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Technology Features to Promote Student Empowerment: A Qualitative Approach

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Abstract

In March 2020, the coronavirus reached Norway and other European countries, and to avoid further spread, stay-at-home restrictions were introduced, which led to instant digitization of education. Literature shows that technology has a positive effect on student empowerment. This study aims to take a deep dive into the students' adaption to the digitization and how it affected their sense of empowerment. In the light of the coronavirus restrictions and existing literature on empowerment, the research question of this thesis is: "How does learning technologies at universities in Norway support student empowerment?".

Ten Norwegian students were interviewed about how their way of studying changed after the coronavirus restrictions. The qualitative data were deductively analyzed using keywords from the literature on empowerment, and then inductively analyzed based on common themes and sayings by the students. The data suggests that technologies that engage the students, are modifiable and adjustable to the students' needs, lead to empowering aspects such as confidence, self-management and self-determination. Many of the technologies offered at universities do not have these characteristics, which makes the students demotivated and frustrated. Cooperation plays a big part in the students' lives, and technology has yet to sufficiently replace the experience of a physical meeting. Future research should investigate how and why universities choose disempowering technologies when more engaging technologies already exist and are available.

Sammendrag

I mars 2020 nådde koronaviruset Norge og andre europeiske land, og for å unngå større spredning ble restriksjoner innført, som førte til en hurtig digitalisering av utdanningsprosessene. Faglitteratur viser at teknologi can ha en positiv effekt på “empowerment” hos studentene. Denne studien forsøker å forstå studentenes tilpasning til digitaliseringen og hvordan den påvirket deres følelse av “empowerment”. I lys av koronavirus-restriksjonene og eksisterende litteratur på “empowerment”: “Hvordan kan læringsteknologier på universiteter i Norge føre til ‘empowerment’ for studenter?”.

Ti norske studenter ble intervjuet om hvordan deres måte å studere på endret seg etter at koronavirus-restriksjonene ble innført. Kvalitativ data ble deduktivt analysert ved å bruke stikkord fra “empowerment”, og deretter induktivt analysere basert på ofte nevnte temaer av studentene. Dataene viser at teknologier som engasjerer studentene er modifiserbar og mulig å endre til studentenes behov, og fører til aspekter ved “empowerment” som selvtillit, selvstyre og selvbestemmelse. Mange av teknologiene som universitetene tilbyr innehar ikke disse kvalitetene, noe som gjør studentene demotiverte og frustrerte. Samarbeid spiller en stor rolle i studentenes liv, og teknologien har til gode å tilstrekkelig erstatte opplevelsen av et fysisk møte. Videre forskning burde undersøke hvordan og hvorfor universitetene velger teknologier som er “disempowering”, ettersom mer engasjerende teknologier allerede eksisterer og er tilgjengelig.

Preface

This thesis is the last piece of the puzzle for me to get my master's degree in computer science at NTNU. This thesis is research with interviews as a methodological approach, conducted in Trondheim from home as the coronavirus restrictions prevented physically meeting the interviewees.

Luckily, my supervisor Babak A. Farshchian has kept the spirits up by checking in on his other students and me almost every day. I want to thank him for giving me feedback on countless thoughts, questions and writings, and showing me how much there is to the world of science and research.

I would also like to thank the interviewees for taking their time, answering my questions during the interviews and adding data to my thesis, even though the exams and stress were creeping up.

Kristina Hovland Berg
Trondheim, July 10, 2020

Contents

1	Introduction	1
1.1	A Unique Case	1
1.2	Educational Technology & Empowerment	2
1.3	Changing Direction	2
1.4	Motivation	3
1.5	Research Questions	3
1.5.1	Overview	4
2	Background	5
2.1	Empowerment	5
2.1.1	Internal forces	7
2.1.2	External forces	8
2.1.3	Overlapping forces	8
2.2	Educational Technology and Empowerment	9
3	Methods	11
3.1	Methodological Approach	11
3.2	Data Collection: Interviews	13
3.2.1	Participants	13
3.2.2	Grouping of the technology	14
3.2.3	Conducting the interviews	15
3.2.4	The interview guide	15
3.3	Methods of Analysis	16
3.4	Evaluation & Limitations	18
4	Results	21
4.1	Internal Forces	22
4.1.1	Self-Management	22
4.1.2	Self-Determination	23
4.1.3	Motivation	24
4.1.4	Self-Efficacy and Confidence	25
4.2	External Forces	25
4.2.1	The Student-Lecturer Relation	26
4.2.2	Information Sharing in General	27
4.2.3	Information Sharing: Lectures	28
4.2.4	Information Sharing: Recorded Lectures	29
4.3	Overlapping forces	30
4.3.1	Cooperation	30
4.3.2	Belongingness	32

5	Discussion	33
5.1	Engaging Technology	33
5.2	Technology Enhances Lectures	36
5.3	Technological Limitations	37
6	Conclusion	39
	Appendices	45

List of Figures

- 2.1 Empowerment Forces and Keywords from Literature 6
- 3.1 Research Process 12
- 3.2 Method of Analysis 17

List of Tables

- 3.1 Interviewees and Their University and Field of Study 14
- 3.2 Technology Grouping 15

- 5.1 Empowerment Keywords and Technology 34

Chapter 1

Introduction

This chapter presents the case and context of this thesis, as well as the research questions and the motivation behind. It explains how the coronavirus pandemic ignited the rapid digitization of education, which created an interesting case to dig into.

1.1 A Unique Case

In December 2019, the Covid-19 virus – or coronavirus – started to spread in China, and continued to spread to the rest of the world and by March 2020 the World Health Organization (WHO) declared it a pandemic¹. In order to slow down the spread of the infectious disease, the WHO recommended to keep a safe distance between other people and avoid going out in public². Norway followed these recommendations by initiating measures to prevent infection³ and complied to social distancing by closing schools and universities for a longer period⁴. All schools and universities closed late in March 2020 and reopened slowly by the end of May 2020. The closings led to instant digitization of education where all types of work had to be done from home.

How did the students cope with this situation? What did they think and feel about the sudden digitization?

¹FHI - "Fakta om covid-19-utbruddet"

²WHO - "Coronavirus - Prevention"

³Lovdata - "Forskrift om smitteverntiltak mv. ved koronautbruddet (Covid-19-forskriften)"

⁴FHI - "Råd til universiteter, høyskoler, fagskoler og folkehøyskoler"

1.2 Educational Technology & Empowerment

In the last years, student empowerment and related aspects have become more relevant and essential to education. Educational institutions are going through a shift where they see the benefits of engaged students taking an active part in their knowledge path. Technology can give students tools for empowerment and shift the learning environment to a student-centred one[Erstad, 2003]. There is a need to understand the potential technology has to change the student learning experience[Kirkwood and Price, 2014].

Usually, new technology is eased slowly into the education system. In 2020, the pandemic and the following stay-at-home rules forced digital learning technologies to replace ordinary teaching and learning. The students' adjustment to the new situation and how they use technology to cope formed an edge case worth looking into.

1.3 Changing Direction

This master's thesis was concerned initially about health empowerment and data was supposed to be gained through interviews of users of welfare technology, which are mostly older people. However, amid the pandemic closings, it became difficult to reach out to potential candidates, mostly because of the social distancing rules, and because older people are particularly vulnerable to the risks of catching the virus⁵. Also, the health department was overloaded at the time and could not prioritize finding potential candidates for this research. Therefore this thesis changed its course in order to deal with a more accessible group of people: Students.

This part of the story is included because it is possible to draw lines between health and learning technology. They are similar in the way they influence a persons' life. Welfare technology is defined by Trondheim municipality as "technical installations that can improve your ability to manage yourself, and to secure your quality of life and dignity"⁶. NDLA defines learning technology as digital tools that can facilitate education, learning and evaluation wherever you are⁷. It might seem that welfare technology is more of a direct tool of empowerment compared to learning technology.

Both an older person and a student have this expert in their life, doctor and teacher, that presumably are responsible for their handling of health care or

⁵FHI - "Råd og information til risikogrupper og pårørende

⁶Trondheim kommune - "Velferdsteknologi"

⁷NDLA - "Learning technology in change"

education. Both technologies can contribute to empowerment by helping the user make informed decisions, cooperate with peers and gain confidence in carrying out a task. This thesis will further explore the way students become empowered by using technology in an educational setting.

1.4 Motivation

The inner motivation for this research is that I, as a student, have my own thoughts on learning technologies and empowerment. I wanted to see if those same beliefs apply to other students, and preferably for students outside my own program of study. I also think this part of computer science is exciting and important; where technology meets humans and social studies. We learn a lot about the technical aspect of computers in my field of study, but less about the technology's role in our society. I believe there is more to technology than just replacing physical versions of things, such as ordering plane tickets or checking calendars. Technology can contribute to democracy, equality and empowerment. This thesis will investigate the technologies abilities through the eyes of the students.

The external motivation for this thesis is the rare edge case of the immediate digitization of the universities and the students' lives. I have experienced it myself and want to hear what other students have to say. Another motivation is my supervisor, Babak A. Farshchian, who claimed that the result of this research could be useful for professors at NTNU and could contribute to research on the subject of empowering technologies.

1.5 Research Questions

This master's thesis explores how learning technologies empower the students by utilizing a unique opportunity: An instant digitization of students lives. The research question is:

- **RQ1:** "How does learning technologies at universities in Norway support student empowerment?"

The research question is answered by first conducting a literature review and creating a conceptual framework from keywords on empowerment. Then, students at different universities in Norway from different disciplines were interviewed. The resulting qualitative data were analyzed by first deductively coding based on keywords from the conceptual framework, and then through an inductive coding focusing on the broader meanings and themes from what the students had said.

Because of the sudden strict measures amid the pandemic, the students were able to compare their everyday life before and after the measures applied. This comparison made them reflect upon what they appreciate and despise about the current situation, and what the technologies meant for them at the moment.

1.5.1 Overview

Here is how the paper is structured. First, the reader becomes introduced to what the literature says about educational empowerment and technology in Chapter 2 Background. As will be shown, empowerment is defined in multiple ways with multiple keywords. These keywords are put into a conceptual framework to simplify the concept of empowerment and will be used in the deductive data coding.

