't know, I don't have like the full recipe, but just some sort of building blocks or you can easily put things apart or together.

The respondent suggests that there is a need for flexibility and customization in the approach to structuring projects. That it is important to define roles and expectations clearly, but also to allow for the incorporation of students' interests and experiences. By breaking down larger projects into smaller ones and allowing for projects to be customised based on student needs as well, a clear framework could be established for help. They express that it is important to keep in mind the needs of the company, but also to create opportunities for students to explore their own interests and ideas within the framework. Their perception is that the key to success seems to be finding the right balance between structure and flexibility.

Because I think that makes it easier from both ways. And I feel that maybe we have not really had that in our group. We haven't had any outspoken roles or responsibilities. So, I think that's one thing that could have been improved. And I think it's especially important when there are external parties involved.

Reflecting, the respondent can now see that more defined roles and a clearer structure would have benefited their project.

so, we already have a second plan, like preparing for a risk ahead of time.
This citation is one of the only ones mentioning risk management and having potential solutions if problems arise. Being prepared and not expecting everything to go perfect.

That's the thing, yeah. First, we in a group sit together and like ask each other who could be the responsible person for this task.

In a simple way, the group used several approaches at the same time, openness, structure and dividing tasks and responsibilities. The respondent has a simple yet effective approach to structure.

I would say the school already gave us the basis, like they already prepared the ground for us so we're pre-informed of what they expect of us and what we should expect of them.

Here the structure was already prepared, the key element was expectations.

… the stakeholders we knew the problem statement, we knew the focus, and we addressed the problem. That's why the vision is very, very important. What's the problem statement? What exactly are you addressing? So, it's very easy for everyone to delve into and address it from different views, which is very good.

Defining the scope, structuring what to do, and how to do it. The respondent’s team tackled the partners’ problem with a constructive and structured approach.

What things do you think has made your group work as good as it has worked? Yeah, I would say we have a very strong scrum leader. They are very well planned, is very swift in other things, organized, so it's been very helpful because sometimes I have to work, and another will have to fix times that are convenient for us to do things.

It is a collaboration, the group is all in this, their planning, organisation, and ability to be agile in responding to the needs of the group have been particularly helpful. Additionally, having someone who can coordinate schedules and ensure that everyone is able to work at times that are convenient for them can be a critical component of any successful team. By having this structure in place, the experiences of the group have been working efficiently and effectively towards its goals.

I saw that in the projects where everyone was really confused, where the course was not very clear. Even though you had a very good team, it was hard to work until the end because you were not sure what you were doing. And even though you worked well together, it was hard to finalize a project.

Clear instructions, clear goals, and clear expectations. These were not part of this respondent’s experience. This made a good group work hard.

But I think there should be a framework, there should be a framework which is easily understandable and adaptable for the new students or the students who will pass recently so they can like collaborate with the external partners easily and more adaptably.

The respondent expresses an experience of recognizing the importance of having a clear framework in place for collaboration with external partners. It suggests that the lack of such a framework can create challenges and difficulties for new students or those who are not familiar with the collaboration process.

Like, you should know what your objective is, but then you should have quite a good amount of freedom in how you're going to achieve it.

The respondent’s experience of having a clear objective but also having the flexibility to choose how to achieve it. The perception is that this allows for creativity and individuality in problem-solving while still working towards a common goal. So having an external structure doesn’t have to be during the whole process.

...in some other courses we were kind of put into a group based on nothing, like random. And it worked once and then again
The respondent describes an experience of being randomly assigned to a group in some courses, with varying success in terms of group performance. It implies that random grouping may not always lead to effective collaboration and that other factors, such as shared interests, goals, or working styles, may be important in creating successful group dynamics. It also suggests the potential frustration or uncertainty that can arise from being placed in a group without clear criteria or objectives.

Well, I mean, I think a project, it has to be like some sort of a puzzle and not like a fully served project. Let's see it as a matrix or like a Rubik's cube, where you have like nine squares. And then, I mean, you have this is like the ideal thing. And then you have like puzzle pieces that this, you can do this, so you can do this, so you can do this, or you can actually do the full row, or maybe you can even do six boxes, or you can pick and choose and pick and choose.

This respondent has the view that a project should not be approached as a rigid and fixed plan, but rather as a flexible puzzle or they use an example of a Rubik's cube. They emphasise the importance of having various options and possibilities for the students to choose from, to cater to their interests and needs. This approach could allow for more creativity and adaptability, as students can choose what pieces of the project they want to work on and how they want to approach it.

Our plan, which was the utmost thing. There was a benchmark from the beginning, so we're working with it. If we hadn't won then it would be very messy, but from the beginning there was a benchmark of working on the stuff. It's all very light for us. So this thing of starting your project with doing something like immediately. Was a help. Yes, it was super helpful. Yeah, it is. Because the spirit was high at the point of, at the beginning, but if I hadn't done something by now, I think I would have been free so cold already and withdrawn from the entire thing. Ah, so in a way to also keep motivation and keeping, yeah, yeah, the motivation for learning, but also for the project.

The respondent expresses the importance of having a clear plan and benchmark from the beginning of a project. They emphasise the positive impact of acting and doing something immediately, which can help to maintain motivation and engagement throughout the project. The respondent also suggests that without this clear plan and early action, they may have become disengaged from the project. This experience highlights the importance of establishing clear goals and benchmarks, as well as acting early on to maintain momentum and engagement.

The respondents suggest that having a clear structure and supporting framework can be crucial to the success of a project. A lack of such a structure can result in confusion, frustration, and uncertainty among team members. The respondents recommend finding balance between structure and flexibility, as well as incorporating students' interests and experiences while keeping the needs of the company in mind. Defining roles and expectations is also expressed as essential. The respondents highlighted the importance of being prepared for potential problems and taking a collaborative approach to tasks and responsibilities. Clear instructions, goals, and expectations are also crucial for success. Additionally, respondents lift the importance of having a clear framework in place for collaboration with external partners which is essential for new students or those who are not familiar with the collaboration process.

**Expectations and experiences**

Expectations and experiences are connected, and they can influence each other. The different answers from the interviews and questionnaires showed a diversity in opinions and experiences. Several students have had bad experiences with collaborations, and it seems like
This has reflected negatively on their perceptions. Another expectation seems to be from the other side, that students themselves lack knowledge of collaboration.

Not so much from the industry partners, but the lack of industry knowledge amounts the students that are collaborating with the industry is telling, which can lead to misunderstanding or failure.

The respondent’s view is that the industry partners are often knowledgeable and experienced in their field, and it is the students' lack of industry knowledge that can be a barrier to successful collaboration. It pushes the responsibility towards students, to conform and learn and get a solid understanding of industry practices and norms, as students may struggle to effectively communicate their ideas and contribute meaningfully to the project. This kind of view underscores the importance of providing students with opportunities to gain experience about the industry they are collaborating with, whether through coursework, workshops, or mentorship programs and sees collaboration with the industry as a form of norming into the industry.

In the perspective of ideas, say, I want to create, for instance, I want to create an idea from scratch, I have created an idea from scratch, and I want to convert that into a business model. So, these are the pieces of the puzzle. Some pieces I do know and some pieces I don't know. Maybe I know some pieces but not well known. So, what should the external, what I expect from the external collaborators? I want to show them my way of work and so that they can view it in their own perspective, and they can define the bricks I don't know, or they can redefine what I know. So that's what I expect from them, to learn from them, so that I can modify myself or redesign my works. And also, I expect that they can assimilate what I think, so that the closing, what I need is the reduction of the gaps while collaboration to get the works done or to like rearrange the puzzles, the pieces of the puzzle, so that there could be a best optimal way to find an optimal way to attain the objectives. That's what I expect from the external partners.

Learning from external collaborators can help modify or redesign existing ideas, potentially leading to a better outcome. The respondent takes a stance, away from their own knowledge, and asks for the collaborators to be judges, or to value their knowledge, the ideas, and the work they have done. Defining the bricks, this expression is interesting, as the respondent asks for defining the different parts of what is being done, using the language of the industry. The will of letting the other party decide what the different parts are, is a very humble and open approach, letting the other one defines and decide what is being done and what has been done. On the other hand, the respondent continues with the next step, which is working on the idea themself again, modifying and redesigning according to the feedback, but letting it be feedback and not demands. They also expect the partner to do the same and take their considerations as feedback which they implement. The expectation of the partner is maybe higher than what they are expressing themselves to be willing to do, or maybe the phrasing is just a little bit unclear. In the end, the respondent has an expectation that the collaboration is intertwining the different opinions and bits of knowledge to reach the goal. They acknowledge their own limitations and recognize the value of external input in refining and improving their ideas. However, the language used to express these expectations can be interpreted as somewhat humble and open, while still being assertive about their own ideas and agency in the collaboration. Overall, the respondent seems to have a collaborative mindset and is willing to engage in a dialogue with partners to reach a successful outcome.
Many of the respondents who have been interviewed are students attending a separate Master program, which has an international intake from different educational backgrounds. The respondent discusses their experience attending the program pursuing a master's degree, and it appears to be vastly different from that of a bachelor's degree. Not only is there a difference in age and prior work experience, but there is also a different mindset that comes with actively choosing to pursue higher education. However, the respondent expresses that their experience is that external organisations and partners often fail to recognize these differences and treat all students as if they are in the same box. This can lead to frustrating situations where students are spoken to as if they have no knowledge or experience, despite some of them having worked in the industry for years. This gap of knowledge or communication is something that frustrates the respondent, and they point out how it is important for organisations and partners to recognize and acknowledge the differences in mindset and experience that come with pursuing a master's degree. They make a difference between students who come to pursue a master's and those who come for a semester to party. As international students come to study in Sweden, they often face the challenge of finding job opportunities in the country after graduation. This is expressed as particularly challenging because they may not be familiar with how Swedish organisations operate.

