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Master's Thesis

"Corona was not the best time of their lives"

A qualitative study of challenges teachers faced facilitating a digital learning environment equivalent to the classroom

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SUMMARY

MASTER IN PEDAGOGY – MASTER THESIS

Title	«Corona was not the best time of their lives»: a qualitative study of challenges teachers faced facilitating a digital learning environment equivalent to the classroom
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- Closed schools   - Full digital homeschooling   - Distance learning   - Corona pandemic   - Inclusive learning environment   - Motivation   - Digital competancy   - Sociocultural learning theory

Abstract

The purpose of this thesis is to shed light on how teachers in Norway experienced the transition to full digital teaching because of the lockdown in March of 2020. This includes a focus on which aspects of facilitating a digital learning environment the teachers found challenging as well as challenges they faced in relation to motivating their students.

The theoretical basis of my thesis is based on learning in a social cultural perspective, where motivation and inclusion are key factors when creating an inclusive digital learning environment.

Previous research includes qualitative and quantitative studies regarding teachers' experience with facilitating a full digital learning environment. Mentioned in these studies are challenges having to do with motivating students, lack of hands-on contact and communication with students. Due to issues raised by teachers in my study regarding students' privacy rights when participating in a digital classroom, I have included two relevant articles from a teachers' perspective.

Results from my study clearly show that digital homeschooling was felt by most teachers in my study as an emergency, something they were not prepared for. All have emphasized the importance of physical contact in the school environment as a contributing factor for learning. They had varying success with the use of collaborative assignments which were meant to establish a sociocultural aspect to the digital learning environment. The majority have reiterated that intended learning occurs in the social context of the classroom and school environment. The teachers have experienced a high learning curve regarding their own digital competency and have been able to incorporate some of the tools they used during the lockdown in the classroom today. Their biggest challenges when it came to motivating their students were creating diverse assignments that secured good progression and not being physically present with their students to see and react to their needs.

GDPR was mentioned by several teachers regarding challenges in following up and motivating their students. The issues regarding privacy protection have few guidelines but posed great discomfort for both teachers and students. It appears that the social and cultural content suffered while the academic content was simpler to ensure.

Sammendrag

Formålet med denne oppgaven er å belyse hvordan lærere i Norge opplevde overgangen til full digital undervisning som følge av nedstengningen i mars 2020. Dette inkluderer et fokus på hvilke aspekter ved tilrettelegging av et digitalt læringsmiljø lærerne opplevde som utfordrende samt utfordringer de møtte i forhold til å motivere elevene sine.

Det teoretiske grunnlaget for oppgaven min er basert på læring i et sosialkulturelt perspektiv, hvor motivasjon og inkludering er sentrale faktorer når man skal skape et inkluderende digitalt læringsmiljø.

Tidligere forskning inkluderer kvalitative og kvantitative studier angående læreres erfaring med å legge til rette for et komplett digitalt læringsmiljø. Nevnt i disse studiene er utfordringer knyttet til motivering av studenter, manglende praktisk kontakt og kommunikasjon med studenter. På grunn av problemstillinger som tas opp av lærere i min studie angående elevers personvernrettigheter når de deltar i et digitalt klasserom, har jeg inkludert to relevante artikler fra et lærerperspektiv.

Resultatene fra studien min viser tydelig at digital hjemmeundervisning for de fleste lærerne i studien min opplevdes som en nødsituasjon, noe de ikke var forberedt på. Alle har fremhevet betydningen av fysisk kontakt i skolemiljøet som en medvirkende årsak til læring. De hadde varierende suksess med bruk av samarbeidsoppgaver som var ment å etablere et sosiokulturelt aspekt ved det digitale læringsmiljøet. Flertallet har gjentatt at tiltenkt læring skjer i den sosiale konteksten i klasserommet og skolemiljøet. Lærerne har opplevd en høy læringskurve når det gjelder egen digitale kompetanse og har kunnet inkorporere noen av verktøyene de brukte under nedstengningen i klasserommet i dag. Deres største utfordringer når det kom til å motivere elevene var å lage varierte oppgaver som sikret god progresjon og det å ikke være fysisk til stede sammen med elevene for å se og reagere på deres behov.

GDPR ble nevnt av flere lærere angående utfordringer med å følge opp og motivere elevene sine. Spørsmålene rundt personvern har få retningslinjer, men utgjorde stort ubehag for både lærere og elever. Igjen ser det ut til at det sosiale og kulturelle innholdet led mens det akademiske innholdet var lettere å sikre.

Foreword

First and foremost, I would like to thank my supervisor Anders Mørch. Thanks for all the advice, input, tips and useful feedback. Thank you for always being available. I don´t think there is anyone who answers emails as fast as you do.

I would also like to thank Miriam Segal, who administers the KDL course. Glitches in information posted online has proven to be a challenge for me and having someone who can answer my questions has been a big help.

Thanks to the teachers who participated in this study, sharing their experiences with me. Thank you for being welcoming and open, and for taking the time to do the interviews.

Finally, I would like to thank my family and friends for their encouraging words during the last couple of months.

A special thank you to my sister for her support, time and help in structuring my thesis. I couldn´t have done this without you Hilde!

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1 Introduction

Now that I am writing my thesis, schools as well as society has re-opened. After the lock down in March 2019, schools have had no other choice than to conduct teaching digitally. How have teachers experienced the change, and how have they facilitated their teaching online? Through my master's thesis, I want to shed light on the breadth of how teachers have handled digital teaching. In this lies how they facilitated an inclusive digital learning environment, and how they motivated their students.

1.1 Background

Corona has influenced how we perceive the traditional way of schooling in regard to using digital tools in learning. The title of my thesis is taken from a quote from an elementary school teacher, "*Corona was not the best time of their lives*". My son felt the same way. He grew up with YouTube, Instagram, Gameboy, play station and the likes, meaning that he is well equipped for using digital devices. In the spring of 2020, he was a senior in high school, and wrote on our chalk board at home: "*Skole for meg er merkelig nok et sted jeg slipper å tenke på skole*" (direct quote). In other words, he felt he needed to be on school grounds to both learn and be a part of the social scene at school.

On the other hand, a junior high school teacher, who wrote an article in the local newspaper Budstikka (Nedal, 2021, p. 2), said that after almost two years with the pandemic, students and teachers have gained good routines with home schooling. The students have received the teaching they are entitled to, and they have been able to show their academic competence via digital aids.

The article was published prior to the re-opening of both schools and society. Although the teacher speaks highly of how they have achieved "proper" schooling during the pandemic, I am interested in taking this further as there seems to be multiple perspectives on this issue. Based on the previous mentioned quote by one of the teachers I interviewed, along with my own son's experience of digital homeschooling, I will be addressing the topic of challenges teachers faced when facilitating a digital learning environment in respect to inclusion and student motivation. An inclusive learning environment has to do with creating an

environment for learning where all students feel they are socially, culturally, and academically looked after (Olsen, 2015), where motivation plays an important role.

1.2 Research question

Based on the above, I am interested in looking into how Covid-19 pandemic and the subsequent closing of schools affected teaching practices from a teacher's point of view. Considering this, my research questions are as follows:

What challenges did teachers face in creating a learning environment equivalent to a physical classroom environment?

- What aspects of facilitating an inclusive digital learning environment did teachers find challenging?
- What challenges did teachers face when motivating the students in a digital learning environment?