Chapter 3, Methods, will explain how the research was carried out. It will talk about the methodological approach, the data collection, the thematic analysis and the limitations. The main goal for this chapter is to thoroughly explain how the research went from theory, data collection and to a conclusion. The chapter will also include a list of what types of students that were interviewed and table of umbrella terms for technologies with overlapping functionality.

The answers from the interviews are found in Chapter 4, Results. The results are divided and structured based on their connection to the keywords from the conceptual framework. Each section presents a summary of common themes and sayings relevant to the framework.

The broader meaning of the data concerning educational empowerment and technology will be discussed in Chapter 5 Discussion. It will answer RQ1 by explaining how technology either does or does not promote empowerment by evaluating different technologies' functionality.

Finally, Chapter 6 Conclusion summarizes the essential findings and gathers all the threads from this paper.

Chapter 2

Background

This chapter gives the reader an insight into aspects of empowerment according to literature through a conceptual framework. It will also present what the literature says about technology in education and empowerment. This theory is relevant for analyzing and discuss the results from the interviews.

2.1 Empowerment

This section is the result of a literature review on educational empowerment. It provides an overview of the many aspects of the subject. Repeated keywords from the literature were put into a conceptual framework, Figure 2.1, which categorises the concepts into three different forces that are interconnected and contribute to empowerment: Internal, external and overlapping forces.

Empowerment is a term that has been wildly discussed, and there seems to be no finite agreement to the matter. It is argued that the term is multidimensional and it cannot be portrayed solely on one notion[Thomas and Velthouse, 1990]. Some state that educational empowerment is rather a philosophy than a strategy[Nicolaidis and Koutroumpezi, 2008]. Empowerment is a subject finding its way in the fields of social sciences, psychology, education and health, to name a few. This thesis will focus on empowerment in education.

Some repeated keywords are used to describe empowerment, such as control, self-efficacy, power, self-management, skills, engagement, participation, enabling, efficiency, independence, self-determination and cooperation. The literature on empowerment shows how the keywords are highly interconnected, which will be

described further on in this section. As an example of the cohesion of keywords: One study claims self-determination is a *process* that can lead to empowerment and self-management[Aujoulat et al., 2007], while another claims that self-determination is *a part* of empowerment [Schneider et al., 2018]. One might say that the difference lays within the way the sentences are formulated. However, it illustrates the different perspectives of effect to cause, which contribute to the ambiguous definition of empowerment. This section intends to bring a certain clarity of the themes based on a literature review. The subsections are split into what type of force – internal, external or both – that pushes the individual to empowerment. In this thesis, the forces of empowerment are understood as driving forces or tools to experience or gain empowerment.



Figure 2.1: The Forces of Empowerment with their related keywords.

This conceptual framework is the result of analyzing literature on educational empowerment. The figure shows which words are used to describe empowerment and that each force influences other forces.

Figure 2.1 shows what type of force each keyword belongs to, as well as how they influence each other. Even though the following subsections are separated based on the type of empowerment force, they are deeply connected. For example, in a school setting, when teachers facilitate shared-decision making with the students, the students gain confidence and self-efficacy[Cargo et al., 2003]. By having this self-esteem, the students are even more willing to participate in the decision-

making process. Each force is influencing the other, which is presented by the dotted lines with arrows in Figure 2.1.

Separating empowerment terms into internal, external or overlapping forces works in this thesis as a conceptual framework in order to introduce the reader to empowerment and show how this thesis can either support or challenge established theories on empowerment. Some terms could be placed under other forces because the meaning of the words is relative to whoever is interpreting. In this framework, one keyword belongs to only one force.

This way of categorizing empowerment has been done in similar ways before as different levels: Individual, interpersonal and political[Gutierrez, 1994]. The individual will, in this sense refer to the internal force of empowerment, as a psychological component. Interpersonal levels are similar to the overlapping forces, which refers to the empowerment between two or more people through cooperation. The political level refers to the ability to work with others to change social institutions[Gutierrez, 1994], which is also comparable to the overlapping force of empowerment. The external forces – such as education and opportunities – are not emphasized in those three levels. Nevertheless, they are essential, especially in an educational setting, where the teachers can empower students by creating a welcoming social climate[Cargo et al., 2003].

2.1.1 Internal forces

The inner force of empowerment is here defined as the individual's capacity to "take control, exercise power, and achieve their own goals" and this process enables them to "help themselves and others to maximize the quality of their lives"[Adams, 2008]. This force that influence empowerment lays within the individual's characteristics, such as personal interests, personality types and disabilities[Kirk et al., 2017]. The students become more empowered when they feel a personal relevance in their study [Brunton and Jeffrey, 2014].

Self-efficacy relates to the students' confidence in their capabilities[Nicolaidis and Koutroumpezi, 2008]. When students develop self-esteem and gain confidence by taking responsibility for their and other students' learning outcome, they become more aware of their potential. The students' skills and abilities influenced the development of their potential[Cargo et al., 2003].

Self-determination is about students being able to initiate tasks and make decisions for themselves[Nicolaidis and Koutroumpezi, 2008].

Empowered students can reflect on their learning outcomes, address problems and participate in finding solutions. These students know that they have the abilities to be heard and make differences[Short et al., 1994].

2.1.2 External forces

Examples of external forces of empowerment are experts in a specific field and information.

The *expert* represents the person with more power, information and knowledge than the individual. In health, the doctor is named the expert, and the patient becomes more empowered as the patient-doctor-hierarchy evens out[Mäkinen, 2006].

This individual-expert-relationship also applies to the educational setting, whereas the teacher can be seen as an expert. The teachers play an essential role in creating an empowering environment which enables the students. Enablement can be done by providing enough information and opportunities for the students, as well as allowing the students to take an active part in their learning[Cargo et al., 2003]. Some key characteristics related to student empowerment are mutual respect in the student-teacher relationship and the teacher's faith in student potential[Kirk et al., 2017].

Students become more empowered when the teachers thoroughly explain things, provide positive affirmations and compliments, as well as when the student has a positive view on or admire the teacher. Such behaviour contributes positively to the students' self-affirmations, encouragement and motivation[Diaz et al., 2016].

However, some are reluctant to giving the individuals more responsibility: The experts are afraid to lose their authority and power as the primary informant[Calvillo et al., 2015]. This mindset is a common obstacle in the road to empowerment. Educational institutions where the principals are reluctant to change, will not become more empowered[Short et al., 1994].

Yet, there is nothing that cannot be solved through communication. When students and lecturers work together through open dialogue and shared responsibility, they can reach empowering experiences[Nicolaidis and Koutroumpezi, 2008].

2.1.3 Overlapping forces

The third type of force is the overlapping one where the individual's strength and knowledge grow by cooperating with peers.

A way of engaging students is to let them contribute to the curriculum. When students have the opportunity to edit literature, as in an online literature collaboration like a wiki, the students can go from passive to active in their educational

process[Ravid et al., 2008]. Students contributing to the curriculum also creates more balance in the power relation between the students and teacher.

Cooperation through teamwork is positively received by students as long as it is under the right conditions. The key to successful teamwork is peer evaluation and good communication[Kapp, 2009].

2.2 Educational Technology and Empowerment

In the past years, technology for learning and teaching have entered schools, universities and the educational system. How does this technology relate to empowerment?

Many see educational technology as either digitization of existing course materials or a mere replication of the standard teaching practises. It should rather be seen as a way of increasing the quality of learning and provide a structural change to engage the students[Kirkwood and Price, 2014]. Technology does have the potential to give the students space and tools to take an active part in their learning[Erstad, 2003]. Technology also makes it possible for the instructor to give feedback and information to the students[Solvie and Kloek, 2007].

Both the teacher and students could benefit from seeing the worth of ICT in school[Kler, 2014]. As the teachers are the experts in their field, their view on technology affects the students' attitudes towards technology. Some teachers are sceptic to the educational validity of the technology, even though the students appreciate the multimedia features of technology, features that are not found in books[Saye, 1997]. Still, this scepticism does not overrule the fact that technology can improve teaching and learning, and teachers should recognise the vital role they play in facilitating the implementation of ICT in their schools[Schiller, 2003].

Information technology and the internet can "improve a community's cooperative activities and strengthen their capabilities in the information society"[Mäkinen, 2006]. When connected, citizens can become more influential participants. The citizens become enabled through cooperation. A network of peers can be created through social network technologies and can act as motivators and mentors[Skinstad and Farshchian, 2016]. The advantage of such a network is that the peers can communicate in an equal way[Mäkinen, 2006], especially in anonymous forums where one can talk about struggles without experiencing stigma and guilt[Tenedez et al., 2019].

In an educational setting, the social aspect and the need to belong somewhere are big motivators to stay engaged in school projects[Cargo et al., 2003]. Be-

longingness and small cultural differences play a huge role in student empowerment[Brunton and Jeffrey, 2014]. Students tend to dislike classes where the teacher do not facilitate student involvement and decision-making[Kirk et al., 2017].

Empowerment is gained when individuals are able to act as information sources themselves and can help each other by sharing experiences. Technology plays an important part here, as it makes it possible to reach peers all over the world at any time[Calvillo et al., 2015].

A way to do this is by minimizing the patient's dependency on the doctor by giving them enough information to make informed decisions. This case is where technology, especially Web Services, can be a source of reliable, understandable and accessible information [Calvillo et al., 2015]. Technology gives people many places to go for information[Saye, 1997].

Chapter 3

Methods

This chapter explains how RQ1 was answered by conducting interviews with students about their relation to educational technology. The interview data were then analyzed and categorized using the conceptual framework on empowerment presented in the previous chapter.

3.1 Methodological Approach

This thesis follows the research process, as explained by Briony Oates' research theory from "Researching Information Systems and Computing" [Oates, 2005]. The chosen approach is a qualitative case study with interviews as a data generation method, see Figure 3.1. This chapter's primary focus is to explain the strategies, data generation methods and data analysis.

The *experiences & motivation* as well as the *research questions* are presented in Chapter 1. The safety measures that took place in the light of the coronavirus included staying at home and carrying out the study life digitally. This instant digitization created a unique opportunity to see how technology influence student empowerment, hence RQ1. Ten Norwegian students were interviewed on their everyday life as students and how their situation changed after the coronavirus restrictions.