As international students, this kind of collaboration is really important for them to learn how Swedish organizations operate and find their first job opportunity in Sweden which is very difficult for international students.

Collaborations with Swedish organisations can provide international students with valuable opportunities to gain insights into the local business culture and make professional connections that could help them secure employment in the future. While these collaborations may not always be successful, they can still provide important learning experiences and help students to build skills that will be valuable throughout their careers.

The quality of these collaborations was however very different from one course to another, and I would say that half of them went very well and half quite bad because it felt like the company was not involved or didn't know what we were doing. Actually, to answer this question, I had to look up at the list of courses I took to remember which one were in collaboration and I didn't remember that half of them were in collaboration, maybe because of the bad experiences I've had and the feeling that some of them were useless...

While some collaborations were successful and provided valuable learning opportunities, others were disappointing and felt like a waste of time. It highlights the importance of
effective communication and involvement from both parties to ensure a positive outcome. It's also worth noting how personal experiences can shape our overall perception of a program, even to the point of forgetting certain aspects. The respondent shines a light on a big issue in their experience, lack of interest or lack of involvement from external partners, which can be connected to some individuals who feel that the term "collaboration" is being overused or misused to make something seem more impressive or trendy than it is.

Then sometimes I think people are using the word collaboration in a way of washing, like they're washing with everything else today to make it sound fancy, but instead it's something else. Like only one way sponsorship or whatever.

This individual believes that true collaboration is something else entirely and that some uses of the term, such as one-way sponsorship, do not truly represent what collaboration is about. It is important to ensure that collaboration is not just a buzzword but is practised in a meaningful and effective way.

Expectations and experiences are interconnected, as shown by the diverse opinions and experiences expressed in interviews and questionnaires. Students who have had negative experiences with collaborations may have negative perceptions of future collaborations, while industry partners may view students' lack of industry knowledge as a barrier to successful collaboration. The responsibility to conform to and learn industry practices and norms is perceived as pushed towards students. When seeking external collaborators to convert an idea into a business model, one of the respondents expects collaborators to provide feedback and help define and refine different parts of the project. The respondents acknowledge their limitations and value external input in modifying and improving their ideas. There may be a perception that external partners view all students as being the same, despite differences in mindset and experience levels among student populations.

**Summary of Phenomenography**

This thesis uses “What makes good collaboration?” as a starting point, and as its final goal. The experiences from the interviews and the questionnaires show diversity but also some clear themes. The most prevalent is what is formulated as Bridging the other, the formulation can be seen as fuzzy, but the terminology “the other” is relevant in this aspect, reaching out, outside of yourself and your bubble, to another part. The theme explores different perceptions of how this can be done in a good way, and examples of how this has not been done at all. Communication, which often is seen as one of the cornerstones of collaboration, is here only a tool for how to build this “bridge,” if the communication is only one-sided, the bridge is not complete, and it doesn’t reach the other. Several of the interviews talk about empathy, not only as the popular, feeling bad for, or having bad feelings for someone else’s situation or sympathising with someone, but instead as an active action. Empathy is either doing active choices and actions to help and make it easier for the team or collaboration to succeed, either by helping others to understand each other, or to build an open climate where failure or weakness is not seen down upon. Another word used is service-minded, or comparisons to different stakeholders as a customer, this can also be seen as different methods for empathy,
using mindsets and methods from different industry settings to try to find solutions which fit the other. This mindset could be one that fits collaboration with external industry partners, but it could also be something that diminishes the own role as a stakeholder. One of the quotes:

The biggest challenge is to convince industry that collaborating with academics is a good idea. It is very easy for industry to keep doing their own things without engaging academia. But it takes a common understanding on both sides that this collaboration has benefits, not only for the two sides but for the society as well.

This points out one of the potential weaknesses in the quadruple helix if one part must convince the other, the question is if it really is collaboration. On the other hand, as one of the respondents expresses:

Almost all collaboration with industry is successful, even failures in developing use cases, should be seen as useful and successful in some sense.

The same respondent also points out a gap, even though it is about knowledge, the solution is not only about the information, but other tangible know-how, and finding different ways of using the information.

Right now the academy has a lot of research about new technologies and the industry is aware of the benefits of them. The problem is that the industry doesn’t know how to use these technologies and how to implement them and try to relies heavily on academia to implement it for them.

This also points to the other theme, power, here it is more complicated than just “knowledge is power”, since knowledge per see is not power, but something that can be used, a tool, power can also be seen in the same way, a tool, and now neither the industry nor the academia has solutions for the problem. Going back to the study’s focus, maybe some of the students actually have expressed, in simpler terms, or naïve:

And then when we see other students doing different projects, and seeing their processes also gives us different ideas, like, oh yeah, they're doing that, so, oh, that's interesting, we could do that, or like having different things rather than everyone doing the exact same thing.

The respondent talks about collaboration, in another way than it is usually formulated, almost as a “thing” outside of themself, by seeing others and being open about what happens, the ideas, which are not only central but crucial for the projects, emerge from another kind of collaboration than the one expressed in the quadruple helix. Maybe this is yet another example of bridging between the other, and each other.

**Phenomenographic Action Research**

This thesis also involved the observation and, in some cases, participation, and analysis of five distinct groups, each participating in different projects centred around innovation and problem-solving. These projects were initiated by Creative Lab, with a shared emphasis on people and exploring novel, creative methods of collaboration.

To identify these diverse projects, members of Creative Lab took an outward approach, actively seeking collaborations with external organisations interested in partnering with MDU or its students. This approach aimed to foster a dynamic exchange of ideas and perspectives between academia and external stakeholders.

A key aspect of these projects was the active involvement of students as essential participants and stakeholders. By incorporating students into the project teams, their unique perspectives, knowledge, and skills were leveraged to contribute meaningfully to the project's goals and
outcomes. The projects proposed that were chosen by students were the following: Ion games, Foodfestival, Mälarenergi x Mimer, Re: Create and Games Workshop.

Through these projects, this thesis sought to uncover and understand the various ways in which collaboration can express itself (Plattfaut, 2013). By examining the lived experiences, perceptions, and actions of the project participants.

The structure of the participatory/phenomenographic action research within Creative LAB followed five key phases, inspired by Parello et al (2019):

**Planning:** A coordinator from Creative LAB guided the project members in creating a dedicated space for sharing experiences, engaging in reflective thinking, and collaboratively planning their initiatives.

**Action:** Led by the course teachers and with the support of Creative LAB, the project members implemented various projects and events aligned with their objectives. These activities aimed to display innovative ideas and solutions generated by the participants.

**Reflection:** A designated space was established for project members to engage in reflective practices. This involved conducting interviews and participating in discussions during workshops facilitated by the project members, allowing for deeper insights and learnings to emerge.

**Assessment:** Rigorous data collection and analysis took place, utilising a phenomenographic approach. The materials gathered, including the earlier interviews and the questionnaires, were examined to gain a comprehensive understanding of the project members' experiences, perceptions, outcomes, and impacts.

**New planning:** Collaborating with other members of Creative LAB, the project members entered the next phase of planning. Drawing from their collective expertise and experiences, they proposed prototypes for interventions and developed strategies to construct future
events, aiming to refine and enhance the quality of their initiatives. This was done in all projects which made prototypes and/or did several workshops.

**Diary of action research**

This diary is my own subjective representation of the events connected to the thesis, as there are many parts of the projects that are difficult to explain without writing about them as the experiences they were. The diary is also a method to increase the transparency and reflexivity of the projects (Dodgson, 2019), as it helps to place the information from the interviews and other work into the context in which it took place. The diary handles both individual dates, but also overall time periods during the thesis work. In the end, WellBot is separated, having received its own chapter. WellBot was the last of all the projects to be finished and was also the project that I myself was most involved in, it is an interesting project that had a lot of setbacks, that had to change direction several times and that meant a lot of work for everyone involved.