1.3 Scope of my thesis

Ideally, I would have liked to have interviewed both teachers and students, but due to the vastness of this and time constriction, I have chosen to focus on teachers. I have also chosen to focus on five Norwegian schools and will therefore be no basis for comparison with other schools outside of the country.

I had initially included universal design for learning (UDL) in my interview guide, but during the interviews, I understood that this was not something they were familiar with, or rather the concept of universal design in general was not familiar to them. I have decided to include UDL but under the pretense of "a learning environment suited for all". In this lies the prerequisites defined by Center for Applied Special Technology (CAST, 2018), engagement, representation and action & expression. I will be using this in my analysis. I will come back to this later.

In addition, privacy protection or GDPR (General Data Protection Regulation) has been mentioned by several teachers regarding using a video function either when speaking one-on-one with the teacher or in a classroom setting. GDPR is fronted in our society as an important

issue, but clearly not in the setting teachers have experienced during the lockdown. I will come back to this later in my discussion.

1.4 Clarification of terms used in this thesis

I was born and grew up in the United States. I feel that a clarification of terms I use my thesis is necessary in order to avoid confusion. I refer to elementary school, junior high school, and high school. In the US, elementary school covers kindergarten through 5th grade (ages 5-10) and is equivalent with *barneskole* in Norway. Junior high school covers grades 6-8 (ages 11-13) and is equivalent with *ungdomsskole* in Norway. High school covers grades 9-12 (ages 14-18) and is equivalent with *videregående skole* in Norway.

I also use the term digital homeschooling referring to digital teaching under the authority of Norwegian schools during the pandemic.

1.5 Outline of chapters

Chapter one is an introduction to the project, which you are currently reading. It the next chapter I present relevant theoretical perspectives I will be using. Following this is a chapter providing previous research on the area. Chapter four describes the research method I have chosen and why. Chapter five contains the empirical results and is closely related to chapter six, which is a discussion about the results by comparing my findings with the findings reported in the previous research. Finally, chapter seven contains my conclusions and final remarks.

2 Theoretical framework

I am basing my thesis on the sociocultural view of learning, meaning that knowledge is constructed through interaction and in a context. (Dysthe, 2001) describes learning from a sociocultural perspective as 1) situated, 2) basic social, 3) distributed, 4) mediated, 5) participation in a community and 6) a process in which language is central. This perspective emphasizes the importance of having a social framework that envelopes students' actions. Elements in a learning process include interaction and collaboration. In addition, are the individual's ability, opportunity, and willingness to participate in the learning activity which are crucial for learning.

In the work of planning all-digital home tuition, the teacher's view of knowledge and learning will be central in terms of how they choose to proceed and in what way they plan to use available digital aids.

My thesis focuses on how teachers have incorporated technology into their teaching under the pandemic. When applied to learning, it has to do with the activities that the children engage in to learn, and how they fit in. I am basing my theoretical framework around the understanding that language as well as interaction in a social environment are both essential to learning.

2.1 Sociocultural perspective on learning

Learning in a sociocultural perspective is based on how acquired knowledge and skills have been (historically) and are to the present day transferred among us in society and passed on to future generations to make sense of individually and in small groups (Säljö, 2002). Danish and Gresalfi, 2018) say that "… sociocultural theories focus on the *participation* of learners in the social practices within a particular context" (Danish and Gresalfi, 2018, p. 34). In other words, learning is constructed knowledge brought forth by collaboration and interaction within a (sociocultural) context (Dysthe, 2001). According to Vygotsky (1978), acquiring knowledge is not merely mental process, but a mental process which is dependent on our social and cultural environment. This coincides with what Dysthe (2001) refers to about the importance of a social context, cultural tools and collaboration when it comes to learning.

Knowledge has changed and developed throughout history and is transferred through both language and culture. When knowledge changes, so does our culture – and visa vera. This implies that when we face a problem that needs to be solved, we go about it by using various aids or tools to solve it. This process takes place continuously, in stride with the development of society and technological development. Aids consist of mediating artifacts, in particular thinking and communication, where one uses language, both to "talk to oneself" (internal thinking, thought) and in external thinking (thinking is verbalized, speech). Internal and external thinking together make up communication, which is cultural (Säljö, 2016).

I have chosen this perspective on the grounds that I wish to look at how teachers use technology as mediating artifacts (Wertsch, 1998) in and outside of the classroom. Vygotsky (1978) refers to both conceptual and physical tools as mediating artifacts and digital technology are examples of the latter. Vygotsky's belief is that higher mental functioning along with our actions are in general mediated by tools and signs. Tools being technical tools or artifacts, such as a pc, and signs meaning psychological tools such as language (Wertsch, 1998).

In the sociocultural perspective to learning, one is concerned with studying how actions are situated and created in cultural, historical practices (Wertsch, 1998). This approach can provide a better understanding of how human practices both affect culture and are influenced by the culture where the development of knowledge is essential. We construct knowledge in transaction with our surroundings, and learning is therefore seen as an active process, more than a passive process (Säljö, 2016). This coincides with Dysthe's (2001) and Vygotsky's (1978) view that learning is a social process.

From a sociocultural perspective, communicative processes are central when it comes to learning and development. Listening, talking with each other, working on a project with someone are examples of communicative processes. It is the combination of language and practical interaction that make up the basis for learning (Dysthe, 2001)

I am looking to see how teachers have used technology in their teaching, where both language (text, images, information) and technology, work as mediating artifacts (Wertsch, 1998).

2.1.1 Artifacts and mediation

Throughout history people have had to solve challenges that they are faced with and have created and adapted various tools and utensils to suit this purpose. Artifacts are traditionally thought of as something from the past, but they are equally relevant in today's world, and we use them every day and we sometimes create them. Experience is gained through practice with the tool over time (Säljö, 2002).

In the sociocultural perspective it is not plausible to separate artifacts from human actions, or learning (Säljö, 2002). Artifacts are looked upon as intellectual tools, ideas, and thoughts, which are then transformed into something tangible. Säljö (2002) gives an example of a ruler, where the ruler has its origin from someone wanting to measure something, thereof originating from an idea. The idea is then transformed into what we know as a ruler, or tape measure.

Vygotsky (1978) writes that we participate in a social community, and that our thoughts and actions are influenced by the tools we surround ourselves with. This means that both the physical aspect, e.g., ruler or digital tool, along with the mental aspect, e.g. language, are mediating factors for learning. Artifacts are used in different ways and is the starting point for the development of knowledge (Säljö, 2016). Learning can therefore be understood because of the learner interacting, either in interaction with others or with artifacts, i.e. various digital tools. We can therefore understand learning in a sociocultural perspective as something that takes place either when several people interact, or when an individual interacts with (others, mediated by) a learning tool or other artifact (Säljö, 2002). In recent years, for example, PCs and information technology have become common tools, these are artifacts created in a sociohistorical culture (Säljö, 2002).

2.1.2 Scaffolding

According to Vygotsky we as humans are constantly evolving, where change comes from experience. When we learn something, the knowledge becomes a platform for further learning (Säljö, 2016). Vygotsky (1978) argued that a child's potential level of development or learning was equally if not more important than the actual academic level the child is presently at. The child's present academic level is defined by for example problem solving tasks the child can master alone. Problems the child cannot solve alone without the aid of

someone more knowledgeable defines the prospective mental development. Vygotsky called the area between the actual academic level and the prospective level the "*zone of proximal development*" (ZPD). The framework of scaffolding (Wood, Bruner & Ross, 1976) is built on the principle of ZPD. This involves a more competent other who can supply the learner with physical and/or intellectual support during the period of appropriation of the specific knowledge or skill to be learned. The more the learner masters this specific skill or knowledge, the less support the learner will require, and the scaffolding will decrease until it is no longer needed (Wood et al., 1976). By understanding where a child is in his or her development, a teacher can support the child's learning with the help of instructions based on what the child already knows (Säljö, 2016).