Chapter 2 showed through a *conceptual framework* based on a *literature review* how empowerment are defined by multiple terms. These terms were then utilized to code the qualitative data from the interviews, which made certain themes emerge – more about the methods of analysis later in this chapter.

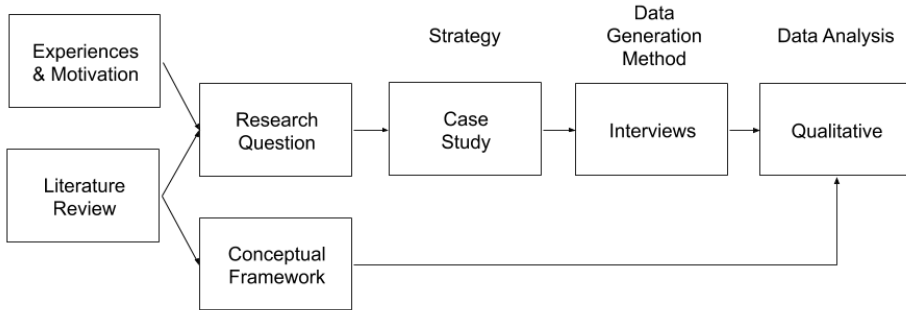


Figure 3.1: The Research Process based on Oates' model [Oates, 2005]. It shows the different steps included in this case study. The conceptual framework is based on the literature review and is being used to analyse the qualitative data later in the process.

This thesis explores a *unique case*, which is a rationale for a single case study design [Yin, 2003]. The case is rare in the way the digitization of education suddenly were forced upon the Norwegian universities. Usually, digitization happens slowly over time through pilot testing and reviewing. Moreover, if someone feels dissatisfied with the technology, it is often possible to go back to older methods. Though, in the coronavirus situation, you could not just return to campus and the lecture halls if Zoom meetings did not suit you. The students had to adjust to the current situation instantly. The situation made it interesting to gain insight into the students' perception of the sudden digitization and how it might have empowered or disempowered them.

Semi-structured interviews of students from different fields of study were conducted, which lead to qualitative data on the matter. The reason for choosing this type of data generation is that it leaves a possibility for the interviewee to bring forward themes that might not have been highlighted before [Oates, 2005]. The core of this thesis is to understand student empowerment from a technology perspective, where the students' feelings and thoughts play a central part. Such attributes can be challenging to catch in a questionnaire because of the sometimes impersonal nature of questions. In a face to face interview, the interviewer can sense what topic the interviewee is interested in, and can change the course of the interview in order to let the interviewee speak freely.

There exists a Learning Empowerment Scale that can be used as a survey to create quantitative data on student empowerment [Weber et al., 2005]. This scale can be used to show connections and links between different factors of empowerment

and school settings. In this case, the individual students' thoughts and feelings played a big part in answering RQ1, in which one should avoid adding limiting questions in a survey and instead utilize interviews as the chosen data generation method.

It could also have been possible to conduct an experiment on a specific theory within educational empowerment. However, experiments often include observations and a representative sample of participants [Oates, 2005], which proved to be difficult in light of the coronavirus outbreak.

3.2 Data Collection: Interviews

This section explains how the data for this research was created. Namely, how the ten interviewees were recruited and how the interviews were conducted.

3.2.1 Participants

Ten students from different field of study were interviewed in this research. See Table 3.1 for the list of interviewees and distribution of universities and fields of study. It was desirable to find students that did not study computer science or IT. As a computer science student myself, I know that my peers and I share the same views on technology. Through our studies, we have learned the possibilities, trends and a particular language related to technology. Students from other fields have a different perspective on the matter, which was more interesting to look into, rather than confirming my perceptions. Also, around 17% of Norwegian students study under the category of natural science or technical subjects in 2019¹, which makes it possible to assume less than 17% of the Norwegian students studies IT. This can imply that the technology perspective gained through IT studies might not be representative for all Norwegian students, and it is, therefore, more fruitful to interview students from other fields to get different perspectives. The over-representation of NTNU students is discussed in Evaluation & Limitations.

Before reaching out to potential interviewees, the project got approval from the Norwegian Center for Research Data: NSD². NSD offers a template for a data management plan that ensures safe and secure storing of data according to Norwegian law of storing data. The approved information sheet about participation in this project is included in the appendix.

¹SSB: Statistisk Sentralbyrå - Studenter i høyere utdanning

²NSD: Norsk Senter for Forskningsdata - Hjemmeside

Interviewee	University	Field of study
Person A	UiB	History
Person B	OsloMet	Biology
Person C	NTNU	IT
Person D	NTNU	Project Management
Person E	NTNU	Physiotherapy
Person F	NTNU	Cybernetics
Person G	NTNU	Medicine
Person H	NTNU	Audiology
Person I	NTNU	Medicine
Person J	UiB	Mathematics and Physics

Table 3.1: List of the Interviewees with their University and Field of Study. The overview shows the diversity in field of study in this research.

Contact information to potential interviewees was gathered through the survey tool offered by the University in Oslo³. The tool ensures that the one answering the form agrees to share the contact information and that the information is stored in a safe way.

The form-link was published on my Facebook page and the supervisor’s course page. Two people signed up via the link, whereas only one was able to be interviewed. The rest of the interviewees were contacted through Facebook’s Messenger, after asking friends for names of people studying on their first, second or third year at one of Norway’s colleges or universities. This process lead to nine interviewees. Some people were reluctant to participate, but became willing when they were offered a 200 kroner gift card on the food delivering service Wolt⁴ sponsored by the Department of Computer Science (IDI). Ten students were interviewed in total.

3.2.2 Grouping of the technology

The interviewees studies at either the Norwegian University of Science and Technology (NTNU), the University in Bergen (UiB) or the Oslo Metropolitan University (OsloMet). Each university uses their own set of different technologies. However, the technologies have overlapping functionalities and similar intended use. It is, therefore, natural to group them when discussing them later on in this paper. For example; NTNU uses Blackboard as a learning platform, and UiB uses MittUiB. The platforms have different developers, but the same functional-

³UiO’s form service for data gathering: nettskjema.no.

⁴Wolt food delivery service

Group	Technologies	Functionalities
Learning Management Systems	Blackboard, MittUiB, Canvas	Sharing of learning material and lecture notes, calendar, and assignment delivery
Videoconferencing Software	Zoom, Blackboard Collaborative, Microsoft Teams Video Conference	Video meetings and lectures, live or recorded, from two to more students
Communication and Collaboration Platforms	Microsoft Teams, Facebook, Facebook Messenger, Discord	Chatting, file-sharing, closed groups
Online Forums	Piazza	Ask, see and answer questions, anonymity as an option
Other technologies	OneNote, Notion, YouTube, Snapchat	Mentioned as an important part of the student's life, but not promoted by the learning institution

Table 3.2: Technology Groups based on the technologies' functionalities mentioned by the interviewees. Note that only the main functionalities from each technology are mentioned, which was also highlighted by the interviewees.

ities: sharing teaching material, assignment delivery and a calendar. They are grouped together as seen in Table 3.2.

3.2.3 Conducting the interviews

The interviews were initially thought to be done face to face in a physical room, but because of the coronavirus outbreak and the social distancing rules, the interviews were conducted through video conferences. The Zoom Video Communication software, or just "Zoom", was used as it has a recording mechanism and does not require login for the interviewees.

3.2.4 The interview guide

The interview guide in the first two interviews contained direct questions about their sense of empowerment. This proved not to be very sufficient, as it was not

apparent that everyone has a definite opinion on the subject. In hindsight, the first interview guide was more similar to a survey and left little room for answers outside of the questions. Therefore the interview guide was changed to a more semi-structured one, with more open questions and room to answer freely. It also included some optional follow-up questions in case the interviewees did not mention specific topics on their own. The updated interview guide is to be found in the appendix.

The interviews lasted about 45 minutes each and were twofold; the first part consisted of general questions about the interviewee's study program, everyday life and what technologies they typically use. In the second part, the interviewee was asked to reflect upon an imaginary study situation where none of the technologies or internet existed, and how they then would solve their everyday tasks. This reflection made the interviewee point out essential technologies they used and showed how much some of them rely on technology every day. It also made them highlight what functionalities in the technology they appreciate or dislike, which made them talk about their feelings and thoughts on technology. From there, terms directly or indirectly from empowerment were used, and themes emerged.

3.3 Methods of Analysis

This section describes how the data were processed and analyzed. The results of this analysis are presented in Chapter 4 - Results.

The analysis was done following the steps in Figure 3.2. The qualitative data were thematically analyzed [Braun and Clarke, 2012] through both inductive and deductive coding, also called blended coding[Graebner et al., 2012]. Throughout the first steps of the analysis, notes were taken to ensure that reflections and concepts were written down for later.

The first step was about stepping into the interview data. This was done in a combination of different ways. First, the notes from the interviews gave an overview of what the interviewee talked about. These notes became a vital part of the subconscious reflection upon the subject. Later, the audio files were added to the qualitative analysis software NVivo⁵, and then transcribed. Mainly, every word spoken by the interviewee was written down. In some cases, for example, when the interviewee talked about a story irrelevant to the topic, only a short summary of the story was reproduced in the transcriptions. By both writing and reading the data, it was easier to understand what the data really meant actively, and barely start to draw lines to literature.

⁵Alfasoft.com: NVivo - "What is NVivo?"

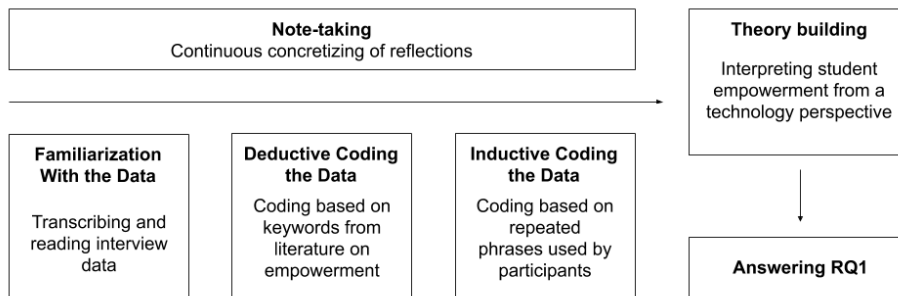


Figure 3.2: Method of Analysis. The figure shows how the qualitative data obtained from the interviews were transcribed, read through and then coded deductive and inductive. Simultaneously, notes were taken to concretize reflections and emerging themes. Further on, the codes and the overall student experiences were interpreted in order to answer RQ1.