The work with this thesis started before the spring semester, is built on the accumulative work of the first year of the master’s as well as the projects CCC- Creative Collaboration Community in the spring of 2022. The formulation and creation of Creative LAB took place in a course during the autumn of 2022, in the student group made of Anna Khofman, Inés Acinas and me, Simon Lindblom. After the course, which resulted in two proposed ways of working with transgenerational work with students, MDU Heritage, as well as the student-focused innovation lab, Creative LAB. The work which was made between the course ending and the start of the thesis will be included in the appendix.

When approaching the question of *What makes good collaboration?* Discussions within the group (Anna, Inés, and Simon) landed repeatedly in formulations such as "true collaboration", "democratic collaboration", "real contributions". Some of the red threads were over and over again, a will to make a positive change, and to collaborate with partners who were engaged or open to collaborative relationships. In the course in which Creative LAB was formulated: Human Centred Design, two key interviews were made, one with a group of students in another program than the project group. This group clearly formulated the will, as well as the wish for collaborating not only with external partners but also with other students, letting the projects they worked on live on through the other students, giving them the projects and letting the junior students continue to work with them. The other interview was with the project manager of Göteborg Tekniska College, specifically talking about their lab and their student projects. The project manager described how students were the main workers, in many ways, university students built on theoretical and scientific knowledge, making Bachelor- and Master-thesis projects, each one contributing to a bigger picture. Gymnasie students were the "workers", during their work-practice courses worked at the lab for several weeks, taking care of most of the daily tasks. (Khofman, Acinas & Lindblom, 2022, in the appendix)
When starting the spring semester, there was much confusion in what the Master thesis would be about, two members of the Creative LAB group, Inés, and Simon, both had won ABB's Sustainability competition during the spring of 2022. A part of the prize was to write the thesis in collaboration with ABB. At the same time, the group was working with establishing contacts and potential projects for collaboration in the spring for students at the Project Management Course. The teachers Adesuwa and Eric were both positive and open to letting Creative LAB present project proposals for the students.

During this period, Cornelia joined the group, she was interested in looking at different groups and how they collaborated or how they found common grounds, language, or places to do this. She had worked with "bubble-hopping" in the course before, using these metaphors to explain communication in complex organisations. When Cornelia joined the group, she brought with her the Helix perspective, something that has shaped the project and the theses afterwards.

When establishing contact with different partners, there was a strategic choice of approaching organisations and companies which did not have a collaboration with MDU, but also being part of industries or part of helices, which were not established within the MDU collaborations. Some of the identified industries were creative fields, gaming and part of the civic society but also projects focused on "real contributions" which was further formulated and identified as social innovation. Some of these were put into the projects of Project Methodology, such as gaming/board games - ION Games, ABF, PMU Second Hand Erikslund and Konstfrämjandet, and projects such as Game workshop, Re:Create and Food Festival.

ABF became a key partner in the start of this semester, helping with fundings for Re:Create workshops, as well as being the host and collaboration partner for two workshops. The workshops were focused on implementing design thinking, and methods for bottom-up innovation. The basis for the workshops was made in the course preceding, Creativity, and Innovation Management. With the different steps of the Double Diamond model being connected to different personality archetypes, with the goal of making the identification with the process having a low threshold.
The workshops, which were held by Cornelia and me, were a success. The participants, with Business Developers from ABF in the first and both the Business Developers from ABF and international students in the second. By mapping out the different actors, their roles and the interconnections, in the first workshop, the second workshop could focus on problems or situations where ABF already has established networks or work, but in new forms which are connected to many different stakeholders and providing solutions that benefits many. The connection with ABF was held throughout the thesis work, even though the initial contact person left for a new job, the continuation went on smoothly, the early workshops could be one of the factors for this, as the new contact person was one of the people involved in these as well.

During the spring and the execution of the projects within the course, several workshops and different forms of action were done. The involvement from Creative LAB and myself in the different projects varied depending on the members, some projects such as the Game Workshop, involved weekly meetings as well as feedback on work and participation in the workshops. While others such as ION games, were mainly a presentation of the project and mediation of contacts.
Many of the projects had one thing in common, where the group members contacted to get support when it felt difficult, or when it felt too big or hopeless to achieve the goals. This can be seen as and connected to the proximal development zone. Whereas the members looked for support to breach the areas which were new or felt too hard.

During the whole process of the project of Creative LAB, with all sub-projects and experiences, one of the strengths has been the "core group", initially consisting of Anna, Inés, and me (Simon), but since Anna moved to Gothenburg and started a new work, Cornelia, Inés and me (Simon). This core group has used a WhatsApp chat to communicate, not being bound by time or space, as well as video calls, shared folders, and shared discussions. The group has worked as a base for all projects, and a place to develop and air ideas and concepts.

Simultaneous to the thesis-focused work, work on the LAB itself has been done in the group. With a mixture of theoretical and practical work.

To create and facilitate collaboration, has been done through several methods, one of them being with the approach, the people who want to collaborate and collaborate, are the ones we collaborate with. But finding these people can be hard. One of the mindsets used, has been to continue to reach out finding new relationships and collaborations, and try to sustain the relationships gained. Find new ways of combining the needs and goals of different actors to find solutions which benefit as many as possible.

By promptly reaching out, asking directly, and inviting input and engagement has been the characteristics of Creative LABs interactions with new stakeholders. Having the agency to act independently, without asking for permission, using the roles as students, individuals with one foot in academia, one foot in civil society and part of a process which includes personal development, with goals that could be contributing to the future society. Students have a favoured role, is something we experienced in Creative LAB, as working with something that can be seen as "bigger than ourselves", we have had the privilege of being seen through the lenses of us maybe being naïve, but maybe having time to spend during these years we find our future selves. I have sent more than 1000 emails connected to Creative LAB during this period, I know that I have sent more than 500 just in the last few weeks, and during the autumn and start of this semester I was more active. This outreach has resulted in the projects. It has also resulted in several projects which Creative LAB can continue working on after this semester. It has resulted in contacts throughout Sweden, Europe and the World. Many of the connections have had a common theme, other organisations, people or movements, which want to use creative ways to connect different parts of society and work for a more sustainable future. This could absolutely be connected to the typical early adopters.

I don't think everyone, or many at all would like to do the work we have done during the last year, we have put our work breaks, weekends, and days off into a potential future, which is not only for us, our loved ones or our community, but for people we don't know, for a
potential future we don't know is possible to reach. With the idealistic concepts of Society 5.0 and the potential of how Human-Centric solutions could be implemented into Industry 5.0. With all these potential opportunities in the future, I want to at least try to nudge it into a little bit more positive change.

Almost all projects within Creative LAB, have focused on social innovation, this has been a strategic choice, with several aspects weighing in. The core group discussed projects and potential partners, and we actively searched for collaboration partners within civil society or organisations and businesses with close connections to the civic society. All projects also had the goal, which they succeeded with, to be free to join. One of the assumptions was that by making the projects have a stable foundation within theory, but practices which are easy to approach, the chances for successful collaborations and projects would rise. These assumptions are based on the perceived disconnect between civil society and academia, where academia sometimes is not trusted, or seen as another or exclusive part of society. During one workshop with Re: Create, this became clear. The people who approached the workshop, which was situated in the middle of the second-hand shop PMU Second Hand Erikslund, individuals wondered what was happening. When they understood that it was an open event, free for anyone and done by university students. The responses were everything from reminiscences of their own student years to parents wanting their children to come and look and learn.

To make several workshops, events and happenings throughout the semester has been very intense, and it would never have worked if the groups doing the projects wouldn't have been so invested. The number of hours, to find solutions to small problems, to designing and advertising the events is astonishing. I am hugely impressed by the project members' devotion and their grit. Most of them have had periods of their projects where they wanted to give up or question their ideas or execution. I have had many discussions with different teams and team members, about one of the main skills making projects succeed, willpower and the ability to take a no and find a new solution.

For myself, trying to balance finding solutions, such as funding, or spaces to hold the events on, has also meant a balance between telling the participants about plans, or not, depending on how likely they are to succeed or fail. Mimer, now WellBot, the group is a good example of this as the project which they were supposed to do was a straightforward project, hold some workshops, reflect, and develop how they can be improved. Instead, they have gone from a local workshop with school kids to an international hackathon event with several stakeholders and a substantial prize. But all happened in one small step at the time.

In one of the interviews, the respondent talked about how getting info about other projects and building ideas on the ideas, was inspiring. I think this points to one of the strengths of this project, how the different groups have done thing after thing, and learnt from each other as well, the projects have not been isolated but instead influenced each other.
For myself one of the biggest takeaways is how a mandatory task within a course has the potential to build a culture within a group. By making the projects something bigger than the course credits it could motivate another form of learning. Forcing the participants, including myself to push boundaries and test and try new things. But everything has been within the safety of the university, if all fails, it is just another example to write in a report.