2.1.3   Computer supported collaborative learning (CSCL)

The concept of Computer supported collaborative learning (CSCL) is that it not only mediates interaction, but also shapes how a student reasons when working with learning material. CSCL builds on the concept of scaffolding and shared knowledge, with or without the use of a computer. (Dillenbourg & Fischer, 2010). They refer to the term "integrated learning" for CSCL. In this lie integrating coherent pedagogical activities that occur across multiple social platforms (individual, group, and class) and places that can be supported by various tools. When establishing learner centered methods of instruction, approaches to collaborative learning play an important role, where learners are not left to their own device. Dillenbourg and Fischer (2010) mention that although there is an increasing interest in focusing on the social interactions surrounding a digital tool, individualism is still a key concept. An individualistic approach is based on a *student model* and entails adapting the CSCL environment to the individual. This requires having information about the student in the application, for the application to make pedagogical decisions in relation to the student's progression and the student can learn. There is also a *group model* that is based on the *student model*, where a given task is designed to require more than one student to solve the task.

Both synchronous and asynchronous software are considered means of mediating communication (Johansen, 1988). Synchronous tools enable real-time communication and collaboration between two or more individuals at the same time, like video- or audio-based communication. Asynchronous communication is any communication that does not take place in real-time, like text-based communication e.g. email. Both have their advantages and

disadvantages. Synchronous communication can be appropriate when working on a task with one or several others, where ideally the group comes to a shared understanding. Dillenbourg and Fischer (2010) mention that text-based communication offers the ability to have parallel conversation threads (an affordance) that allow for time to reflect over the content. This is something that voice conversation does not have.

2.1.4 Affordances

The term affordance has to do with interpreting possibilities that lie in an object or a system (Gibson, 1979). Gibson introduced the term affordances, which he initially attributed to what the environment provides and offers animals, for example shelter under å rock. He states that the affordance for an animal is specific to that animal. The concept of affordances has since then been expanded to encompass the public. An individuals' perceptions are shaped through presence in a society and in the opportunities that lie in these environments. The interaction between an individual, artifacts and the environment contribute to our perceptions of what is useful and what is not (Gibson, 1979). That is not to say whether an individual understands the intended purpose or possibilities the object offers, which can affect the motivation of an individual to not act as intended.

Norman (2013) refers to an affordance as the relationship between properties of a physical object and the capabilities of the individual that determines how the object can be used. He argues that an affordance is a relationship as opposed to a property, meaning that the relationship is dependent on the individual while at the same time mentioning that the relationship can be confusing when dealing with a virtual object, for example a technological tool.

Actions are behaviors that are situated in an environment, and if an individual sees a possibility in something at their disposal, they may interpret that as useful and meaningful (Gibson, 1979). A tool can provide different functions depending on the use. When it comes to affordances technology provides, for example an app constructed to guide the learner, it is not a given that the learner sees or understands the possibilities the tool provides. This also applies to teachers, who may not see or understand the affordances a digital tool must provide. Norman (2013) who was among the first to connect the concept of affordances to technology warns that while some affordances can be perceived, others cannot.

Hutchby (2001) takes the affordance concept a bit further and talks about affordances as a text metaphor in connection with technology. He argues that it can help to explain some of the challenges we face in the era of new technology, mentioning what an individual "reads" (interprets) into the technology may not coincide with the intension of the artifact. This process of interpretation is thus not influenced by the technology's built-in functionalities, but by the individual who uses the technology. (Hutchby, 2001). Again, this is based on the individual and how he or she perceives the usefulness of for example a chat function, thus affordance is not only about a set of properties of a tool but also a psychological dimension (i.e. state of mind or attitude).

2.2 Motivation

In a cognitive perspective the term motivation refers to an internal state that comes from a feeling, a desire or drive to accomplish something (Danish & Gresalfi, 2018). It is an individualistic trait. The sociocultural perspective as opposed to a cognitive perspective looks beyond the individual and instead considers the activities and practices an individual partakes in a given context. Along with human agency and how people understand the possibilities in that situation, the individual may or may not be inspired to act in a motivated way (Danish & Gresalfi, 2018) This implies that a person is neither motivated nor not motivated, but their actions are.

Renninger, Yen & Kern (2018) tell us that motivation has to do with the willingness of an individual to engage in a task and accomplish it. This is relevant to what Danish and Gresalfi (2018) refer to as human agency, if a student sees and understands the possibilities or affordances in a given situation, he or she might be more willing and motivated to give it a try. Dewey is profiled as having a pragmatic view towards learning. He argues that the activities children are engaged in at school shood have value in themselves, meaning activities the children understand and that will contribute to their knowledge, experiences, and growth as an individual in society (Dewey in Säljö, p.86). Therefore, working with students' motivation becomes an important part of a teachers' practice. The teacher's own motivation is also central to this process and will be decisive for how much work the teacher puts into teaching and training for the students.

The sociocultural view of learning and motivation claims that we learn in interaction with the social and cultural context we are in (Dysthe, 2001). The motivation one must carry out a given task is related to the expectations we have of the context we are in and the people we are with.

2.3 Learning metaphors

Metaphor: "*a figure of speech in which a word or phrase literally denoting one kind of object or idea is used in place of another to suggest a likeness or analogy between them.*" (Webster-Miriam, 2022)

We use metaphors to better understand a concept or idea, like "It's raining cats and dogs". It is unlikely that cats and dogs are falling from the sky, but figuratively speaking we get the notion that it is raining heavily. Learning is also a concept, which has to do with gaining knowledge. "Concepts are to be understood as basic units of knowledge that can be accumulated." (Sfard, 1998 p. 5). When it comes to learning, there are many different theories associated with what the concept of learning is. One theory is seen in the light of two learning metaphors. Sfard describes these two learning metaphors as seemingly conflicting, but also complement each other. One metaphor is the acquisition metaphor, the other is the participation metaphor. According to Sfard (1998), we are so used to thinking of learning as a cognitive process, that it can be difficult to spot other ways of understanding learning. The distinction between the two metaphors can thus be confused with the difference between an individualistic and a social perspective on learning (Sfard, 1998).

2.3.1   Acquisition

As mentioned previously, the acquisition metaphor describes one perspective to learning. To acquire something means to "to get as one's own" (Miriam-Webster, 2022). In this case to acquire knowledge. This perspective looks at knowledge as a personal commodity, and the learning process the means to obtain this knowledge. Sfard (1998) describes the process of learning in terms of concept development, where the term concept is understood as a basic unit. An individual constructs knowledge that will both build on previous acquired knowledge and enrich the individual with new knowledge, that again will repeat itself in a

similar cycle. She refers to terms such as constructing, appropriation, and transformation, which tells us something about how one acquires new knowledge.