Things that initially emerged was, for example, the students' ambivalence towards live and recorded video lectures, as well as their optimistic view on teamwork. After further speculation, this shows the importance of belongingness and that the technology did not fulfil that aspect. Such observations created the base for the coding presented in the next steps.

Moving forward, the second part of the analysis was the deductive coding of the data. The codes were based on keywords from literature on empowerment, which is also shown in the illustration of the conceptual framework Figure 2.1. Then came the inductive coding of the data. The codes were based on the familiarization process from the first step, and could be themes such as "Students not asking questions directly to the lecturer". Using these two ways of coding ensures that the data "is being heard" and theoretical relevance[Linneberg and Korsgaard, 2019]. The outcomes of this process are found in the Results chapter.

The second step of the analysis was theory building and answering RQ1. The main goal of this research was to see how learning technology promotes student empowerment, thereby answering RQ1. This step, therefore, consisted of finding what technology, or what functionalities, were linked to feeling or experiencing empowerment. The results were put in a table, found in Discussion, that shows which technology features supports which empowerment keywords.

3.4 Evaluation & Limitations

This section evaluates and justifies the methodological choices made in this research.

Data Generation Method

This research conducted semi-structured interviews as a data collection method because it is found suitable for research that explores experiences and feelings towards technologies, which cannot quickly be answered through pre-defined questionnaire responses [Oates, 2005]. However, interview-based research makes it hard to obtain objectivity throughout the interviews. Based on my own experiences from learning technology, it was a challenge to keep assumptions and thoughts inside and refrain from influencing the interviewee's mindset. Also, some interviewees were affected by the fact that they were being recorded, in the way that they seemed to try to say the "correct" thing, rather than their own personal opinion.

Selection

As easy it must have been to interview fellow computer science students, in terms of recruitment and shared viewpoints, it was more fruitful to interview students from other disciplines. The studies varied in how much they were dependent on physical attendance, and the lecturer's mindset on technology, which affected the students' relation to technology and how empowered they felt using it.

One IT student was interviewed, and as expected, they already had a lot of opinions on the technology and what works the best. Those opinions were similar to the researcher's, which was affirmative but based on the interviews beforehand, it could not be possibly representative for a Norwegian student in general. Therefore, students from other fields of study were chosen in order to avoid further confirmation bias.

As Table 3.1 shows, there was an overweight of students from NTNU, which is the result of difficulties recruiting participants due to the coronavirus restrictions. Most people had declined to participate as they, understandably, had enough to do with adjusting to the new routines.

This unbalanced distribution of represented universities might have affected the results of the interviews. Even though the universities utilize similar technologies, their attitudes towards technology and way of teaching vary. This varying also holds for the different fields of study. Based on the interviews, it seemed like the engineering programs utilized less modern teaching methods, compared to programs like audiology and physiotherapy. Examples of such methods are Team-Based Learning, which increases the students' social support and knowledge about a topic [Michaelsen and Sweet, 2008], which can have an effect on the

students' feeling of empowerment.

The intention of this thesis is to explore how technology promotes student empowerment, and since the universities' technologies share functionalities, the variation of universities represented should only affect the results to a small degree. However, if there were significant differences in technology use between the universities, it should have been a priority to balance the amount of represented universities.

Chapter 4

Results

This chapter presents the answers and sayings from the interviews which have a connection to keywords from the literature on educational empowerment. Implications of the results and connection to RQ1 is found in the next chapter.

The students were asked to talk about their everyday life as students, what technologies they use, and their feelings and thoughts on the technologies. They reflected upon a thought situation where the technologies and internet did not exist, which made them realize the impact technology have in education and life in general. Also, they talked about how they coped with the coronavirus restrictions.

The qualitative data from the interviews were coded both inductively and deductively, as explained in the Methods chapter. A combination of both opens up the possibility for new themes from the data and ensures theoretical grounding. This chapter is structured based on the deductive coding, meaning it is sectioned based on the forces and keywords found in Figure 2.1 created from the literature on educational empowerment.

Each empowerment keyword belongs to one of the three forces of empowerment: Internal, external or both. The forces are seen from the individual's perspective, depending on the factor that promotes empowerment. Either the factors come from inside – as an internal force, such as confidence, self-management or skills. Alternatively, there are external factors that influence the individual, like the lecturer, information or feedback. The third force is a combination of inner and outer influence, where equal individuals or peers work together to become empowered.

Technology also plays a part in this empowerment process and is seen as a way of enabling either of these forces. More about how and which technology features support student empowerment, thus answering RQ1, is found in the next chapter. Here is what the students said regarding the empowerment terms, presented as a summary supplemented with quotes.

4.1 Internal Forces

The internal forces refer to the individual's abilities, skills and feelings that make them empowered. Technology should facilitate for these characteristics. However, the technologies that were mentioned when talking about the subject were third party technologies, which in this case means they were not a part of the universities technology package. The students have found them on their own. Examples of such technology include time-management apps, TODO-lists and digital notebooks.

Most students felt that it was cooperation with peers that made them motivated and confident when conducting tasks. Cooperation will be talked about in later sections. This section is concerned about the strengths that the students have on their own.

The coronavirus restrictions lead to people being isolated, and there were less external factors that influenced the students' work moral. They had to become more dependent on themselves and had to get motivated by other ways than meeting peers or attending physical lectures.

4.1.1 Self-Management

The most coded empowerment term belonging to the internal forces was self-management, which in this case is seen as the students' skills to handle their everyday life; problem-solving and time management.

The students were asked to describe how they usually study for a course. The answers indicate how they learn the best and how they gain control of their study life. Most students seem to follow the same schedule: Wake up, go to school, go online to find information about an exercise, topic or course, take notes on the computer and talk to peers. Many people saw meeting their peers and attending lectures as a way of structuring their everyday. The coronavirus restrictions halted these types of activities, which meant that the students had to find other ways to structure their lives. Instead of being pushed by outside factors, they had to push themselves.

The self-discipline was enhanced and supported by technology. One student utilized the *pomodoro technique*, which is a time-management method to stay focused and remove distractions[Cirillo, 2009].

“When I study, I use a Pomodoro app where I will get statistics on how much I work every day. Yesterday I felt tired, so I stopped working early. I felt the same today, so that is going to affect the statistics. I do not like that. Now I feel I have to catch up with the lost time.”

- Person C on self-management

Another student appreciated the note-taking software from Microsoft, OneNote. It made it easier for them to organize their thoughts and lecture notes. Also, it is available on both their PC and phone, which was positive:

“Sometimes I have left my PC at home and then I have just taken notes on my phone instead [in a lecture]. [OneNote] is so accessible and easy to use.”

- Person I on OneNote

4.1.2 Self-Determination

Self-determination is about the students’ ability to chose their way of working and make their own decisions about something[Aujoulat et al., 2007]. The students can make independent choices regarding their way of studying[Nicolaidis and Koutroumpezi, 2008]. The quotes coded as self-determination show how technology helps them reach their goals at their terms.

Most students said that they had their way of working, and it was their responsibility to keep up with the courses. Their field of study facilitated independent studying by mainly making it voluntary to attend lectures. This allowed them to choose for themselves what they wanted to do with their time. Lectures was in general a much talked about topic during the interviews. This topic is categorized as “information sharing”, and is presented in the section about external forces.

It did not seem like the coronavirus situation changed the students’ self-determination. They were still able to set their own goals and strategies on how to reach them. The technology made it easier for them to write down TODO-lists and schedule their week.

Some of the study programs did not have mandatory exercises or some kind of supervision at all. They said that their field of study demanded highly independent work, and they were favourable to the idea of being evaluated or getting feedback during the semester. One medicine student said this:

“I think it is good to be structured and do things in your own way. Homework was just disruptive. Though, it could have been nice with exercises just to know where you stand in a course.”

- Person G comparing high school to university

The ones with mandatory evaluation throughout the semester did not voice their reluctance to the exercises they were given. Whether something was mandatory or not, it was clear that the students appreciated the ability to find their path to knowledge on their own, and not being told exactly how they have to study. Person C exemplifies this:

“If you read a book at school and the lecturer says ‘read this book’, you have no desire to read that book. But if you pick it up on your own a few months later, then it suddenly seems much more interesting.”

- Person C on who is in charge of their study life

Person H seems to agree with their statement:

“I have my own methods, and if I am not allowed to do it that when, then I do not think I will learn anything.”

- Person H on working independently

4.1.3 Motivation

So what exactly makes the students able to go through with their studies? Motivation can both be something that comes from inside and a result of outer influence. In this case, motivation is the first-mentioned one and refers to what drives the students forward. Motivation is the *cause* of effect. In later sections where motivation is mentioned, it is seen as the *effect* of an external cause. This distinction is important to make to avoid confusion for both the reader and researcher.

Technology did not directly build the students’ motivation, but it could demotivate them if it did not work correctly, such as having a lack of functionality or complex structuring. More about this in the external and overlapping forces sections.

Some say their motivation to keep up academically is their inner expectations of themselves. Other say they want to avoid the stress of falling behind, or that they get the reward of feeling better about themselves when they complete a task.

“I can sometimes feel that I am falling behind, and that is what pushes me to sit an hour longer [at school]. Besides that, there are no expectations of what you

have to do.”

- Person I on choosing their way of studying

4.1.4 Self-Efficacy and Confidence

The interviewees often mentioned what does and does not make them confident and feel a sense of achievement while studying. One of the things that contribute to self-efficacy and self-esteem are activities that make the student take an active part in the learning, such as cooperation with other students and exercises. More about cooperation in the “Overlapping Forces”-section. In other settings, where the student is less active or does not participate, they feel less confident.

In lectures specifically, the students do gain confidence when they understand what the lecturer talks about, which happens when the student has read about the topic earlier. Otherwise, when the lecturer talks in an incomprehensible way or a student ask about an unfamiliar topic, the other students feel insecure. One student pointed out that it was difficult to take notes and pay attention at the same time:

“When I am in a lecture, and take notes and pay attention at the same, I cannot do both a 100%, so I always have low self-esteem when I leave the lectures.”