The students, could through collaborations with different stakeholders in different parts of the Helix models, try out how they, both as students, but also as project managers could facilitate collaboration. During some of the projects, including a closer connection to the University it became clear, the excluded role a student has at the university, the student is passing through, and has very little to no agency in creating or facilitating anything without help from someone who is an employee at the University. When doing an event at the university, it didn’t matter who attended, and external individuals non depending on who, were as welcome as any student. During one of the workshops held by Level Up: Game Workshops, my daughter joined, she is 10 years old and was an active participant in the workshop. During this workshop the game “Our Move” by Andrea Hvistendahl was played, and different groups of 3-4 people mapped out different stakeholders, and their roles at the university campus. One emerging theme was the lack of external people, and even though the campus is a public space, it is not a including space.

But in other collaborations, the roles were different. During the Re:Create workshops, the group instead took on the role as a face for the university, participants in the workshop were thrilled and excited that people, designers, students from the university was out in the public and actively engaging. This led to many positive interactions and talks between participants, the facilitators, and the store personnel.

While engaging in contact with different organisations outside of the University, having the two legs of civil society (non-profit organisation Creative LAB) and academia to stand on was a great strength. Engaging in contact with municipalities, with organisations such as Leader (provider of funds for rural projects) and with civil society organisations, became easier, since it signalled a continuation and longevity, which one school project doesn’t. Some examples of this, are continued connections and further collaborations with Leader and with Eskilstuna municipality.

The collaboration with Leader, started during the autumn, when we reached out to them to ask if they wanted to collaborate. This happened during the course in Human Centred Design, and the initial idea was to create pop-up maker spaces, preferably in the countryside. Now, during the start of the summer, the same rural developer initiated and mediated the contact to the responsible for Innovation development at Skultuna district administration. A meeting was held, and potential future collaborations were expressed, with Leader being one of the stakeholders involved.
Eskilstuna Municipality, one of the business developers at Eskilstuna is also part of a non-profit organisation, working with gaming for young people. This person was invited to the Game workshops held by Level Up, was an active participant and got in good contact with the students who facilitated the workshop series. Now during this summer, both I and one of the students will work together on a boardgame with another department in Eskilstuna, much because of the workshop and the meeting connected to this.

WellBot

Email to the project group, with proposals which they could choose between.

The WellBot project, connected to ABB, presented unique challenges throughout its course. Initially, the group had selected a different project in collaboration with Mimer and Mälarenergi, involving workshops with children, looking into the future of housing, at Expectrum. However, due to changes in personnel, communication breakdowns occurred, and the project faced delays and uncertainties.

Flowchart of how WellBot has been influenced, and who the main stakeholders or actors influencing have been throughout.
Additionally, the idea of a hackathon was proposed as part of the Entrepreneur project at EIT, and the group expressed interest in pursuing it. Despite minimal preparation, the group chose to work on the hackathon project, leading to further developments.

An initial visualisation done to show where and how Creative LAB can collaborate with different stakeholders.

The initial visualisation showed Creative LAB outside of MDU, as well as outside of ABB. The interesting thing with this visualisation, is the part where potential projects hackathons are mentioned, with precompetitive collaboration. This is what WellBot has become, with 11 teams from different universities around Europe registered.

Throughout the WellBot project, a significant focus was placed on connecting the ideas of external and internal stakeholders, translating their diverse needs into a common ground. This involved finding innovative solutions that could benefit all stakeholders and align with the project's overarching goals.

The 26th of May 2023, WellBot is held as a hybrid event on Campus Eskilstuna, MDU and online. The hackathon was a success, and the day was inspirational, and the teams came up with various ideas. During the day, the participants went through several iterations, after each they presented their progress, or a more defined prototype. After their presentation, a group of mentors gave feedback, with focus on feasibility, innovation height, sustainability, as well as depth of idea and concept.

Tuesday the 30th of May, all projects which were part of the course in project management presented their work during the semester. WellBot being one of them. The group members were happy with the results, even though they had a hard time getting there. Some of the factors they expressed for their success, were the support they got from both their in-class mentor, Loe, as well as me and Ines from Creative LAB. This was something of a red thread
throughout the presentations, in which Creative LAB had been involved with, that the group expressed some of their success to the support of Creative LAB.

On the 1st of June, the winners were presented. A group (Group Yellow was the working name) which had focused on E-health and making it easier to get in contact with healthcare.

Summary of Phenomenographic Action Research

The experience of being part of the projects myself, was enlightening as well as a great way to test and facilitate the ideas within Creative LABs sphere. One of the red threads of the projects was the interaction between the teams, and how the teams learnt from each other’s mistakes and accomplishments. Some of the teams started early with their projects, having workshops from the start, as a benchmark and starting point for the rest of the semester, while others had their happening in the end, such as WellBot.

Most of the groups met many setbacks and hindrances to reaching their initial goals. This can be seen in some of the interviews, as some of the participants had their setbacks during the period in which they were interviewed. This can be good, as it shows the participants in different stages, and the experiences also show variation in the parts of collaboration.

Working together, not only with other thesis students, but also with many projects, resulted in a deep dive into what collaboration means and how it can, and not, work. The work became iterations and prototypes of itself, and even though I refer to the learning process of the participants. I was also in a process, where I iteratively needed to adapt, develop, and clarify the collaboration. with both the participants in the various projects, as well as other organizations that were involved, to the others involved in Creative LAB. This led to the final project workshops or events having a bigger foundation, not only in practical know-how, but also in effective and structured ways of collaborating.
Findings

"Perhaps this sounds very simple, but simple things are always the most difficult. In actual life it requires the greatest discipline to be simple, and the acceptance of oneself is the essence of the moral problem and the epitome of a whole outlook upon life." - Carl Jung (2001)

It's just collaboration, how hard can it be? As Jung (2001) states, seemingly simple things are complicated. The experiences of the respondents in this study, state many ways of how good collaboration can be set up, having clear communication, a set goal, empathy between each other and a structured approach to the work. But also, expectations of the others, in having freedom, support, and help when needed, but not having micro-management or too much involvement, or maybe more involvement throughout all of the steps. To take on a role, a role which facilitates the group's work and collaborations or a role which serves the needs expressed by partners.

What are the experiences and perceptions of good collaboration for students at Mälardalens University?

This thesis aims to answer through both the experiences and expressed perceptions of respondents, as well as the personal reflections of the researcher, as part of the projects which many of the respondents conducted. The answer to this big question depends on how well the different stakeholders conveys their perceptions. It depends on how well they present the value it will bring. It depends on how well the expectations match each other between the stakeholders. It depends on the social skills of all involved. It depends on how open the stakeholders are about the boundaries and prerequisites.

Looking at the answers from the respondents, one of the most important components of a good collaboration is the perceived value of the outcome. This can be seen both in answers which directly points to this, but also in the ones which points at the opposite, collaborations which had no perceived value:

…it went well because the external partner was very helpful, they were very willing to give information and also learn from us. So, it was not a one-sided knowledge. They learned from us, or we learned from them because they wanted information, they wanted research from us, so we did that. And all the time we had to get information from them. They were very helpful; they were willing to do it.

The partners wanted the research, and the students wanted to learn and feel needed, the exchange between the stakeholders was a “win-win”, something that can be found in several of the good examples of collaboration from the respondents. On the other hand, it can be seen when the goals and the value of the collaboration are not clear, that the collaborations become worse, the respondent gives a nuanced answer, which incorporates the industry, the academia, and the students, which all have different goals and finds value in their separate parts, and when these don’t have the same goals, they are less likely to succeed:
I would not say that I have been satisfied with the outcome or results, even though the partner or academia might have been… Most of the collaborations have been on the brink of being unsuccessful, usually do to as mentioned before, ambiguous instructions and bad communication or expectations from academia and industry that does not go together…The more structured collaborations today are not actually suited for all students, for example those within innovation management are wildly left behind.

One interesting connection from the literature is from Nordberg et. al. (2020) where a student found a value which the project itself didn’t look for or was seen by the other parts and made a business model of this. Also, Carlsson et. al. (2022) talks about the value for students in “real life experience”. Lindhe & Sülau (2021) emphasises that variety in views is important to solve and approach complex problems, but this is clearly also a hinder or barrier, if the different views also mean different values sought after.

The goals of a company/organization and the learning objectives we have in a course at the university can be difficult to reconcile. If the company only wants a project completed at a cheaper rate than on the open market, I think they should reconsider whether they should collaborate with a university. There must be a giving and taking and learning process for all parties. Students must have the right to experiment, test, and fail, not necessarily “deliver” a finished product/service. Time constraints for companies/contacts are common.