This approach to learning does not allow much room for sharing knowledge with others, or transformation of knowledge. As mentioned before, there are many approaches researchers use to discuss how learning takes place. The sociocultural perspective focuses on how learning is transformed from learning in a community to the individual. This has to do with participating in a community, discussing different views which may contribute to a new understanding, for example a chat room. Sfard (1998) claims that *'each (metaphor) has something to offer that the other cannot provide'* (Sfard, 1998, p.4).

2.3.2 Participation

The participation metaphor has to do with community building. In the classroom setting the teacher is looked upon as the expert participant, while students are novices.

The transition from the acquisition metaphor to participation creates a new focus, it involves a shift, from looking "inside the individual's mind" to looking at what is going on between the individuals (Sfard, 1998). The discussion and language use among researchers has focused more and more on which activities lead to learning, rather than the static concept of the acquisition of knowledge. The participation metaphor represents a more dynamic approach to knowledge where learning is seen as a process rather than a condition. Participation is dependent on a context, for example a discussion in the classroom or on a chat function. The actions take place situated, in a specific culture, in a specific situation and by social mediation.

Participation involves linking learning and understanding (Säljö, 2016). The learner learns through participating in a social setting with others. which can also be seen as a socio-psychological view of situated learning, where the environment itself is important for achieving knowledge. This is notable when talking about participating digitally vs online. This perspective links the cognitive aspect to the social setting. Furthermore, this perspective focuses on the individual's relationship to a group, and not on the activity itself, even if it is the practice itself that identifies the community of practice. Learning described by this metaphor does not consist of the procession of knowledge but of learning through doing activities.

2.4 Inclusive learning environment

The pedagogical concept of inclusion is linked to a students' rights where the goal is to stop all forms of bullying and social inequalities. For students who are not initially vulnerable they also may need to feel included in school, whether it is academic, social or cultural inclusion (Olsen, 2015). The Norwegian Directorate for Education and Training (n.d.) describes an inclusive learning environment as a learning environment where students are encouraged and stimulated to develop both academically and socially. A well-functioning learning environment is dependent on active participation from both teacher and students. It is through learning processes where thinking, interacting, communicating, and collaborating with others that lay the foundation for students acquiring new knowledge. Teachers have a responsibility to ensure that students show good judgement when speaking of others as well as interacting appropriately in varying contexts. A student's sense of belonging in the school environment will be strengthened when treated with respect, as a valued participant. Varying the arenas for learning can contribute to increase students' motivation and understanding. An inclusive learning environment has to do with creating an environment for learning where all students feel they are socially, culturally, and academically looked after (Olsen, 2015), where motivation plays an important role.

2.5 Universal design for learning (UDL)

The concept of universal design covers many areas in our society, where learning is one aspect that encompasses equal opportunities for students to succeed. In other words, designing a learning environment in the classroom, or in my case an on-line environment that offers something for every learner. According to CAST (2018), universal design of learning can be seen as a framework with consequences for goals, methods, teaching aids and assessment. The concept is based on three building blocks: 1) engagement, 2) representation, 3) action and expression. CAST (2018) calls this the "why", "what", and "how" of learning. Engaging students has to do with stimulating their motivation to learn. Presentation has to do with how the teachers vary the presentation of information and learning material. Action and expression have to do with offering students diverse ways they can show what they have learned. "When you use UDL, you assume that barriers to learning are in the design of the environment, not in the student." (Posey, 2018).

3 Literature reviews

The reviews in this chapter cover studies having mainly to do with how teachers have experienced teaching online. Included here is their digital practice, digital competency before the pandemic, as well as challenges they faced along the way. Due to issues involving students' privacy rights when using cameras in the digital classroom, I have included two articles pertaining to the General Data Protection Regulation (GDPR).

Following are two subsections where I have grouped the reviews in the categories: teachers' experience with digital homeschooling, and GDPR.

3.1 Teachers' experience with digital homeschooling

3.1.1 Teachers experience with digital homeschooling during the spring of 2020

SINTEF conducted a survey at the end of April 2020 which shows how teachers in Norway have experienced teaching and learning during the period of digital homeschooling (Fjørtoft, 2020). The purpose of the survey was to examine teachers 'experiences with digital homeschooling. A total of 929 teachers responded to the questionnaire that was sent out. The teachers represent elementary schools, junior high schools, high schools, and vocational schools. The study highlights both positive and negative aspects of infrastructure, working conditions, learning environments as well as the teacher´s digital competence. Most teachers that "trial and error" was most useful in the transition to digital teaching, but several had also benefited from guidance from a colleague or IT resource at the school. It shows that the teachers who were interviewed used several digital resources, such as Teams, digital learning resources the school has licenses for, pre-recorded videos made by the teachers, Facebook and Instagram. Many teachers reported having used video communication with their students daily, as well as holding "live" teaching lessons either daily or weekly. There is no mention about the length of the lessons or if it was to "greet" the students. The choice of working methods was predominantly assignments where students worked independently. Active participation through use of video, chat or the equivalent was somewhat lower, and the least used method was collaborative work. The report mentions teachers gradually running out of ideas which resulted in students working independently. Teachers also reported planning teaching sessions online required more preparation digitally than in the classroom, although

many felt that digital learning resources made it easier to differentiate between students. Most of the challenges that the teachers addressed were related to the students' learning environment and social conditions. Their role as teacher was challenged by the limited pedagogical room for maneuver that arose when students were not physically present in the classroom. The teachers who were in this survey had different starting points for teaching with digital technology. Many experienced an increased workload and less separation between work and leisure. This report also shows that teachers commented on how they saw the purpose of digital resources in connection with their teaching, which they had not been aware of or used before lockdown, and that they will continue to use them back in the classroom. Learning platforms, such as Teams and Classroom, were mentioned by the teachers as useful. Furthermore, teachers thought they would use video solutions to a greater extent, both for meetings and to record learning videos. Despite several challenges that teachers had to overcome, this study indicates that they have generally mastered the digital transition and expanded their pedagogical toolbox for use in the classroom after the pandemic (Fjørtoft, 2020). Whether or not this has been done, remains to be seen.

3.1.2 Analysis of digital homeschooling during the 2020 corona outbreak

The Nordic Institute for Studies of Innovation, Research and Education (NIFU) conducted a qualitative study in autumn 2021 in connection with digital homeschooling during the pandemic. Their research method consisted of a survey, sent out to four respondent groups consisting of school leaders and teachers. They were asked questions in four different topic areas; pedagogical and professional conditions, digital frameworks, organization and team around students and teachers, and contact with the students' home. The study indicates that most teachers had little or no experience in organizing teaching digitally prior to the lock-down. Most of the teachers' state that they were able to help students with things they had questions about in schoolwork. 27 percent of elementary school teachers said that they were able to follow up students who struggled academically. Only 23 percent of teachers who teach junior high school answered yes to this. Most school leaders believe that the school to some extent has a common understanding of what good assessment practice entails when pupils do schoolwork at home. Of the teachers, only 38 percent answered correspondingly (Federici & Vika, 2020). This indicates a gap between how teachers feel about the assessment process works as opposed to school leaders. Over 90 percent of teachers report that they feel they have strengthened their digital competency since the lock-down. The

highest proportions are found in elementary schools, junior high schools, high schools and vocational schools. Most school leaders and owners state that there has been a great deal of attention to privacy protection in the choice of digital tools and resources (Federici & Vika, 2020).