- Person D on confidence

Others pointed out that they liked doing exercises, and completing them made them gain confidence. One student said:

“Research shows that one learns a lot by doing exercises, making mistakes, discussing etc. So it should be more of that type of work.”

- Person G on how they wished their study program was facilitated

It is much more favourable to take an active part than a passive one in their study life, even though not all interviewees stated it directly. Being active creates confidence. One student said felt bad about missing lab work because of the coronavirus restrictions:

“We have a lot of labs in [a course], and that made me learn a lot. I had a much more active role, where I can do things on my own, instead of being in a lecture having a passive role.”

- Person J on lectures versus lab work

4.2 External Forces

From the conceptual framework, one can see that the external forces of empowerment are those that influence the individual from outside. In an educational

setting, the lecturer plays an important role in facilitating, sharing information, giving feedback and engaging the student. This section explores the role of the lecturer according to the students, what the lecturer does that leads to empowerment and what role technology plays.

The results show that the coronavirus restrictions had varying effects on the external forces. The student-lecturer relationship became a bit more distant for the students in smaller classes but did not change for the ones in bigger classes. There was no significant difference between information sharing in general either, as most of the information already exists online. However, when the lectures became digital, it created new possibilities as the students' were able to stop, rewind and adjust the speed of the lectures, which many students appreciated. It made the information more accessible and available on their terms.

4.2.1 The Student-Lecturer Relation

From the students' perspective, the lecturer is seen as the expert: The one who holds the information and guides the students through their field of study. The interviewees seemed to agree that the lecturer has the responsibility of sharing their knowledge.

On the matter of the students' relation to the lecturer, it was clear that it depended on the size of the class. The students in classes about the same size as a high school class, around 25 students, felt much closer to the lecturer than the ones with more students. The ones in smaller classes also felt a lower threshold to ask the teacher questions. There could be a correlation between small classes and closeness to the teacher because the teacher can see all the students and give personal feedback. Student can become more empowered when the teachers approach the students on a personal level[Kirk et al., 2017].

After the outbreak of the coronavirus, the lectures became digital. For those in small classes, this created more distance to the lecturer.

“[The lecturers] know us, they know our names. It does not feel as personal as it used to be [after the coronavirus outbreak]. The lecturer used to come to you during practice, and now they feel further apart. I feel the lecturers really care about us, and they want us to complete our studies.”

- Person E on their closeness to the lecturers

In the larger classes, they did not see it as important to have a close relationship with the lecturer, and the digitization of lectures did not affect this relationship.

“I feel like I do not have that much contact with [the lecturer] anyways, so [the

digitization] does not have a negative impact. I do not have a personal relation to the lecturer at all.”

- Person D on how the digitization affects their relationship to the lecturer

When asked about what they do when they do not know how to solve an assignment, all the interviewees said that they ask their peers for help. Furthermore, when their peers do not know the answer, they would find an answer close enough and avoid asking the lecturer. Some interviewees said that if their whole class had some questions, they would gather them and send them to the lecturer through the class representative.

“I rather ask my friends, and maybe they do not know the answer, then we will ask someone else, instead of just asking the lecturer directly.”

- Person F when talking about the difference in the student-lecturer relationship between high school and the university

One of the students with large classes claimed that there was no culture for asking questions in lectures. However, more people asked questions when the lecture was held through video conference:

“We had a lecture where we were supposed to ask questions through our microphones, which resulted in no one asking about anything. But once we were able to use the chat, there was a lot of questions that popped up. It probably lowered the threshold to ask.”

- Person I on asking questions on Zoom

4.2.2 Information Sharing in General

A topic that was often brought up was information sharing; how, where and how fast it was shared. If this was not done in the right way, the students felt frustrated and unmotivated. The information could be announcements, PowerPoint presentations, updates in a course and video recordings. Most of the information is shared on the universities’ learning platforms.

There were some obstacles that made it more difficult for the student to get the information they needed. They include that the information was spread throughout different platforms/pages, the lecturer’s lack of understanding of the technology and the information is not structured in an organized way.

When the information was spread throughout multiple pages, it felt like much more of a hassle to acquire the needed details to finish an exercise or gain knowledge. The students uttered their frustration and feeling of hopelessness on the matter.

“MittUiB contains pointers you can click on to be directed to external pages...

I do not know, I do not use [the pointers] that much. It might be both positive and negative if you click the pointers and get brought to another site. It could have been better if everything just was on the same place.”

- Person A on the use of MittUiB

“It would have been much easier if you could do everything on the same place... I have three different Outlook-emails, and it is confusing to switch between them”

- Person B on improvements to the technologies offered by the university

The lecturer’s technological abilities profoundly affected how the students got their information. Many students felt that the lecturer did not utilize the technology in the right way. Either the information appeared too late, or it is structured confusingly on their home page. One student said:

“There are many user errors by the lecturers. A lot of things are shared way to late, for example: Suddenly, in May, a PowerPoint from February shows up in the file directory [on MittUiB].”

- Person A on how helpful the technology is

Other students also uttered their frustration over late-arriving information. An when the information arrived, it was sometimes difficult to find. It seemed like the lecturer had their way of structuring things that did not make sense to the students. An example of complicating the process of finding information:

“One of the lecturer ’systematizes’ the video lectures by naming them ’Lecture’ without further naming, so you do not know what the lecture is about. You have to find another file with an overview of the lectures and try to connect which lecture belongs to which video.”

- Person J on the different ways lecturers structure their home page

Sometimes the information can feel overwhelming and disorganized. Just as with the lateness of information, this also causes frustration and irritation.

“[Canvas] can sometimes be a bit confusing too. I have experienced that they publish too many documents at the same time that you become frustrated... If you visit a course page and then there is suddenly ten folders with lots of documents, it makes you feel kinda... [overwhelmed]” - Person B on the learning platform Canvas

4.2.3 Information Sharing: Lectures

It seemed like every student had something to say about the lectures. It does take a central part of their stud life as many thinks of the lectures as the main information channel.

As compared to the student-lecturer relationship, the motivation of attending lectures was not dependent on the size of the class. The students said that the main reasons for attending lectures were a combination of meeting peers and the fear of missing out on information. Some also said that lectures were a good way of having a good routine and getting a push to go to school.

“I usually attend to all of the lectures, because it is nice to see my classmates.”
- Person H on attendance in lectures

When all the lectures were held digitally, there were mostly negative experiences towards it. The negative experiences were related to the social aspect, as the need for social interaction was not fulfilled in the same way as physical attendance. Also, one claimed that it was easier to lose attention to the lecture when sitting home alone:

“I feel that I can easily zone out and pay less attention if I sit alone and no one can see me, compared to sitting in an actual lecture hall. ... Yet, it is simpler to just turn on the computer instead of going to school.”
- Person B on normal versus digital lectures

Others said the complete opposite that they zone out during physical lectures. As other research has also shown, attending a lecture does not necessarily mean that the students pay attention or learn anything [Von Kinsky et al., 2009].

When the students were asked to choose physical or virtual attendance in lectures, most of them choose the former because they miss going to campus and meet their classmates.

“I read that we have to continue with video lectures this autumn [because of the coronavirus precautions], so I guess I have no choice. Of course I want to return to campus. The social aspect is really important, it is tedious to stay ‘locked’ inside your own room to study.” - Person D on whether they prefer video lectures over the physical ones

4.2.4 Information Sharing: Recorded Lectures

Even though most people preferred to attend lectures physically, they still appreciated having recorded lectures available. When attending a non-digital lecture, the students were more focused on writing down what the lecturer said, rather than genuinely understanding the topics. However, when having the possibility of watching the lecture again at a later time, the students were able to pay more attention to the lecturer, because they had the assurance that forgotten information was easy to retrieve.

Other features that were appreciated was the possibility to stop, rewind, speed

up and slow down the recorded lecture. This made the students more in control of the lecture, as they could watch it on their terms, personalized to their pace of learning.

“Now that I watch everything on video in these corona-times, I have run everything on double speed. Then I do not have to take notes, I can just focus on understanding the topics, and I think that is almost better. If there was something that I did not understand, I could just go back [in the video recording] and watch it again.” - Person D on confidence and control during lectures

One student talked about the frustration when the faculty decided to quit recording lectures:

“It is stressful because you loose a tool that makes it possible to combine school with student volunteerism activities. For example, when you have a meeting, you can watch the lecture afterwards.” - Person C on digital tools

4.3 Overlapping forces

The overlapping forces refer to how working together and interaction with peers promotes empowerment. The students talked a lot about how they miss their friends and being social. When the campuses closed to prevent further spread of the coronavirus, many students lost a crucial social arena. In addition to the campuses closing, it was advised to avoid meeting friends, which made many students stuck in their small dorms.

This made communication technology vital in order to achieve some sort of human interaction. Even though such technologies have existed for a long time, they did not seem to fulfil the students’ social needs. The human body language is yet to be successfully expressed through the internet.

The input they get from peers is valuable for both social and academic life. It contributed heavily to the students’ motivation and engagement.

4.3.1 Cooperation

One of the most positively talked about themes was cooperation and communication with other students. Most students said that they gained more confidence when discussing a subject rather than searching for the answers on their own. One student claimed:

“In general, when we talk together in the bachelor group, I feel more self-efficacy while talking to others [rather than afterwards]. Because then everything seems

so clear in a way.”

- Person B on confidence using video conference technologies

The reason might be summed up by one of the interviewees:

“I like to cooperate with others because then there are more people thinking about the same case, and you can get multiple perspectives on the subject, which makes it easier to reach a solution.”

- Person D on the preferred way to study

It is also preferable with small study groups as it lowers the anxiety of saying something stupid or wrong:

“I prefer sending direct messages and talk to the other students directly, instead of using the shared platforms. When I send something to more than one person, I feel it becomes a high threshold [to ask questions] because I think ‘Is it stupid to ask this question?’”

- Person C on how technology affects their relation to other students

However, after the coronavirus broke loose and the stay-at-home rules applied, the cooperation became a bit more complicated. Even though there exist many different online communication tools, they do not match the experience of meeting peers in real life.