Much of the literature connected to Quadruple and Quintuple Helix, doesn’t approach these questions, there is several which talk about different roles, such as: **Research providers** which offers scientific solutions, **Mediators** that facilitate interaction, **Operatives** that engage in functional activities and **Brokers** which provides access to networks (Bellandi et. al., 2021), but these don't talk about motives or who takes on which roles. Abhari et. al. (2019) uses motivation to identify different roles: **Ideators**, **Collaborators** and **Networkers**, these on the other hand is easier to also find within the students, maybe because the roles which Bellandi et. al. (2021) refers to are higher up in the systems, on the other hand, when the students talk about what they wish for, they mention diffuse roles, which could be seen as **Mediators** or **Brokers**:

As international students, this kind of collaboration is really important for them to learn how Swedish organizations operate and find their first job opportunity in Sweden which is very difficult for international students.

Here the whole university can be seen as a **Mediator**, **Collaborator**, **Networker** and **Broker**. Kimbrough and Cooke (2011) talk about the importance of building a campus that is inclusive for international students, or student groups that are new in the universities. This can be connected to the statement, as one of the respondents sees the need for something else, not only the course objectives within the university. And another aspect connected to the potential roles is this:

You know, I wish there was some person or like a student center that you go to and talk to them and ask for things. You go to them, say, hi, I have this idea, I want to do this and do that what's the next step and she or he whoever is replying should answer you on the spot not throwing you at someone else and go talk to that person go email this person it shouldn't be like this or I wish you like more open hands and more support like okay that's great. How can we help? It's not like that really so far.

The respondent expresses a seen need, for some sort of role, a **Broker**, or a **Mediator**. This leads to another part of what makes good collaboration, good foundation, conditions, and preliminary work. In this setting, as part of a course, the collaborations needed to work fast,
and work needed to start fast. That is not always the case. Within the Quadruple and Quintuple Helix, Carayannis et. al. (2022) emphasises the important role for the University to be an active facilitator of sustainable collaboration. Litardi et. al. (2020) shows through their visualisation, the sustainable University, which is built on 4 pillars, Quintuple Helix, Public Engagement, Third Mission (economic growth), Third Mission (Social and Environmental growth), this stands on the foundation of research and education. The universities described have used the third mission to fund different projects (Litardi et.al., 2020). This can be connected to the project done at Karolinska Institutet, mentioned in the introduction, where students helped the university to communicate with the society (Söno, 2022). Potentially making the students themselves Mediators and Operators, while the university takes on the active role as Research providers, and passive as Brokers. Bellandi et. al. (2021) as well as Abhari et. al. (2019) view that the different stakeholders play roles, can bring a depth to identifying what enablers or enabling actions can be done to facilitate collaboration. Miller et al. (2018) presents a model for resilient networks in innovation. Within this, one of the interesting aspects is that Intrinsically Motivated People are seen as their own part of this network, and using the Network, Reputation and External Opportunities to collaborate. This can be seen as an enabling model, where the need for intrinsically motivated people is not only seen as something beneficial, but as an important part of a resilient network. Some of the respondents really showed this intrinsic motivation:

Yeah, because I don't believe in the small things that we are doing every day. I believe in the bigger picture. And I'm sure that in the bigger picture, this project will be a milestone for me… personally, I see it as a bridge for my future. So, I'm doing this project here right now and I'm writing a report about it and I'm gaining experience in networking with people and in researching and in bringing like all the pieces together and this will serve me in the future…

The own motivation for the individual is by building own goals and own values in the work. Another respondent showed another aspect of this:

I like to help people and I want to spread out the growth mindset and specifically for women because I've worked with different kind of women in the past. And it was really nice to work with them and help them change the way they thought and the mentality because they were not educated. And they never actually worked a day in the life in like a professional place. And it was very new to them. And it was really nice to kind of work with them and try to change the way you think and switch from being a housewife and show them that they can actually do different things….And if there's a way to connect both aspects, like the creativity part and the women empowerment part, that would be great. But I still haven't found that company that does both. Maybe I can come up with my own startup, and I just hire women. I don't know. Could be, could be.

On the other hand, another one of the respondents took up a negative aspect of using collaboration as a tool, similar to green washing:

Then sometimes I think people are using the word collaboration in a way of washing, like they're washing with everything else today to make it sound fancy, but instead it's something else. Like only one way sponsorship or whatever.

This citation points to what Öberg et al. (2021) sees as potential tension that hinders collaboration, the respondent sees the collaborations through their old bad experiences. Cai and Lattu (2022) points to the Quadruple Helix as a better model for Bottom-Up initiatives, and Triple Helix for Top-Down. The question in this, is what is used in the universities today, and does the University with courses that have set defined goals and requirements for the students give space for Bottom-Up initiatives or are they favouring Top-Down. Kimura et al. (2018) talks about the network of the functional system, and that all different parts affect each
other, and education being one of many different systems, this points both to the importance to take one's own role seriously, as it affects many more than those within one's own system, but also in order to bring about major changes it may be required that several different systems cooperate, even systems that at first glance are not seen as an obvious collaborating parties. The students, they come from different backgrounds and have different views on what works the best, some like much freedom, and see this as one of the success-factors:

Like, you should know what your objective is, but then you should have quite a good amount of freedom in how you're going to achieve it.

While others see it as a balance between the wants, and the needs of the students:

So, depending on the time and maybe the students' interests and the experiences, then you can like build your own. It doesn't have to be a matrix. I mean, you can see it as blocks, building blocks, so that you take something from the kids' blue box, and you build your own project based on the needs of the company and your own interests and experiences… the company also has to have some sort of won in it… So, it's not just going to be like, oh, do whatever you want. But I mean, you can have maybe a few needs or some ideas for projects, but then they can be put apart to smaller projects or put together to a big one and then according to the students' needs…. So, I don't know, I don't have like the full recipe, but just some sort of building blocks or you can easily put things apart or together.

This answer works well with one of the barriers of collaboration, the expectations, as working with someone new, or with someone you don't know the level of knowledge of, it can be good to have a balance between both Bottom-Up, as well as Top-Down. Frogett (2015) points to this, that even though collaborations are promoted in flat hierarchies, the role of a vertical leadership can contribute to good collaboration. Dowin Kennedy (2021) points to the crucial role bottom-up capacity-building communities are for sustainable development. So, to build a collaborative community, it can be beneficial to have the option to work Bottom-up.

Working with this thesis, I have seen many projects, with many different approaches to this question. The question is big, but still concise, it boils it down to the core. If the question was more situation-based it could risk focusing more on situational aspects and not the core, the collaboration. In the interviews some of these success-factors were expressed, but some were not. Much of the projects and collaborations have been good, some bad, much of the success has not been through the implementation of formulated methods, but instead continuously reiterated social contracts between the stakeholders. This can be connected to Ziker and Fulk (2018) which pointed to social relationships, sharing and collaboration being fundamental human behaviours.

**Limitations of this thesis**

This thesis has had several limitations, one being the novelty of the area; few studies have been done with students as the research subject for collaboration within Quadruple and Quintuple Helix. Many of the present studies and articles have a system-level view of the area and few practical or tangible examples. The area is very much a theoretical area, and the practice has not caught up. This leads to uncertainty in the interpretation of what these
models translate into on an individual level, in the interactions and experiences of single people.

The literature review was also limited, the field of Quadruple and Quintuple Helix are small, which leads to a theory formation where it is still the creators who are responsible for the largest part of the theory, but also for the largest part of the interpretation. It creates a theory, which should be covering many different people and parts of society, but very few people have interpreted this. This can be seen in different aspects, such as the articles in the periphery taking up topics that highlight individuals and experiences, while those in the middle are purely theoretical. The articles in the periphery are still quite a few, and the practice of how to conduct research with Quadruple and Quintuple Helix may not be defined yet.

The review could have used more search databases and implemented a more systematic approach to inclusion and exclusion for articles. It could also have reviewed articles connected to experiences of collaboration, not only connected to Quadruple- and Quintuple Helix, but other fields as well.

The experiences of the respondents represent a small group, they have different genders, different ethnicities, different nationalities, and different ages, but they all go to the same school, and most of them to the same program. This is a limitation, as the thesis aims to look at something that is not bound by situational aspects. It would be beneficial to look at other groups' experiences. It could also be beneficial to look at the same group, later, to see if the experiences of collaboration have changed.

The thesis has also dealt with the work with Creative LAB at the same time as the thesis which has benefited in the form of insights into the processes, but perhaps also hindered in biases or assumptions. It could be interesting to have an outside perspective on Creative LAB and all the work as well, to get a different perspective. The thesis has not taken any ethical considerations into what the collaborations end in, but instead focused on the process of the collaborations. This has been done since the projects in which the collaborations were executed, were not done. On the other hand, the participants took their earlier experiences into accounting and reflected on their experiences.

Lastly, one of the big limitations has been time, the project as well as the thesis, tackles big issues and dealing with these in the timeline of a master’s thesis means compromises in the work which could possibly affect the results.

**Contributions**

The contributions of this thesis can be divided into two different orientations, one being exploring new parts of the Quadruple and Quintuple Helix models, building new knowledge,
and contributing to this scientific field. On the other hand, much of the thesis has been linked
to the projects within and in the vicinity of Creative LAB student-focused collaboration.