3.1.3 Teachers' communication with students during the pandemic

The next survey was held in two rounds in the period of March 27 to May 19, 2020. It was led by a research group at the Faculty of Education at the University of Oslo called FIKS (Research, Innovation and Communication in Schools) (Gilje, Bjerke & Thuen, 2020b). The purpose of the study was to obtain information about how schools had handled the situation while they were closed, as well as looking at how the situation was after the reopening of schools. The first part of the survey was conducted March 27 to April 5, 2020, while the second part was conducted from May 13 to 19 May 2020. The second survey was only sent out to those who had responded to the first survey. The study shows that many of the teachers missed being able to communicate with the students face to face. The teachers emphasized that physical presence in the classroom to a greater extent gives them both the opportunity for direct communication with the students as well as the opportunity to be aware of the students' mood and motivation. Teachers found it difficult to improvise and adjust their teaching practices along the way, as they normally did in the physical classroom. Some teachers reported that they had created assignments that involved collaboration between the students, but the majority answered that students mainly worked independently. The article also mentions that some students worked better during the period of digital home schooling since they could work at their own pace and in their own time. Although many teachers had no for formal support from the school, many got support and inspiration from colleges and on various Facebook groups for teachers. Many of the teachers developed their own learning videos and used digital resources to a greater extent than they had done before the lockdown. Because textbooks were not used as frequently as in the classroom, digital aids were significantly more used. Teachers reported that they would take the methods they used during digital homeschooling back to the classroom. The most prominent difference highlighted in the article between digital homeschooling and teaching in the classroom is the form of contact between teacher and student. The teachers emphasized that the physical presence to a greater extent gives them the opportunity to communicate directly with the students in an unformal way, as well as giving them the opportunity to perceive the students' mood and

motivation and follow up thereafter. This makes it easier to give students relevant feedback and follow up in a more personal way. However, over a quarter of the teachers answered that communication through video worked well for many students.

3.1.4 Learning from the Covid-19 experience when it comes to digital homeschooling

The next study was conducted by Bubb and Jones (2020) in April 2020. It has to do with how teachers and students experienced digital homeschooling, and what, if anything, would they take back into the normal school day. It was an online survey held in two rounds using a quantitative method for analyzing the data. Eight schools were involved, ranging from elementary school to high school. Their findings show that teachers struggled with engaging student participation online, although student autonomy had increased. On the other hand, both students and teachers improved their digital skills during the time with digital homeschooling, and most teachers reported that they felt they had become more competent in using digital tools. The teachers in the survey reported having created more creative and exciting tasks for the students during this period than they had before the lockdown. They also found it easier to create assignments that were interdisciplinary, for example a practical math problem instead of solving it on paper. Students felt a peace of mind they got at home and being able to work at their own pace. However, some of the students answered that they thought the tasks they were given at home were either too simple and repetitive or that the tasks were too difficult, and that they therefore struggled with the work. Most teachers felt they had facilitated the students who struggled academically during this period. This was mainly due to closer contact with the parents as well as facilitating work assignments. The students worked mainly alone and little together in groups. The use of digital aids helped to give students more useful feedback, and most of the students answered that the feedback they had received during the period of digital homeschooling helped. Some of the students pointed out that the teacher «saw» all the students and not just those who always raised their hand in class. However, the teachers replied that they missed giving oral feedback to encourage students in their work. The students enjoyed the period of digital home schooling and explained this by saying that they enjoyed organizing their days themselves, and that it was positive to be able to work with the subjects in the order that suited them best. They also felt that they had more participation in how they organized their own learning and the ways they solved tasks compared to regular school. They experienced becoming more independent during the period of digital homeschooling. Nevertheless, they were eager to return to school,

and replied that they missed friends, the teacher, and the routines at school, in addition to the fact that it was difficult to have parents as teachers.

3.1.5   Teachers' agency

Although the next study is based on university teachers, I believe it has relevance to teachers in general who were faced with setting up a digital learning environment during the pandemic. The purpose of the study is to look at how teachers have handled the digital transformation when confronted with the lockdown of schools and universities. Damsa and Lanford (2021) sent out a survey during the first month of the lockdown to university teachers in Norway. The purpose of the survey was to gather information about constraints the teachers were faced with when they forced to try themselves at integrating pedagogical and digital resources into a meaningful teaching practice for themselves as well as for their students online. The article focuses on teachers' agency, which refers to "the capacity of people to act upon their ideas and plans to transform current thinking or practice "(Damsa & Langford, 2021). Findings show a widespread in digital competency among the teachers prior to the lockdown. This had to do with lack of pedagogical knowledge in how to utilize the functionality in a digital device or resource as it was intended. In addition to lack of pedagogical knowledge in using technology in a teaching setting online, teachers also experienced challenges for those who tried, as well as time challenges (everything took more time) and corona related factors Although most teachers did choose to base their teaching online, there were many who chose to use pre-record lectures and post them online. Damsa and Langford (2021) argue that when looking at teachers' agency one should take into consideration the constraints which they are faced with. In this case, inadequate digital skills, pedagogical knowledge concerning use of digital tools, technical infrastructure, which is not in place and lastly, lack of time on the teachers' part to accomplish what they had set out to do.

3.1.6   Digital homeschooling: The youngest had least contact with the teacher

The next study, conducted by Roe, Blikstad-Balas and Dalland (2020), is based on a survey sent out to over 4,500 parents of children in elementary and junior high school under the lockdown in 2020 and their perception of how digital homeschooling has worked for their child/children. Although I am researching teachers´ experience with teaching digitally, a parent´s perspective is relevant in the sense that in many cases parents have facilitated the

teacher's role. Their study shows significant differences in children's contact with the teacher during the week, following up requirements for attendance online and the extent to which schools use digital tools. Also mentioned is not having to show that they are doing schoolwork during the school day. However, the survey does not show to what extent the teachers have tried to contact the students, without success. This is closely related to attendance where parents who have children in both elementary school and junior high school say that the oldest child has been followed up more closely than the youngest. However, the survey does not show to what extent the teachers have tried to get in touch with the students, without success. Using digital tools when teaching has often been entirely up to the individual teacher, even in the past. That many teachers may have not utilized the digital tools to the full potential is reflected in that parents report the Showbie app being filled up with various exercise sheets in all subjects. The report also mentions that some parents report that their children do thrive with digital homeschooling, receiving good follow-up several times a day, good assignments, and good conversations with each other. However, the latter group is probably in the minority, especially for the younger children. The survey also shows that the way digital tools are used often reinforces individual ways of working. This is reflected in what the parents report about their children's work assignments, consisting of various exercise sheets in all subjects in the Showbie app. Teachers are clearly not aware of the possibilities of what a digital platform has to offer, other than post a writing assignment.

3.1.7   Still a long way to go: Narrow and transmissive use of technology in the classroom

The next study conducted by Blikstad-Balas and Klette, (2020) and is based on datasets from 178 consecutive video-recorded lessons from 47 junior high school language arts classrooms in Norway. The focus of this study is to look at how teachers, who have access to ICT in the classroom, choose to integrate digital technology into their lessons. In connection with integrating ITC into teachers' lessons, the study also looks at the digital competency teachers have, as well as their attitude towards incorporating digital technology into their teaching. Their findings show that most teachers have not included digital technology in a pedagogical active manner. Students work independently on an assignment on their laptop or computer using for example Word or PowerPoint. The authors attribute this to lack of competency the teachers feel they have in integrating digital technology in their teaching, despite their positive attitude. «In summary, access to ICT Norwegian schools enables broad use of ICT in

the classroom, and the national curriculum explicitly places this responsibility on all teachers across all grades» (Blikstad-Balas & Klette, 2020)

3.2 General Data Protection Regulation (GDPR)

GDPR - General Data Protection Regulation is supervised and followed up by the Norwegian Data Protection Authority. The purpose of GDPR is to strengthen fundamental rights of individuals when processing personal data digitally.