“It is not just the same to use Zoom compared to meeting in real life. When I tried to call [a peer] on Facebook Messenger, it was not the same, but it worked.”

- Person F on difficulties using video conference technologies

One of the things that made it difficult was the lagging of the video meeting, which made people start talking over each other. This made some people shut up and not talk, rather than risking the interruption of other people.

“We use Zoom and Blackboard Collaborative. It works surprisingly well. Though, it is easy to become passive. There is a higher threshold to start talking when on video, because it is so easy to talk over each other”

- Person G on cooperation during coronavirus restrictions

Also, some students claimed that you have to formulate your questions and explanations better in video calls. It made some more aware of their body language and their way to convey their viewpoint:

“When I see myself, I see my own body language when I talk to people and how I can formulate myself in a right way. There occurs some irritation when you do not understand what the others mean. It is difficult to explain something when you are not sitting together. You have to be more clear when talking.”

- Person D on using Zoom and Teams to cooperate with peers

One pointed out that it is easier to notice when someone does not understand something when they are sitting together.

“It is difficult to show the things you are working on [in a video conference], because the video gets inverted. It becomes much more of a hassle compared to sitting in the same room and showing what you have worked on. It is easier to show something on paper, rather than with your phone. Also, it is easier to see if someone understands something or not when you sit in the same room”.

- Person F on why it is not sufficient to cooperate over Zoom

Though, some students did not have those problems, as they appreciated the functionality to share their screen.

“We use the ‘share screen’ functionality to have the assignment questions in front of when working together. Still, we solve the questions on paper.”

- Person D on working together on video conference

4.3.2 Belongingness

One of the reasons that students like to cooperate is the feeling of belonging somewhere, and to meet their social needs. Many students like to go to campus because it is where they meet their friends. When the coronavirus broke loose, the campuses closed and the isolation took its toll on the social aspect of the students’ lives. Even though technology allows the students to see and hear each other through their screens, it does not replace the feeling of being present with your peers. Everyone said they missed going to school and meet their peers face-to-face.

“The social aspect is very important, and it is so dreadful to become ‘locked’ inside my room to work. Of course I would like to return to the campus.”

- Person D

“I miss being at school, it is so much more fun. ... The social [aspect] is kind of a push for me [to go to campus]. I would not study here if I did not have a social life at school.”

- Person H on normal versus virtual lectures

Chapter 5

Discussion

This chapter is the result of a thematic analysis of the interview data. It shows its relation to the literature on educational empowerment and technology, which is shown in Table 5.1, thus answering RQ1.

As explained in the Method Chapter, the data analysis makes use of a blended method of both inductive and deductive coding. The findings of this coding were presented in the previous chapter. This chapter takes a broader look at what the data means by combining the literature related findings to the common sayings by the students. It discusses technology's role for student empowerment and suggests supportive features to ensure value to students.

The research question of this study was to find out how learning technologies at universities in Norway support student empowerment. The data suggest that the technologies support student empowerment when they facilitate cooperation with peers, information sharing and engages students. However, the technology can make the students feel dis-empowered, by offering no interaction, structure or modifiability. Table 5.1 shows how the empowerment aspects are related to educational technology, including what features that either does or does not support empowerment. This chapter will further elaborate on these features.

5.1 Engaging Technology

The keywords that emerged from the deductive coding analysis related to internal forces are self-management, self-determination, motivation, self-efficacy and confidence. The technologies the students mentioned concerning these keywords

Empowerment Aspects	Educational Technology	Technology Features	Empowering Effects
Internal Forces			
Responsible: Students – The individual Keywords: Self-management, self-determination, motivation, self-efficacy, confidence	Notebooks, time-management apps, TODO-lists	<i>What works:</i> Interactive, modifiable, personal, responsive <i>What does not work:</i> Static content, non-modifiable, old-looking interfaces	Education, independence, control, participation, information, self-discipline Boredom, insecurity, ineffectiveness
External Forces			
Responsible: Lecturers – The Expert Keywords: Information sharing in general and lectures	Video conference, communication platforms, learning platforms	<i>What works:</i> Orderly, organized, adjustable, accessibility <i>What does not work:</i> Late arrival, spread out on multiple places	Engagement, self-management, self-efficacy, opportunities Hopelessness, irritation, disengagement, passivity
Overlapping Forces			
Responsible: Other Students – Peers Keywords: Cooperation, belongingness	Video conference, communication platforms, online forums	<i>What works:</i> Two-way communication, discussion, asking questions, optional anonymity, social <i>What does not work:</i> No interaction, lack of body language	Motivation, engagement, information sharing, self-efficacy Passivity, boredom, confusion

Table 5.1: Empowerment Terms related to learning technologies and how it affects the students.

are notebooks, time-management apps and TODO-lists. These types of technologies appear to be third party applications which the students have found on their own, and were not offered by the universities. So what makes these technologies more desirable and empowering than learning technologies?

The third-party technologies have in common that they are interactive, modifiable, personal and responsive. It was easy for the students to use the technology, and it worked on all of their platforms. One of the technologies mentioned was the all-in-one workspace app Notion that launched in 2016 and has gained about four million users in 2020¹. A student that expressed their frustration over Blackboard's confusing interface said they wished Blackboard were more like Notion.

"I feel that Notion is my safe-space because I can set everything up the way I want"

- Person C on the usability of Blackboard

This reflects the overall impression: The students were not pleased or particularly impressed with the technologies the universities had to offer. Learning platforms have been developed in collaboration with the associated universities, and their demands for such platforms seems to focus on some specific tasks such as information sharing and exercise delivery. These qualities are mere digitizations of existing solutions, and should at least be expected from technology today, but it stops there. The universities should aspire to offer more personalized technology features, as it is more engaging than generic information[Prey et al., 2014].

Other technologies in today's society battle the race of meeting the users' needs and providing new functionality, whereas the educational technology lags with its pretty basic functionality.

This perception of educational technology might discourage the students even before they start using it. Perceived usefulness is an important factor when adopting ICT solutions[Gagnon et al., 2012]. Further on, when the students use the technology, they are met with a user interface that does not meet today's standards, and the technology already makes the user unsure of the credibility of the information they see – if they are able even to find it. The functionality is very static and leaves little room for interactivity and personal touch.

Most of the interviewees were students at NTNU, which started utilizing Blackboard in 2017. The students' opinions on Blackboard match the results from earlier surveys on the platform from 2017². The solution was to arrange training

¹Forbes - "Buzz Work App Notion Hits 2 Billion Valuation"

²Universitetsavisa - "Dette er Blackboard-tiltakene NTNU vil sette inn"

courses, which few were interested in³.

The students claimed that the lecturers' digital illiteracy affected their experience with learning technology. This belief could be linked to the lecturers' version having a bad user interface, which makes it difficult for them to provide information in an orderly way or in the way they hoped for⁴. When the lecturers have little faith in the platform, it rubs off to the students too.

The students gain more confidence and motivation through active learning rather than passive learning. It is, in general, less successful to just let information pass from the source to the student. The students should be able to engage themselves in education and understand new information through their personal framework[Von Kinsky et al., 2009]. Technology has the functionality to highlight the students' learning needs[Solvie and Kloek, 2007].

Choosing technologies that engage the students should be a high priority for the universities, as it can empower its students. Nevertheless, it can be difficult to successfully implement such technology as an educational tool as it involves changing academic practise[McNeill et al., 2012].

5.2 Technology Enhances Lectures

Because of the coronavirus restrictions, the teaching instantly became digital, and video lecture technologies such as Zoom and Blackboard Collaborative became popular. The students saw both positive and negative aspects of live video lectures: It was nice to be able to watch the lecture from home, but it was more fulfilling to go to school, attend a lecture and meet peers.

Interestingly enough, few people attended the lectures to learn anything. They attended to either meet their peers, write down lecture notes for later or have a reason to get up in the morning and have some sort of structure in their lives. The reasons for attending lectures changed when the lectures were recorded and available to watch later.

The video player with lecture recordings had the functionality to stop, rewind, slow down or speed up the video. This functionality made it possible for the students to actually pay attention to what the lecturer said. Students who thought a regular lecture was going too slow could speed up, and students who were afraid of missing a piece of information could slow down the lecture. The technology made the students learn at their own pace.

³Universitetsavisa - "Kritiserer Blackboard, men møter ikke opp på kursene"

⁴Universitetsavisa - "Merker ingen wow-effekt ved å benytte Blackboard"

Many universities did already offer recorded lectures before the coronavirus restrictions, so the idea is not new. Yet, many professors did not take advantage of this until they were forced to do it. The students with those professors uttered their wishes for having recorded lectures as a standard. They appreciated having the opportunity to rewatch the lectures, mainly since their exam questions are based on them.

The recorded videos' functionalities are not new either: YouTube has been offering this way of watching shared videos since 2005 and is still popular. Compared to the other learning technologies, the recorded videos do actually catch up with mainstream multimedia. It is a known concept for the students as they grew up to this type of technology, which might be why they quickly adapt to it.

Another possibility that both YouTube and recorded video lectures share is that they can be watched whenever and wherever. This enables the students to plan their day how they want: The lectures adapt to *their* schedule, not the other way around.

However, for those using the regular lectures in the physical world to get pushed to go to school, the recorded lectures might not be that helpful. However, recorded lectures does enhance their perceived learning outcome.

While most learning technologies should be criticized for just being a digital version of the existing learning tools, recorded video lectures do actually enable new possibilities by giving more power and self-management to the students.

5.3 Technological Limitations

The coronavirus restrictions made people more isolated. The universities and its students had to adapt to a new normal by utilizing digital versions of their education, where video lectures and information sharing was done in a sufficient way.

One aspect that proved to be relevant to the students was cooperation. When discussing with peers, they became active participants in their learning and got new viewpoints on the topics. It increased their feeling of belongingness and confidence.

Cooperation became heavily amputated because of the restrictions, and the technology was not adequate as a replacement. However, it did bring some positive experiences.

The students used video conference software to both educational and social purposes: When working together on an assignment and hanging out to talk. It was

appreciated that they could see and hear each other; it gave them a social feeling. A student even said that they arranged beer-pong tournaments on Zoom. Yet, it was just not the same as meeting in a physical room due to the technological limitations in our time.