The contributions to the Quadruple and Quintuple Helix models are mainly in bringing new
perspectives, as well as practical cases and experiences of working within these models. The
participants of the projects and the interviews and questionnaires have brought many insights
into how these theoretical models can manifest in practice.

Creative LAB, and the work with the student-focused innovation lab, have the potential to
increase the community’s collaborative culture, both within the university amongst students,
but also in the surrounding communities and organisations. The projects so far have focused a
lot on social innovation, and on social inclusion. This has been one way to both engage the
external partners, such as second-hand shops, but also the participants in the projects, as
social inclusion is a subject that many have a relationship with and experiences of. This could
have impacts in the future of student retention, and the relationship between society and the
university.

Some of the new collaboration partners provide new opportunities to explore or collaborate in
different fields than usual for students at the university. This is something that has the
potential to grow if it is managed properly.

One of the biggest contribution of this thesis, is bridge between the practical and theory, the
projects and the collaborations set up for the thesis has been of a variety that hasn't been
present at the course beforehand. Many of the participants gained real experience, since the
projects sat high demands on them and the results where highly dependent on the groups.
Many of the participants expressed this several times, this can be seen as a good bridge
between theory and practice. This method of conducting practice inclusion takes alot of
effort, but the reward is also good, the participants have expressed it as a success, and
expressed how they wish for it to continue. Several has chosen to continue with projects
connected, and some have got summer work.

Conclusions

What are the experiences and perceptions of good collaboration for students at
Mälardalens University?

The answers found within this thesis, from the experiences of the respondents, as well as the
experiences of conducting several projects within Creative LAB, can be boiled down to this:

To make **clear goals** together, where the stakeholders are open with their **expectations** and
their **conditions**. The goals do not have to be the same, but they should not collide.
**Openness**, in **communication** and in **understanding the other**, the collaboration will
probably meet hinders or unforeseen hurdles. **Agency** for the stakeholders, depending on the
nature of the project, more cooperative projects need a flatter hierarchy and a bottom-up
initiative, while fixed goals and a more defined hierarchy works better for a Top-down initiative. **Motivation** is important, the motivators are different between different individuals, as well as different stakeholders. **Established value** for the collaboration members will gain, can be a powerful method for motivating in and for collaboration. Many of the respondents had formulated the role of **social interactions** in collaboration, how the interactions both within and outside of the groups helped the projects. A **will** to make the collaboration work, both short term and long term. The last success-factor is **fun**, if the collaboration has elements which are **interesting** for the stakeholders, this makes the collaboration easier.

Questions that could be asked to help to define these aspects:

- What value does this bring for us and for others?
- What motivates this collaboration?
- What is the goal of this collaboration?
- What strengths and weaknesses do we have?
- What conditions are affecting this collaboration?
- What is needed to know entering this collaboration, and is there anything to take in consideration?
- What roles does this collaboration need?
- What roles do we have in this collaboration?
- What is interesting in this collaboration?
- What will this collaboration result in?

**Future research**

This thesis aims to explore the experiences of collaboration and identify the factors that contribute to successful collaboration. It also aims to be a pre-study for a bigger research project which this thesis is just the first part. Through the analysis of various themes emerging from the data, the thesis has identified some success factors. Drawing upon relevant literature in the field, there is a potential to examine how different roles and defined structures within the Quadruple and Quintuple Helix models can be established. In this thesis, the fields which were mainly explored were the civil society, the academia and industry. In practical work within the projects, it explored facets of environment, with projects such as Re:Create, which touched on fields as enabling third spaces (Oldenburg, 1989) as well as circular economy. Much of the thesis, has been on the intersections between academia, and another part.

The findings can be utilised to further develop prototypes or projects such as WellBot and engage in iterative processes to test and refine collaborative practices. Furthermore, it could be valuable to examine these prototypes and methods from different perspectives, including organisations from different countries, sectors of society, and hierarchical structures. Comparing and contrasting these practices with existing successful models, in other fields, can provide valuable insights for enhancing collaboration in various contexts.
When conducting all the projects, as well as collaborating with the theses between the core-group of Creative LAB, the goal of collecting all the work within all the projects has risen. The discussions have been divided into two different approaches, one leaning toward a magazine, a more subjective and visual presentation, a combination of a communal portfolio, or the more ambitious of making a book or journal over all the projects, the outcomes, the produced material as well as reflections and additional interviews, focus groups and gathering of data, after the projects are done.

Another aspect, connected to action research, or looking into innovation labs, is the continuation of projects, some of the projects within this thesis have the potential, as well as members with the will, of continuing. This is an opportunity to make case studies or comparative studies of these.

Creative LAB as a study object, or how this student-driven and focused innovation lab possibly could be implemented into the university system, finding the synergies or parts with goals open for collaboration.
References


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Creative LAB is a student-focused innovation lab created by Simon Lindblom, Inès Acinas and Anna Khofman during a course in the autumn of 2022. Through human-centred research connected to student wishes and needs, the result was MDU Heritage, a multigenerational learning and project-based pedagogical framework, within this Creative LAB was formulated, as a student focused and bottom-up innovation lab, where students were the main stakeholders. This creates a larger variety of platforms for different projects and collaborations both with the university and for the students. This allows students to take ownership of their education and to learn by doing. It also encourages creativity and collaboration, while giving students the opportunity to develop their skills in a meaningful way. This aims to foster an environment of innovation and encourage students to be creative. The lab provides a safe environment for students to explore, experiment and develop their skills. The lab is open to all students, regardless of their major, to help them achieve their creative goals. The lab is designed as a platform for students to explore and practise creative problem-solving. The starting point for the Creative LAB is the master's program in Innovation and Design, as the program is a multi-disciplinary program with a focus on a variety of projects. The lab encourages students to work together, think innovatively and explore different creative approaches to problem-solving. It also provides resources and guidance to help them develop their creative skills. The goal of Creative LAB is that through working with each other, students can learn from each other and develop a deeper understanding of creativity and innovation. Also providing projects that focus on finding problems that are within the proximal learning zone for the students, as well as providing value for the stakeholders. Through this, the students can apply their creative skills to real-world problems and gain valuable experience. Creative LAB also supports the students with mentorship and feedback to help them reach their goals.
Creative LAB aims to be a third space (Maniotes, 2005) for the students, where students can interact on equal terms non-regarding their uniqueness. Depending on how the student-focused projects turn out, there is also a potentiality that a third place, a place outside of the home and work (Oldenburg, 1989) may appear, which could increase communication and a sense of fellowship, also gain a place connected to the university, which is social and has low barriers to communication. Creative LAB is started within the Masters of Innovation and Design, a program with international intake. The students involved come from various
countries, regions, and parts of the world. Creative LAB could play a role in Mälardalens University’s role in attracting as well as integrating international competences.

When preparing for this thesis, a mapping of Creative LAB, with potential collaboration, as well as where Creative LAB could be placed in a Quintuple Helix was made.

First mapping made of Creative LAB in a collaboration cluster. Simon Lindblom 2023

First placement of Creative LAB within Quintuple Helix, Simon Lindblom 2023
LinkedIn

On LinkedIn most of the activities for Creative LAB were posted. To make it easier to show what happened, the following posts are in chronological order:

Wishing you a great holiday and a Happy New Year!

#creativelab #collaboration #mälaralen #MDU

When looking through the jungle of Master programs at antagning.se, deep-diving through... se mer
Exciting news!
We’ve got a variety of projects for students... se mer

Se översättning

Projects for this spring
- A new project about the topic of... se mer
- A workshop focusing on... se mer
- An event discussing... se mer
- A collaboration with... se mer

Yesterday, we at Creative LAB (Simon Lindblom and Cornelia Alenbring, with great help from... se mer

Se översättning

Attention all sustainability enthusiasts! Join us at PMU Second Hand Erikslund on March 1st... se mer

Se översättning

PRE-LOVED ITEMS: action for sustainability
We are proud to present our collaborating partner PMU in our next occasion, at a... se mer

Se översättning

Creative LAB x PMU Second Hand
Västerås, SE
Isiekwê Olise, Anuradha Pothalkar och 4 deltagare till
Creative LAB
179 följare
2 mån • Redigerad • 🚀

What happens when you bring together a group of creative minds and a second-hand store... se mer

Se översättning

Creative LAB
179 följare
2 mån • 🚀

Exciting news for students, employers, and visitors of MDU! 🌟 The Level Up project, in... se mer

Se översättning

Creative LAB x Project: Level Up Workshop 1: Social life at Campus
Location: C3 L11 Studio Eskilstuna
Inés Acinas, Federica Vergari och 14 deltagare till

Se evenemang

Creative LAB
179 följare
1 mån • 🚀

Hey everyone! 🌟... se mer

Se översättning

Creative LAB x Project: Level Up Workshop 2: Complex problems
Location: C3 L11 Studio Eskilstuna
Amaradhi Pothalkar, Inés Acinas och 8 deltagare till