The Personal Data Act (2018) consists of national rules where the EU Privacy Regulation (also called GDPR - General Data Protection Regulation) is incorporated by a reference clause. (Personal Data Act, 2018). The purpose of GDPR is to strengthen fundamental rights of individuals when processing personal data digitally. With Corona and full digital homeschooling, new privacy issues have been brought up. A normal school day where you meet physically does not normally involve the processing of personal data in the way that digital teaching does. The changes in the form of teaching during the pandemic bring about the need to think about the privacy of students who participate online in a completely new way. The Personal Data Act (2018) regulates privacy issues, but there is nothing specific pertaining to utilizing for example, video conferencing in a digital classroom where the students are at home. It comes down to interpretation of the stipulated regulations.

3.2.1 Can online teaching come in conflict with GDPR?
The next article brings up the topic of teachers who are not permitted to use teach digitally. The Union of Education Norway (Utdanningsforbundet) has received several reports from concerned school representatives from different districts regarding some municipalities that refuse teachers to teach via online platforms. They justify this by claiming that it violates GDPR guidelines, ie students' privacy, for example in the home (Korsmo, 2020). The students can, for example, gain access to other people's homes by using a camera and that conversations via the internet can be filmed or recorded. Korsmo (2020) interviewed a representative from the Norwegian data protection authority, who explains that it is up to each municipality to make a choice of allowing or refusing use of digital technology in teaching. They are not at liberty to overrule the municipalities decision. At the same time, The Norwegian data protection authority representative mentions that they do not want student privacy to be used as an excuse for the municipalities not to go the extra mile to make

digital teaching work. It is possible to conduct digital teaching in good and privacy-friendly ways, he says. One way is by having everyone who is logged in turn off their microphone and camera (Kosmo, 2020). When asked what these teachers should do, his reply was that it is not their role to come up with that kind of advice. Their role is to enforce the rules (Kosmo, 2020).

3.2.2 Can teachers require that students have their camera on?

Digital homeschooling with video education have become the new norm during the corona pandemic. The next article is based on statements from students who feel pressured into to having the camera on during sessions in the digital classroom. Some may have challenges at home, be ashamed of clutter, siblings walking around, or other things they do not want to be visible to others. Others may find it extremely uncomfortable to show themselves on screen to the whole class (Nøttveit, 2021). Nøttveit (2021) interviewed Novak, a high school principal, who opened for teachers to be able to require that students have their cameras on during a digital class where there is a pedagogical justification. Novak mentioned having set up some guidelines for this, mentioning that students are welcome to use their own background that covers the surroundings when they are required to have their camera switched on. Novak argues that being able to see the face of another is an important part of informal communication, which helps create security and good relationships between people. Good relationships are a foundation for learning. Not seeing the faces of those you talk to from time to time can have the opposite effect, namely create insecurity, which is something that can hinder learning. Nøttveit (2021) contacted Nervik at the Norwegian data protection authority and asked if teachers can require that students have their cameras on during a digital class. Nervik replied that they had no definite answer to whether teachers can demand that the students have their cameras on. She recommended that teachers are conscious of how they use the camera in their teaching online. Be aware of when one has the camera on and off. Decide when it is necessary and why it is appropriate (Nøttveit, 2021). In summary GDPR regulations are open for interpretation, and because the Norwegian data protection authority have no definite answer to whether teachers can require their students to have their camera on, or whether municipalities can refuse teachers to teach using online platforms, the decision is left up to municipalities, school leaders and teachers.

4 Research design and methods

In the next chapter, I will present my choice of research method, how the research in this study has been carried out and why I have chosen a thematic analysis to systematize my data.

Every empirical study should be based on a research design that explains what kind of approach has been used in the study. The different stages in the research process will also have influence on the research question(s) (Thagaard, 1998).

4.1 Qualitative research

Silverman (2014) states that a research design is governed by what one is seeking to answer. When choosing a method of research to use, whether it be quantitative, qualitative or a combination of the two, there are guidelines to follow depending on what you are researching. Quantitative research involves numerical data where the researcher in interested in analyzing the relationship between variables (Silverman, 2014). It is governed by a linear process where the various aspects of the research process follow one another in time (Thagaard, 1998). On the other hand, qualitative research involves analyzing real-life situations, social phenomena, as well as individual experiences (Silverman, 2014). The model used with qualitative researching is not linear, but cyclical (Thagaard, 1998). This entails that the process of analyzing the data will often be a repetitive process. According to Thagaard (1998), the work with interpreting and analyzing the data cannot be separated. She accredits this to the fact that when a researcher is analyzing the data, she is at the same time thinking over how to interpret them in terms of her research question(s). This in turn can result in altering your perspective and research questions.

In my case I am interested in gathering information about how teachers have experienced the abrupt change during the lockdown from a classroom environment to a digital learning environment. This includes covid-19 as a social phenomenon and teachers' experiences with facilitating for digital learning. Based on this, I chose to use a qualitative research method.

There are several methods to choose from when collecting data, for example observation, interviews, sending out questionnaires or analyzing tapes and conversations. (Silverman, 2014). These are just a few. I chose to use semi-structured interviews, as this provides me

with an opportunity to choose topics and questions in advance, while at the same time allowing my informants to mention other things outside of the questions (Dalen, 2011). This opens for flexibility and gathering information that I had not planned on.

4.2 Selection of informants

As mentioned earlier, the inspiration for the theme of my thesis derives from my then 18-year-old son. He struggled with digital homeschooling, and that inspired me to want to look into the different aspects of digital homeschooling. I knew my son's viewpoint, so I decided to look at this from a teacher's perspective. I used my network to find teachers that were willing to help me in my research. This included my son's teacher in high school, my friend who is a teacher, a friend of my sister who is a teacher, as well as contact with a teacher through my supervisor. This automatically defined which grade levels I would be looking at.

I interviewed 5 teachers, ranging from primary school to high school. Table 1 below gives an overview over the teachers, level they teach and which digital resources they have used. Grade levels indicated are from when the pandemic started until the Norwegian society re-opened 2020-2022.

Table 1 Data on informants

Informant	Level	Digital resources
Informant 1	Elementary school, grade 2-4	iPad, Teams, Book Creator, Pages, Showbie
Informant 2	Elementary school, grade 2-4	Chromebook, Meet, Classroom
Informant 3	Junior high school, grade 7-9	Teams, Apple TV in the classroom, Showbie, iPad, FaceTime, Whereby
Informant 4	Junior high school, grade 7-9	Teams, Wooclap, OneNote, Classroom screens
Informant 5	2 high schools, grade 10-12	Teams

4.2.1 Digital resources

Because not all the above-mentioned digital resources may not be familiar, I decided to give a short description of each. Chromebook is similar in size to an iPad (tablet) but has a keyboard. Google Meet, Microsoft Teams and Google Classroom offer digital conferencing.