Many students pointed out that there appeared to be a higher threshold to talk during a video conference. In real life, humans can easily sense when others have something to say, and one can instantly know when to keep quiet to make room for others to speak. In a video conference, it is common for delays in the video transmission: Even the slightest delay can cause big interruptions, confusion and frustration. The human body language we depend on for good conversations is not appropriately digitized.

This irritating aspect of video conferences had effects on how the students studied. Typically, they would go to campus, meet their peers and work together until they finished their tasks. During the coronavirus restrictions, they worked significantly more alone, which was less motivating than working with peers.

Even though much of today's communication is online, it does not fully replace the feelings and effects of being present with peers. The problems regarding online cooperation through the video conference platforms hold for the video conference technologies offered by universities and by third party companies. From a user perspective, it does not seem like video calling technologies have drastically changed since it became available at the start of this decade. They still provide the same aspects of a conversation: see, listen and speak. Yet, the transfer rate, user-friendliness and security have changed a lot.

The universities are therefore not to be blamed for not offering video calling software that perfectly substitutes physical presence. Still, based on how frequently cooperation was brought up during the interviews, they should consider being aware of the empowering effect of teamwork.

Chapter 6

Conclusion

The research question of this thesis was: “How does learning technologies at universities in Norway support student empowerment?”.

The coronavirus outbreak reached Europe in March 2020, and stay-at-home restrictions applied to prevent further spread. Norway and its institutions had to digitize their ways of working instantly. Universities were no different, which created an opportunity to understand how this digitization affected the students and how technology influenced their empowerment.

The literature on educational empowerment contains common empowerment keywords, which was categorized as either an internal, external or overlapping force. This categorization, or conceptual framework, simplifies the complex definitions of empowerment.

Further on, ten Norwegian students were interviewed in order to get a deep understanding of how the digitization affected their lives and feeling of empowerment. This leads to qualitative data which was deductively analyzed using the keywords from the conceptual framework, and then inductively analyzed to gain a broader understanding of the data and its relation to the literature on empowerment.

The data shows that technology can support student empowerment by offering functionalities that make the technology feel more personal and modifiable, allow communication with peers, and present information in an orderly and structured way.

Learning technologies should keep up with the evolution in engaging technologies

to give more value to the students, and possibly lecturers. When doing so, the students gain new possibilities in their way of studying and are able to take control of the pace. Cooperation plays an important aspect too, but as for now, communication technology cannot replace the experience of being present with peers.

This research has focused on the students' perspectives on educational technology and empowerment. Future work should look into the lecturers' side of the story. There should also be an in-depth investigation of the universities' bidding process of "new" technologies, and why they end up choosing complicated and less user-friendly software, especially since there already exist so many engaging technologies out there.

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Appendices

1. Interview guide: “Intervjuguide”
2. Information letter: “Vil du delta i forskningsprosjektet 'Brukere av Læringsteknologi'?”
3. Interview quotes - English to Norwegian translation

Intervjuguide

Intro

Hensikten med denne undersøkelsen er å forstå brukere av læringsteknologi gjennom et intervju på ca 45 min. Det er ingenting som er rett eller galt, for uansett hva du svarer så er det til hjelp for meg i min master. Før selve undersøkelsen begynner, så vil jeg forsikre meg om at du har lest informasjonsskrivet og samtykker til det som står det. Ditt muntlige samtykke innebærer altså:

- At du har mottatt og forstått informasjon om prosjektet "Brukere av Læringsteknologi", og har fått anledning til å stille spørsmål.
- Du deltar på prosjektet ved å svare på spørsmål under intervjuet som det blir gjort videoopptak av
- Kun anonymiserte data om deg og hvilke læringsteknologier du bruker lagres etter prosjektslutt, til lignende prosjekter om læringsteknologi.
- Dine opplysninger behandles frem til prosjektet avsluttes.

Intervjuet er delt opp i to deler. Det første er generelt om studiet og hva du bruker av teknologier, og den andre delen er en liten "case" eller imaginær oppgave bare for å høre hvordan du tenker og føler om teknologien. Prøv å tenke høyt, jeg skal prøve å stille spørsmål på en åpen måte. Det er veldig lov med tenkepause. Og ja det blir litt kleine stillheter med Zoom, men jeg trenger litt tenketid jeg også.

Del 1: Overblikk over intervjuobjektet og teknologiene

1. Hva studerer du og hvilket år er du på?
2. Hvilke fag har du dette semesteret?
3. Hvordan liker du å jobbe med fag? Forelesning vs ikke forelesning. Spørre foreleser vs finne ut ting selv. Samarbeid vs alene.
4. Hvilke læringsteknologier brukes på ditt studie?
 - a. Fortell litt om hva du bruker de til og hvordan de hjelper deg i din hverdag. Si at du har fått en vanskelig øving hvor du sliter med å forstå temaet. Hva gjør du da?

Del 2: Case

1. Nå skal du få en liten caseoppgave. Bare tenk høyt. Tenk deg at ingen av de nevnte teknologiene eller internett eksisterte. Hvordan ville studiehverdagen vært da? Mtp øvinger, innleveringer, forelesninger, samarbeid med andre studenter. Bare ta litt tenkepause mens jeg henter meg litt vann!
 - a. Hva ville du gjort hvis du ikke hadde mulighet til å møte opp i en forelesning?
 - b. Hvis du fikk lov til å gjeninnføre én av teknologiene, hvilken hadde det vært? Og hvorfor?
2. Tilleggsspørsmål:
 - a. Føler du det er bra eller dårlig?
 - b. CoP: Power-to eller Power-over. Maktfordeling.
 - i. Hvem har makten over ditt studieliv?
 - ii. Hvordan påvirker teknologien din relasjon til foreleser? Til studiekamerater?
 - c. Psych: Feeling, Knowing, Doing
 - i. På hvilken måte hjelper "teknologi" deg til å gjøre det du må gjøre på studiet?
 - ii. På hvilken måte kan teknologiene gi deg selvtilitt?
 - d. PoE: Transistent eller persistent
 - i. Selvtilitt underveis eller etter bruk?
 - e. Design mindset: Paticipatory eller expert
 - i. Føler du at teknologiene er tilpasset deg som student eller foreleserne?
 - ii. Hvis du skulle lagt til eller fjernet teknologier, eller funksjoner, hva skulle det vært?

Del 3: Avslutning

Takk for intervjuet! Er det noe mer du vil legge til som du kom på nå mot slutten? Dersom du har spørsmål eller vil legge til noe mer i ettertid er det bare å si i fra.

Som det stod i infoskrivet så vil opptaket lagres på et kryptert lagringsområde og ditt navn vil ikke direkte kobles opp mot lydfilen. Etter at prosjektet er avsluttet i juni vil videofilen slettes og kun en anonymisert transkribering av intervjuet tas vare på.

Vil du delta i forskningsprosjektet “Brukere av Læringsteknologi”?

Dette er et spørsmål til deg om å delta i et forskningsprosjekt hvor formålet er å kartlegge hva brukere av læringsteknologi tenker og føler om teknologien. I dette skrevet gir vi deg informasjon om målene for prosjektet og hva deltakelse vil innebære.

**Læringsteknologi*: Zoom, Blackboard, Piazza

Formål

Dette prosjektet er en del av en masteroppgave i datateknologi på NTNU. Oppgaven går ut på å få en god forståelse av relasjonen mellom brukere og læringsteknologi. Dette vil brukes til å forstå hvorfor teknologien fungerer eller ikke fungerer slik den skal. Forhåpentligvis vil dette hjelpe til med å forbedre slike typer produkter i fremtiden.

Ansvarlige

- Kristina Hovland Berg, masterstudent på datateknologi ved NTNU Trondheim
- Babak Farshchian, veileder og førsteamanuensis ved Institutt for Datateknologi og Informatikk (IDI) ved NTNU Trondheim

Hvorfor får du spørsmål om å delta?

Du mottar dette informasjonsskrivet fordi det er ønskelig å intervju mellom 10 til 20 studenter som benytter seg av læringsteknologi. Dette skrevet er sendt fra prosjektansvarlige til de som ønsker å delta. Deltakere er vervet gjennom å snakke med bekjente og deres bekjente.

Hva innebærer det for deg å delta?

Hvis du velger å delta i prosjektet innebærer det at du svarer på et par spørsmål i form av et intervju via videokonferanse (Zoom) med Kristina. Intervjuet vil vare i underkant av 60 minutter. Det vil bli gjort videoopptak av samtalen, som vil bli slettet etter prosjektets slutt. Spørsmålene vil handle om hva du tenker og føler om teknologien du bruker. Det er ingen krav til forkunnskaper.

Det vil bli stilt spørsmål om hva du studerer og hvilket trinn du er på. Det vil si at selv om du blir anonymisert i sluttrapporten så er det en liten sannsynlighet for at forelesere eller medstudenter kan identifisere deg.

Det er frivillig å delta

Det er frivillig å delta i prosjektet. Hvis du velger å delta, kan du når som helst trekke samtykket tilbake uten å oppgi noen grunn. Alle dine personopplysninger vil da bli slettet. Det vil ikke ha noen negative konsekvenser for deg hvis du ikke vil delta eller senere velger å trekke deg. Dette har ingen påvirkning på din behandling eller ditt samarbeid med kommunen og helsetilbud.

Ditt personvern

Vi vil bare bruke opplysningene om deg til formålene vi har fortalt om i dette skrevet. Vi behandler opplysningene konfidensielt og i samsvar med personvernregelverket. Ditt navn og din kontaktinformasjon vil erstattes med en kode som lagres på egen navneliste adskilt fra svarene dine i prosjektet. Videofilene, transkriberingen og dine data lagres i et eget område på NTNUs lagringsmedium “NICE-1” som sikrer trygg håndtering av data. Kun prosjektansvarlige, Kristina og Babak, har tilgang til dette.

Hva skjer med opplysningene dine når prosjektet avsluttes?

Opplysningene og transkriberingen av lydfilene anonymiseres når prosjektet avsluttes, noe som etter planen er 10. juni. Transkriberingen kan muligens brukes i et senere prosjekt på NTNU. All identifiserbar data slettes.