Se evenemang
Creative LAB

179 följare
1 mån • 🇸🇪

After the first game-workshop, the second added a more intimate and deep discussion and... se mer

Se översättning

Creative LAB

179 följare
2 v • 🇸🇪

Join us for the International Food Event & ... se mer

Se översättning

INTERNATIONAL FOOD EVENT & MINGLE

Intellectual, Sensory and Social Forms of Experience

THURSDAY
11 MAY, 2023 | 16.00 - 18.00

VÄSTERÅS CAMPUS, LÄRKEN

tors, 11 maj, kl. 15:00–17:00 CEST
International Food Event Mingle x Creative LAB
Västerås, SE

Isiekwe Olise, Akil Ahammed och 11 deltagare till

Se evenemang

Creative LAB

179 följare
1 v • 🇸🇪

International Food Festival at Mälardalens universitet
The festival brought together attendees... se mer

Se översättning

fre, 26 maj, kl. 10:00–18:00 CEST
WellBot x Creative LAB
Eskilstuna, SE

Inés Acinas, Federica Vergari och 35 deltagare till

Se evenemang
MDU Heritage

A Creative LAB project proposal
Theories and pedagogical framework
The future is now

en

democracy

ISO56000

ISO56002

Bye bye faculties, and Hello collaboration! 100
Connection points.
Add:
LAB
LAB
Junior
Center 101

Continuation of projects, creating the backbone for MDU Heritage 102
Enabling a multi-generational program within MDU, driven, initiated and managed by students.
File
Tools
Communications
Program
MDU Heritage Yearly
The yearly wheel of MDU
Model
OFF
Dinner
Camps
Week
Week
Camps
Mälardalen
MDU Heritage, Final
MDU Heritage, Final

Furthering and deepening the collaboration to meet the skill supply needed for the region now as well as in the future.

Yh or College
Level
Validation

MOL
Culture, creativity and social events
Building on the creativity of the students to make events, happening and enrichen the campus area.

Creativity
Arts/Creativity
Gamede
UX/Design
Democratic
Society
Provides information, and research results, raising the level of regional knowledge.

Knowledge
democracy
research
doors
**MDU**
collaboration.

us+
+ 2.0
events
internationalization
ons
**space**
MDU.

ops
Sandbox
mic

gs
**Startup**

B 2.0
Student

ANK

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108 Communicating
108 Open up the
108 **MDU** in the world, the world in
109 Globalization, internationalization and
109 **Erasmus**
109 **Erasmus**
109 Student-driven
109 Student-driven
109 Hackathons/Competitions
109 **3rd**
110 Facilitating and enabling the third space to exist and function at
110 Worksh
110 IDÉLABx Creative LAB
110 Open
110 Happeni
110 Mälardalen
111 IDELA
111 Match a
111 IDEBL
111
MDU Heritage: Transformational learning in project-based experience learning

MDU Heritage is the umbrella term for the new pedagogical framework and working method for Mälardalens University. Within MDU Heritage, a focus on multi-generational learning and transformational learning is set. The model is based on several pedagogical theories, in combination with project methods and theories and working methods from innovation and design. The goal is to create a journey for each student, where the students get the experience which they can reflect on and analyse throughout the program. This proposal uses both the existing tools and platforms in combination with new ways of working.
Theories and pedagogical framework

**The future is now**

The pedagogical framework for this new concept of teaching is based on several contemporary learning theories. Säfström, formerly a professor in pedagogics at MDU, states that there is a development myth within education, if the goals for education are put in the future, this can be formulated as the urgency for change in the present will always be put in the future, if the goals for change is put in the future (2010). The wicked problems of today are urgent today. We need to change today.

**Complex society**

In a growing complexity within society, with more and more wicked-defined problems in most of society's different areas, a new way of approaching this is needed.

A collaborative, including an innovative method of working. Innovation pedagogics (Innopeda) the new pedagogics from Turku University, focuses on how to implement new strategies to develop education to fill the needs of the future.

"A growing body of literature, research reports and surveys foretell a future of work that emphasizes the ability to learn and adapt. The ability to continuous learning and development, critical thinking, empathy, ability to understand and find purposes, and cooperate and work in teams, are competences which will ensure wellbeing for individuals and societies. European educational policies share very similar goals. Besides lifelong learning, metacognition, referring to a learner’s ability to recognize and assess one’s own learning and development needs, is a crucial competence in a changing world."


**Experience**

Mezirow (1995), the creator of transformative learning theory, precise the process of learning as something that transforms an individual's thought patterns and behaviours, and changes these. The four phases are:

(a) having experiences;
(b) making assumptions;
(c) challenging perspectives, and
(d) experiencing transformative learning. Transformative learning then becomes a new experience.

By letting the students themselves become the teachers and assistants of learning within the program, based on the thoughts of Vygotsky's (1978) zone of proximal development, the students will be taking on tasks that are close too, but not inside the sphere of what they can do themselves. The senior students work as scaffolding and support for the junior, and also getting the support of teachers connected to the different courses the students undergo.

Dewey (1938) learning through experience is connected to social interaction and reflection.

The students need both the experience, and also somewhere to reflect on this, to deepen the learning and to transform the experience into something learnt.

**Values of democracy**

Lahdenperä professor emerita at MDU, write together with Ledin (2007) that democracy itself is a value, and that democracy itself has value. The school system is built upon this, the idea of democracy, and the value of democracy. They argue that the school has to implement and live by this. By giving the students more influence over their studies, and the possibility to influence their education, some of these values can be met.

**Internationalization**

Stier (2004) professor and Chancellor’s council at MDU, presents three different focuses on the reason for internationalization in higher education, being idealism, instrumentalism and educationalism. These are from the University's viewing point, and in the conclusion, more cooperation with students is one point suggested for discussion and collaboration.

MDU Heritage takes in the students, as collaborators, co-creators, and as co-stakeholders.

Innovation Management ISO56002
By using the framework of ISO56002 as a backbone and base for the MDU Heritage program, the students get familiarized and used to the processes and systematic approach of implementing, creating and facilitating innovation and change processes. Tools and knowledge needed in an ever-changing environment.

ISO56000

Using the information and data the University has collected throughout the organization's life and exploiting the insights. Having a strategic direction of being both the best collaboration University, but also being progressive and bold.

Having future focused leaders, throughout the organization, giving room for the persons driving this.

Building a system, which realizes values outside of grades, where soft skills as well as methods, thought tools, and attitudes which focus on solving the futures needs.
Bye bye faculties, and Hello collaboration!
Collaboration platforms become the new connection points.

Also: Sörmlandskontraktet, MDU Living Lab and Tillväxtmotorn.
These are the platforms or collaboration hubs for MDU today, in MDU Heritage, the idea is to leverage and use these as the base for projects. But these fields do not cover all areas.
MDU Heritage wants to add:
Mälardalens Studentkår LAB

Mälardalens studentkår (student union), has several unions for most of the programs at MDU, they have an active board and play an active role in students' social life. They have a working continuation and could make this into a platform where the student's studies could be more integrated into the union's work.

Creative LAB
Creative LAB is a new student-driven, low-barrier, low-threshold collaboration platform. A place for sandbox exploration and ideation area, where collaborations can be initiated.
Creative LAB is not connected to any specific area or specific program.
IndTech Junior
Using the lessons learnt from both IndTech, but also taking inspiration from international schools, collaborative courses and projects can be made with industry.
Sustainable Impact Center
With the same sort of interest driven approach. SIC is a collaboration and grassroot initiative by people employed at MDU. With a progressive approach focusing on sustainability and making a positive change in the society.
Potential workmethods
**Knowledge shop**
- Reach a researcher, communicate about topics which the society is interested in, opening up the knowledge within Academia for the society. Drive questions society is interested in.
**Events as: Exhibitions and installations**
Continuation of projects, creating the backbone for MDU Heritage

Managing and enabling a multi-generational program within MDU, driven, initiated and managed by students.

One of the main goals of MDU Heritage is the continuation of projects and the building of students' projects, by students. By having tools, easily available, easily used, and used by industry, students can create, as well as allow projects to be taken on by junior students.

Notion Cloud File

https://www.notion.so/MDU-Collaborative-Project-Database-957a2a5e90064bcea4ab5d7705d54044

MDU heritage will have a Notion Cloud file that will document the project and serve as a connection between the stakeholders. The Notion tool is a very popular tool for project management and team communication, so we agreed that apart from a tool companies are familiar with, it’s a very useful skill for students to learn.

Some of the sections users will be able to find within the webpage are:

Idea bank page. Divided into 2 parts: announcements from the companies and the other way around

Mentorship page: linked to the MDU mentorship program: every program has a person that is responsible for collaboration. Uni has this already, this is a connected, easy way to find all these resources.

Resources page.

Good moderators are needed for the web page to function to its full potential. This can be made through student part-time jobs, funded by this system.