The differences lie in that Google Meet is just for video conferencing, whereas Microsoft Teams, Showbie and Google Classroom are characterized by offering an all-in-one collaboration tool that allows teachers to give assignments, give their feedback on submitted assignments as well as other features. Book Creator is tool that allows teachers and their students to create multimedia ebooks based on class assignments and topics. Pages is an Apple product for word processing. Whereby is a conferencing tool. FaceTime is Apple's video and audio chatting platform between two devices. Wooclap is an interactive electronic platform used to create polls and questionnaires. Microsoft OneNote is a digital notebook that automatically saves and syncs your notes as you work.

4.3 Data collection

Qualitative research opens for several approaches to doing an interview: structured interview with pre-formulated questions, open semi-structured interviews and open interviews. The choice of approach depends on which perspective the researcher has. The purpose of an open interview is to have a dialogue about specific themes, but without pre-planned questions. (Thagaard, 1998; Kleiven, 2011). On the other hand, a structured interview is conducted based on questions that are determined in advance as well as the order they are presented to the informant, like a questionnaire but only oral and not written. The benefit of a structured approach to the interview is that the responses are directly comparable with each other when analyzing the data (Thagaard, 1998). Semi-structured interviews seek to obtain descriptions of the interviewee's experience and understand the world from their point of view. A semi-structured interview is close to an everyday conversation, but the conversation has a purpose that requires a distinctive approach (Kleiven 2011).

I chose a semi-structured interview form in this study because it offers a flexible way of approaching information, at the same time opening for follow-up questions, as well as the informants' own additions.

4.3.1 Interview guide

An interview guide covers key topics and questions that together will cover the most important areas the study will shed light on. My interview guide is in Norwegian, as well as the interviews. It was only after the interviews were over that I decided to write my thesis in

English. The interview guide consists of sections having to do with teachers teaching digitally in the period spring 2020 thru autumn 2021:

- How did teachers experience the transition to full digital teaching
- How they have facilitated digital learning
- Challenges
- Changes in teaching practice
- What do they know about UDL
- Something they feel I should have brought up

4.3.2   Interviews

During the interviews it became clear that I had to expand the time frame thru spring 2022. Because I am researching use of digital resources in schools during the pandemic and afterwards, I decided to do the interviews via Zoom even though the Norwegian society has reopened. Prior to the scheduled zoom-interviews, I asked each informant to sign a consent form, which was sent to them by e-mail. In the consent form I informed them of my intent with the interviews and length of the interview (45-60 min). In addition, I informed them of their rights regarding privacy protection, storage of data and their right to withdraw from the project as an informant at any time.

The zoom meetings were stored in a folder internally on UiO's data domains that are password protected.

The interviews started with simple factual questions about challenges with being met by the lockdown and having to teach digitally, and their competency in digital teaching. After that each interview took its own life. I used the interview guide as my guideline. Follow-up questions were also used so that the informant could elaborate on their answers. Before the interview ended, I asked if the informants had anything to add. Through the interviews, the importance of having a listening attitude to be able to ask relevant follow-up questions was experienced (Thagaard, 1998). I had initially planned on looking at how teachers experienced teaching digitally during the lockdown, but during the interviews when I asked for example, how they defined a "good" learning environment (UDL), teachers brought up "*digitalt eller i klasserommet*? ". So, this was taken further in the following interviews, digital vs classroom environment in my analysis.

4.4 Organizing and analyzing the data

Qualitative researching is characterized by having a flexible research program when it comes to collecting and analyzing the data (Thagaard, 1998). She emphasizes the importance of both processing and analyzing the data parallel. The reason for this being that the researcher can then adjust what to focus on in the data collection based on the previous step in the analysis. This implies that the research question(s) one started out with may be altered to accommodate the outcome of this process. Thus, there is a mutual dependency between the research question(s), data collection, analysis, and interpretation of the data (Thagaard, 1998).

4.4.1 Thematic analysis

A thematic analysis is a method based on working with themes in a researcher's data collection and is commonly used with analyzing interview data (Silverman, 2014). The process involves organizing and identifying patterns (themes) in the dataset, which describe the data. There are three approaches to help analyze the data: inductive, deductive, and abductive.

4.4.2 Abductive approach

When starting the process of analyzing data using a qualitative method of research, it is often that a researcher starts by developing a theory or hypothesis based on the data collected. This is known as an inductive analysis, or a bottom-up analysis. In contrast is a deductive analysis, where theory is tested based on the collected data. (Thagaard, 1998). Because the two approaches to analyzing data do not by themselves open for other than either or, there is a third approach. The third approach mentioned by Thagaard (1998) is abduction, which combines the previous two mentioned approaches by analyzing the interaction between the two.

According to Thagaard (1998), abduction is a research strategi where both theory and empirical data are used as a starting point for gaining expanded knowledge about a phenomenon. This was accomplished by categorizing the data collected into categories (inductive approach), which derive from the categories specified in the interview guide (deductive approach).

I started my analysis with an inductive approach towards my data, using categories based on my interview guide and research questions. These were related to how teachers have facilitated inclusion and motivation as well as how they experienced the transition to full digital teaching. Several aspects from the data surfaced after the first stage of analysis, such as student motivation and privacy protection issues (GDPR). The second stage analysis was conducted deductively to look for concepts or theories and test it/them against my data. The UDL framework represents guidelines in connection with facilitating a computer-based learning environment that is suited for all. I started with elements from the three principles in the UDL framework, mapping my data into categories from each, for example, collaboration, vary resources, facilitate coping skills (engagement), presentation of teaching materials (representation), and vary how students can express knowledge (expression).

This led me to an abductive approach, where I analyzed my data bottom-up (inductive approach) then top-down (deductive approach), reiterating the process. When the first round was done with categorizing my data, I realized that I had to redefine my categories. Several aspects from the interviews surfaced, such as student motivation and General Data Protection Regulation (GDPR). Parallel to this, I tested my data collection against my research questions and saw that I needed to incorporate both student motivation and GDPR in the analysis. This led me to an abductive approach, where I analyze my data top-down parallel with bottom-up and then reiterating the process.

4.4.3   Transcribing

The interviews were held during a 2-week period. I transcribed the following days after the interviews using the app f4transkript, which is available for all students and employees at the University. On recommendation by my supervisor, I have transcribed in Norwegian and have not translated them to English.

Table 2 Results of my analysis

	Themes	Codes
1	Facilitating learning digitally	• Including • Activating • Collaborative assignments
2	Following up students	• Absence of physical presence • Student motivation
3	Teacher's experience with digital teaching	• Workload • Limitations with digital tools • Challenges
4	GDPR	• «cyberbullying» • Outspoken students • Invasion of privacy

As stated before, I interviewed teachers from elementary schools through high school. Involvement from parents was an important issue for both elementary schools and junior high schools, but not mentioned for high school. Although this is a factor that clearly inhibited teachers following up students, I have not. When it comes to following up the students, involvement from parents in the tasks children were to do during digital homeschooling at home was something of an unknown to teachers. Who did the schoolwork? This was clearly a factor when evaluating a student's academic progress in a subject.

4.5 Ethical considerations

Research ethics are about the researcher's role and practical implementations in a project. This includes protecting one's informants, meaning to do everything possible to ensure that it is not possible to identify these individuals. Prior to interviews it is important to inform potential informants about what the project is about, so that they are aware of what they are giving their written consent to. Furthermore, it is important to inform them of their right to withdraw from the project at any time, without having to give an explanation (Silverman, 2014; Dalen, 2011). Prior to the interviews, I sent a consent form to my informants by email with information about the project, what they were saying yes to, and that it was their right to

withdraw from the project at any time. The consent form was "signed" and emailed back to me (Appendix 2).