Dine rettigheter

Så lenge du kan identifiseres i datamaterialet, har du rett til:

- innsyn i hvilke personopplysninger som er registrert om deg, og å få utlevert en kopi av opplysningene,
- å få rettet personopplysninger om deg,
- å få slettet personopplysninger om deg, og
- å sende klage til Datatilsynet om behandlingen av dine personopplysninger.

Hva gir oss rett til å behandle personopplysninger om deg?

Vi behandler opplysninger om deg basert på ditt samtykke. På oppdrag fra Institutt for Datateknologi og Informatikk (IDI) har NSD – Norsk senter for forskningsdata AS vurdert at behandlingen av personopplysninger i dette prosjektet er i samsvar med personvernregelverket.

Hvor kan jeg finne ut mer?

Hvis du har spørsmål til studien, eller ønsker å benytte deg av dine rettigheter, ta kontakt med:

- Kristina Hovland Berg, masterstudent ved IDI, NTNU
+47 90 58 36 90
kristhbe@stud.ntnu.no
- Babak Farshchian, veileder og førsteamanuensis ved IDI, NTNU
+47 73 59 36 77
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- Vårt personvernombud:
Thomas Helgesen
+47 93 07 90 38
thomas.helgesen@ntnu.no

Hvis du har spørsmål knyttet til NSD sin vurdering av prosjektet, kan du ta kontakt med:

- NSD – Norsk senter for forskningsdata AS på epost (personvern@nsd.no) eller på telefon: 55 58 21 17.

Med vennlig hilsen, *Kristina Hovland Berg og Babak Farshchian*

Samtykkeerklæring

Dersom du ønsker å delta i dette prosjektet vil du, ved intervjuets start, bli spurt om du samtykker til punktene som listes under. Dette avsnittet vil bli lest opp før intervjuets start.

Ditt muntlige samtykke innebærer altså:

- At du har mottatt og forstått informasjon om prosjektet "Brukere av Læringsteknologi", og har fått anledning til å stille spørsmål.
- Du deltar på prosjektet ved å svare på spørsmål under intervjuet som det blir gjort videoopptak av
- Kun anonymiserte data om deg og hvilke læringsteknologier du bruker lagres etter prosjektslutt, til lignende prosjekter om læringsteknologi.
- Dine opplysninger behandles frem til prosjektet avsluttes.

Interview quotes - English to Norwegian

Person	English	Norwegian
C	When I study I use a pomodoro app where I will get statistics of how much I work every day. Yesterday I felt tired, so I stopped working early. I felt the same today, so that is going to affect the statistics. I do not like that. Now I feel I have to catch up with the lost time.	Når jeg jobber bruker jeg en pomodoro-app der jeg får statistikk over hvor mye jeg jobber hver dag. I går fikk jeg litt små-knekken, så jeg slutta å jobbe tidlig, og jeg har også hatt litt små-knekken i dag, så det kommer til å slå ut på grafen min. Det liker jeg ikke. Så jeg føler jeg må ta igjen for det tapte.
I	Sometimes I have left my PC at home and then I have just taken notes on my phone instead [in a lecture]. [OneNote] is so accessible and easy to use.	Det har hendt at jeg har glemt PCen hjemme og da har jeg kunnet notert på mobilen. Det er bare så tilgjengelig og lettvin.
G	I think it is good to be structured and do things in your own way. Homework was just disruptive. Though, it could have been nice with exercises to just know where you stand in a course	Jeg synes det er fint å være strukturert og gjøre ting på sin egen måte. Lekser var bare forstyrrende. Det hadde jo vært fint med øvinger for å vite hvordan man ligger an.
C	If you read a book at school and the lecturer says "read this book", you have no desire to read that book. But if you pick it up on your own a few months later, then it suddenly seems much more interesting.	Det er som at hvis du leser en bok på skolen, og foreleseren sier "les denne boka", så får du ikke lyst til å lese den. Men hvis du noen måneder senere skal lese på egen initiativ da virker den plutselig veldig interessant
H	I have my own methods, and if I am not allowed to do it that when, then I do not think I will learn anything.	Jeg har mine egne metoder, og hvis jeg ikke får gjort det på den måten tror jeg ikke at jeg lærer noe
I	I can sometimes feel that I am falling behind, and that is what pushes me to sit an hour longer [at school]. Beside that, there are no expectations of what you have to do.	Det er mer det at man kan merke at man henger litt etter som pusher deg til å sitte en time til. Det er ikke noen forventninger til hva man skal gjøre.
D	When I am in a lecture, and take notes and pay attention at the same, I cannot do both a 100%, so I always have low self-esteem when I leave the lectures	Når jeg sitter i forelesning, og noterer og følger med samtidig, da klarer jeg ikke det 100%, så jeg har alltid litt dårlig selvtillit når jeg drar fra forelesningene.
G	Research show that one learn a lot by doing exercises, making mistakes, discussing etc. So it should be more of that type of work.	Det er jo forska på at man lærer mer ved å gjøre oppgaver, feile, diskutere etc. Så jeg synes det skulle vært mer av det.
J	We have a lot of labs in [a course], and that made me learn a lot. I had a much more active role, where I can do things on my own, instead of being in a lecture having a passive role.	Vi har også mange labor i det faget, og jeg følte jeg fikk mer ut av det. Der hadde jeg en mye mer aktiv rolle, der jeg gjør ting selv, istedet for forelesning der man har en passiv rolle.
D	Now that I watch everything on video in these corona-times, I have run everything on double speed. Then I do not have to take notes, I can just focus on understanding the topics, and I think that is almost better. If there was something	Men nå som jeg ser alt på video i koronatida, da har jeg kjørt alt på dobbel hastighet. Da noterer jeg ikke, og kan bare fokusere på å forstå det, og det synes jeg nesten er bedre. Dersom det er noe jeg ikke forstår så kan jeg bare hoppe tilbake og se det en gang til.

	that I did not understand, I could just go back [in the video recording] and watch it again.	
C	It is stressful because you loose a tool that makes it possible to combine school with student volunteerism activities. For example, when you have a meeting, you can watch the lecture afterwards	Det er stress for da mister du et verktøy som gjør det mulig å følge med når du har verv. F.eks. når du har et møte, så kan du se forelesningen i etterkant.
B	In general, when we talk together in the bachelor group, I feel more self-efficacy while talking to others [rather than afterwards]. Because then everything seems so clear in a way	Generelt sett når vi snakker sammen med bachelorgruppa, så føler jeg at jeg har mer mestringsfølelse mens vi bruker det, eller er inne og snakker med noen. For da virker alt veldig klart på en måte.
D	I like to cooperate with others because then there are more people thinking about the same case, and you can get multiple perspectives on the subject, which makes it easier to reach a solution.	Liker å samarbeide med andre for da er det flere som tenker på samme oppgave, og man kan se flere perspektiver sånn at man lettere kan komme fram til en løsning.
C	I prefer sending direct messages and talk to the other students directly, instead of using the shared platforms. When I send something to more than one person, I feel it becomes a high threshold [to ask questions] because I think "Is it stupid to ask this question?"	Jeg foretrekker egentlig DMs [direktemeldinger] og ha direkte dialog med andre studenter, istedetfor de fellesplattformene. Merker generelt når du sender noe til mer enn én person så føler man at det blir en høy terskel fordi man tenker "er det dumt å stille dette spørsmålet?".
F	It is not just the same to use Zoom compared to meeting in real life. When I tried to call [a peer] on Facebook Messenger, it was not the same, but it worked.	Det er ikke helt det samme å bruke Zoom som å møtes. men jeg merket det da jeg ringte på Messenger, så var det ikke helt det samme, men det funka.
G	We use Zoom and Blackboard Collaborative. It works surprisingly well. Though, it is easy to become passive. There is a higher threshold to start talking when on video, because it is so easy to talk over each other	Bruker Zoom og Blackboard Collaborate. Fungerer overraskende bra. Jeg føler jeg får noe ut av det selv om jeg ikke trodde det. Det er lett å bli passiv da. For det er litt høyere terskel for å snakke når man er på video, for da er det så lett å snakke i munnen på hverandre.
D	When I see myself, I see my own body language when I talk to people and how I can formulate myself in a right way. There occurs some irritation when you do not understand what the others mean. It is difficult to explain something when you are not sitting together. You have to be more clear when talking.	Når jeg ser meg selv ser jeg mitt eget kroppsspråk når jeg snakker med folk. Og det å formulere seg rett. Det blir litt irritasjon når man ikke skjønner hva den andre mener, og det er vanskelig å forklare når man sitter på forskjellige steder. Man må være ganske mye mer tydelig.
F	It is difficult to show the things you are working on [in a video conference], because the video gets inverted. It becomes much more of a hassle compared to sitting in the same room and showing what you have worked on. It is easier to show something on paper, rather than with your phone. Also, it is easier to see if someone understands something or not when you sit in the same room	Det er vanskelig å vise fram en oppgave man jobber på, for bildet blir speilvendt nå man filmer noe. Det blir liksom mer styr sammenlignet med når man sitter i samme rom og kan vise frem hva man har jobbet med. Og så er det lettere å vise på papir enn med mobil. Det er også lettere å oppfatte om noen skjønner noe eller ikke når man sitter i samme rom.

D	We use the 'share screen' functionality to have the assignment questions in front of when working together. Still, we solve the questions on paper.	Bruker "Del skjerm"-funksjonen for å ha oppgavene fremme når vi jobber sammen, men gjør oppgaver på papir.
D	The social aspect is very important, and it is so dreadful to become 'locked' inside my room to work. Of course I would like to return to the campus.	Det sosiale aspektet er veldig viktig, det er jo kjedelig å "bli låst inne på et rom for å jobbe". Selvfølgelig har jeg lyst til å være på campus igjen.
H	I miss being at school, it is so much more fun. ... The social [aspect] is kind of a push for me [to go to campus], I would not study here if I did not have a social life at school.	Men jeg savner å være på skolen, det er jo mye morsommere. ...Det sosiale er et lite push for meg. Jeg hadde ikke gått dette studiet hvis det ikke hadde hatt det sosialt bra.
C	I feel that Notion is my safe-space, because I can set everything up the way I want	Jeg føler Notion er mitt safe-space for der kan jeg sette opp ting akkurat som jeg vil.