Social media and communication tools

The Heritage program is linked through communication and the tools used are bound by which tool or application is popular or widely used at the time.

Beginning the communications

A variety of media tools, to get a broader audience, as well as a wider spread of information.

Setting up social media, Instagram, Facebook and LinkedIn.

Whatsapp, Messenger groups

Discord Server

MDU Heritage Yearly program

The Heritage program builds on the idea and creation of a project program that continues throughout MDU students' education. The program is based on students' own formulated wishes in several programs, where they have expressed a will to continue projects they are doing or have earlier done, either again or by letting more junior students take over the projects, with the initiating student working more as a mentor.
The different parts of the program.
This way of working means more responsibilities for the students, and a more passive role for the teachers. In this, the teachers may use the seemingly passive parts of the role to ask Socratic questions instead and help the students to reflect on their experiences.

The different parts of the program have different goals, in the same way as a curriculum is written, different learning goals can be connected to the different parts. Each part can be adjusted to fit inside already established courses, or possibly be part of several courses and have learning outcomes connected to different courses as well.

Example of the first year of the program

Main focus: Learn through experience, to be part of a team and to experience how to work in agile and with different roles.

Getting familiar with different roles, workflow and how to ideate and other work tools.

Connected courses: Research Methods, Courses in project methodology,

Learning goals: Familiarize with working in cross-competence teams. How to document a project. Familiarize with Design Thinking, Innovation and Change management, Service logic and Creativity.
The yearly wheel of MDU Heritage.

Creating a continuous yearly model
The yearly wheel, taking inspiration from systematic work within HR and Quality assurance, spreads out the different parts of the program throughout the year.

Kick-OFF
Each year, at the end of September, MDU Heritage Kick-OFF starts. During this week the earlier groups and new project owners have the chance to pitch their projects to other students to collaborate with. The MDU Heritage groups start working during the autumn semester and continue to work every Friday throughout the year.

Christmas Dinner
A common tradition in Swedish companies, having an after-work event happening during November or December. Having a Christmas dinner, baking lussekatter or enjoying a Christmas market.

Winter Camps
One of the possible yearly traditions of doing a weekend or one weekend-long workshop, with an intensive design thinking sprint, with several prototyping iterations. Happens the first week of January or during Sportlov.

Pitch training
Iterate and prototype
Give and receive feedback

PITCH Week
The different Heritage groups will have a PITCH week, where their different projects will be pitched in front of a jury. In preparation for this, the group will work together with the help and assistance of IDELAB before, to define their ideas, and find possible ways to continue with this these ideas, either in the form of starting a company or pitching for potential funding or as continued research and pitching this to the other students and potential business partners which could have this as Master Thesis projects.

MDU Heritage, Final week
Each year, the first week of May, MDU Heritage has its Final presentations. Here the Heritage groups will have the possibility to show their work in a fair, with their own booth/table. The day is filled with different
workshops, speakers and presentations of the winners of PITCH-week, this happens on two separate days, one in Eskilstuna and one in Västerås.

MDUHeritage Final week is open to the public and is a good day for high schools, preliminary schools, associations, businesses, other universities and municipalities to see the great work the students achieve at MDU.

Summer Camps
One of the possible yearly traditions of doing a weekend or one weekend-long workshop, with an intensive design thinking sprint, with several prototyping iterations. Happens in the first weeks of August or weeks before Midsummer. Possible to work on your project before pitching it to new students.

Pitch training
Iterate and prototype
Give and receive feedback
Skill Supply Mälardalen
Furthering and deepening the collaboration to meet the skill supply needed for the region now as well as in the future.

Yh or College level
Different potential collaborative partners, such as ABB Gymnasium, Myndigheten för Yrkeshögskola and Teknik College.
Offer collaborations in tech,
 Industry 4.0
 AR/VR
 CAD
BSc Validation
BSc Validation, 90 HP, within fields such as battery production, automation etc.
LLL/MOL
Lifelong Learning and Massive Online Learning, building methods and frameworks for both community-based learning, in which lifelong learning is part of the culture. But also building massive online learning courses, with skills that are needed today, with flexible schedules that work for working individuals.
Based on different learning portals on different models, LLL is on the sense of belonging and companionship. MOL on most effective methods for course completion.
Culture, creativity and social events
Building on the creativity of the students to make events, happenings and enrich the campus area.

Creativity
The Information design department joins collaboration for Västerås Konstskola, working for connecting the students and active partners in creative work.
Collaborations with existing actors in civil society such as Konstfrämjandet, Svensk Form and ABF.

Area of projects:
ABF: Start | Trainstation
Västerås: Konst och kulturutbildning (vasteraskonstskola.se)
Konstfrämjandet: Multi21 — Konstfrämjandet Västmanland (konstframjandet.se)

Arts/Crafts
Inspiration by galleries as Zeitgeist (Uppsala) https://galleriz.se/konstrundan-i-uppsala-2022/
Exhibitions
Pop-up stores
Arts/Crafts markets
Gamedesign
Possible cross-competence and program collaboration between several programs is game design. Interest-driven and potential to collaborate with several civil-society actors.
ABF: Start | Trainstation
Spelfaktoriet
UX/Design
Using the MDU Living Lab as a starting point for first-class UX research and development.
Creative LABxMDU Living Lab Workshop series
UX Research for startups or SMEs.
Design thinking your way out of problems.
Democratic society
Provides information, and research results, raising the level of regional knowledge.
Knowledge democracy
Folkuniversitetet in collaboration with MDU developing courses and workshops to raise the lowest level of knowledge in Mälardalen. Contributing to a society where knowledge is one of the bases for discussions and solutions for the future.
Communicating research
Broader collaboration with communication tools and portals. Democratic inclusivity of students, engaging students in projects of communication.
Continuous communication with
Newspapers
Radio
TV
Social media
Open and active communication throughout Mälardalen works as a base for action and interaction throughout the region. With familiarity and openness, bridges of miscommunication, distrust or hesitance can be raised and new ones based on democratic values built.
Natural communication in natural environment.
Open up the doors
Creating events at the university open for the public.
PITCH-WEEK
MÄDtalk
Fairs
Christmas/Eastermarket
MDU in the world, the world in MDU

Globalization, internationalization and collaboration.

Collaboration, regional, national and international. With a focus on collaborating throughout the organization, from bachelor students to professors, co-creating knowledge, method and research.

International students are the best advocate for MDU internationally. Erasmus, as well as the programs in English, are the main doors for international students. Making these programs the pilot project for internationalization for MDU can be a logical step.

Erasmus+
More communication about Erasmus and how to do Erasmus.

Erasmus+ 2.0
With inspiration from Enlight (ENLIGHT (enlight-eu.org)) initiate a new project for international collaboration. Focus on exchanging knowledge. Summer-schools etc.

Student-driven events
Enabling or co-funding events, pop-ups, markets/fairs, and conferences connected to international collaboration.

EYE, European Youth Event
OECD
UN

Student-driven internationalization
Creating framework and work methods for international collaborations between students and international partners.

Hackathons/Competitions
Enabling or co-funding Hackathons and competitions for students and society.
3rd space

Facilitating and enabling the third space to exist and function at MDU.

Together with the Studentkår, as well as the different platforms, work for a living and thriving culture at the campuses. Making the campuses a place where people and ideas meet.

Based on the sociological theories of Oldenburg, the third space is the space which is neither home nor work, a place where people can meet and ideas can be exchanged without either the hierarchy of work or the responsibilities of home. MDU Västerås- and Eskilstuna Campus has the potential to be this third space, for students, employees and others.

Workshops

Workshops based on creating, are held by either students/employees of the university or people active in the creative arts. Workshops with no other goal than to participate, and to gain the experience and knowledge made by experience. Courses or workshops can be done at self-cost.

Examples:

- Working with clay, training eye-hand coordination and ideation
- Impro-theatre, working on improvisation, talking in front of others
- Building with cardboard, prototyping, thinking outside the box

IDÉLABxCreative LAB Sandbox

Ideation workshops or events. Using ideation and tools, methods for idea evaluation and evolving.

Using tools such as Andrea Hvistendahls boardgame Our Move

Open mic

Seminars, performances and speeches (MÅDtalk).

Happenings

Having student-driven or initiated happenings.

- Christmas market
- Easter market
- Art fair
- Baking fair
- BOOKxCHANGE
- Fleamarket
Mälardalen Startup
IDELAB 2.0

Working closely with the industry and the University, building an incubator with the goal of retention of competence within the region. The work is not only to be a more active part of the Heritage program but also to create and facilitate low-barrier and low-threshold activities and workshops for potential entrepreneurs.

Match a Student

Matching companies or entrepreneurs with students with the relevant competencies. A program made to increase collaboration and find business relations. By doing this in a “safe” space, guiding both the outside entrepreneurs as well as the students, sustainable deals and businesses can be made.

Idebank

Idebank for inspiration.