Several weeks prior to the first interview I sent in an application to the Norwegian Center for Research Data (NSD) for approval of my project (Appendix 1). This was necessary because I would be recording the interviews using Zoom. The interviewee could be recognized by their voice, which in terms of GDPR is personal information.

4.5.1 Reliability

When interpreting data there are certain criteria that should be present in order to be able to argue that the findings in the study have authenticity. In other words, the findings are reliable. The criteria say something about how thoroughly the research has been carried out and if the study can be repeated by me or by others, with the same findings and the same conclusions. By choosing informants with different experience backgrounds, one increases the opportunities to illuminate the research questions from different angles. (Kvale, 1997). My informants range from elementary school through high school, supplying me with data from teachers at all grade levels, different school districts as well as varying in age. The audio recordings from the interviews using zoom are transcribed directly. My view is that the findings presented here are relevant in terms of answering what I want to find out in this thesis. I have attempted to reproduce my findings in a neutral and descriptive manner. To ensure high reliability in data collection, the data must be processed so that they are clear regarding which informant has said what (Larsen, 2017). I have done this by referring to the teachers as informant 1, informant 2, informant 3, informant 4 and informant 5. Informants 1 and 2 are grade schoolteachers, informants 3 and 4 are junior high school teachers and informant 5 is a high school teacher.

4.5.2 Credibility

Credibility is about the extent to which the research results correspond to reality (Silverman, 2014). In other words, if the research process has been conducted in a trustworthy manner (Thagaard, 1998; Kvale 1997). Research is based on objectivity, where the researcher is perceived as independent of the informant. Thagaard (1998) claims that this is not the case when people interact with each other. Because of subjectivity, the researcher must argue for the credibility of the study by clarifying the importance of his or her position in the research

project. This means to reflect over the context around data collection and how the relationship to the informant can have influence over the data the researcher receives (Thagaard, 1998). Although I was acquainted with four of the five teachers I interviewed, I feel that this did not impact the quality of the interviews.

4.5.3 Generalizability

Triangulation can increase the validity of the study because the use of several methods can support the findings made (Silverman, 2014). This means that the data material can be strengthened through several sources. (Silverman (2014) also claims that it is difficult to report qualitative data in a meaningful way, because it is difficult to provide evidence of the informants' perspective, which one should present. However, making the data visible through a clear description of context, as well as providing good justifications for the choice of participants, method, and analysis technique, could increase the transfer value of one's research (Silverman, 2014).

5 Presenting my findings

This chapter is designated to presenting my findings. My themes, as mentioned previously, include teachers' experience dealing with teaching digitally, facilitating online learning for their students, what they knew of universal design for learning and privacy protection.

Challenges were faced in all categories; challenges teachers were faced with prior to lockdown, facilitating online learning for their students as well as challenges they met along the way.

Informants 1 and 2 work with elementary school students, informants 3 and 4 work with junior high school students, while informant 5 works with high school students in two different high schools.

5.1 Facilitating learning digitally

As mentioned previously, teachers encountered "challenges" in every aspect of coping with the changes due to online teaching. This next subchapter deals with how teachers have facilitated online learning/teaching regarding inclusion. Here I ask how they handled including and activating their students digitally.

5.1.1 How did the teachers include their students online?

Excerpt 1

> [...] sørge for at alle blir sett. [...] Jeg har opprettet blant annet en liten gruppe, vi bruker showbie, som det heter. Det er en slags classroom, der ett av elevene eller mer kan få en oppgave de kan jobbe med, og de kan levere sine ting. I den gruppe kan du opprette en slags rom hvor de kan snakke med hverandre, men ikke direkte som en chat, men mer som en gruppechat på Messenger. Så der er sånn «Hei hvordan går det» - og så kunne alle svare på det. Så det var en måte å tilrettelegge for den sosiale kontakten. (*Informant 1*)

Informant 1 informed me that it was important that all students felt they were a part of the digital classroom. By setting up a "chat" function in the Showbie-app, students were able to maintain a form of social contact with each other, as well as with the teacher.

Excerpt 2

> Altså inkludering er jo på en måte å få med alle, med hele ryggsekken de har. Og det er et umulig begrep. Skal ha fokus på det, men det å gjennomføre det er ikke

mulig i det hele tatt. Men igjen så er det med inkludering, i hvert fall faglig, lettere digitalt enn klasseundervisning fordi mye av det digitale verktøyet vi bruker er det nivå på. Og det er også flere verktøy som blir mere avansert etter hvordan barnet jobber, eller barn som ikke klarer minus stykker, så får han flere minus stykker enn det barnet som klarer minusstykker. Så at det blir på en måte klar, maskinen klarer vel til en viss del i perioder å tilrettelegge bedre enn oss. Fordi har du svart feil på alle de doble konsonantene, så får du mange doble konsonanter neste gang du logger deg på, og vi klarer ikke å inkludere så lett faglig, som datamaskinen gjør på noen områder. (*Informant 2*)

[...] det handler om det menneskelige og å vite hvem elevene er. Jeg vet jo hvem eleven som trenger en klapp på skulderen og hvem som trenger en tommel opp og hvem som trenger å være i fred og ro, og hvem som ikke trenger. Og det klarer ikke en maskin å finne ut av. (*Informant 2*)

[...] så det medmenneskelige er jo helt noe annet. Når du har vanlig klasseundervisning, lettere å inkludere sånn sett, men faglig tenker jeg nok maskinen nærmer seg oss. (*Informant 2*)

Informant 2 taught second grade when the lockdown started. This informant has a similar response to my question, that including all students has to do with letting the students know and feel that they are an important participant. At the same time saying that implementing inclusion is almost impossible. Informant 2 also informs me that the classroom environment offers something the digital classroom lacks, and vice versa. In the classroom the teacher knows who needs a reassuring tap on the shoulder or encouraging words to boost the student's motivation. On the other hand, the informant mentions that the online resources they use offer level differentiated assignments depending on where the child is academically. The classroom provides a learning environment that nurtures the needs of a student as a whole individual, whereas using digital learning programs which are level differentiated adapts to the students' needs academically.

Excerpt 3
> Nei, at alle skal føle at deres bidrag er viktig da, og velkommen og naturlig. Så da prøvde vi ulike [...] som man har på zoom, [...] breakout rooms. [...] Jeg hadde - vi hadde alltid morgenmøte hver morgen. [...] med den primærklassen på en måte da. Og jeg hadde også stort sett oppmøte i alle timer. Og veldig ofte en felles avsluttning. (*Informant 4*)

Informant 4 tells me that the class met every morning on Teams, and often also at the end of the day. The informant used breakout rooms as an active measure for student inclusion, activation, and collaboration.

Excerpt 4

> I starten gikk det mest på å snakke om hvordan det er å være hjemme, den overgangen, det faglig ble litt borte i starten, og etter hvert så kunne det være en høytlesning eller en tekst eller de skulle lese og svare på spørsmål - sånn leseforståelse, eller å forklare hva de skal gjøre i løpet av dagen. (*Informant 1*)

My interpretation of informant 1 is that inclusion is important, mentioning talking with the students about how they were dealing with the transition from being at school to staying at home and what kind of plans they had for the day. This has to do with both letting the students know you care and activating the students in the sense that they think ahead, what is their plan for today. It was to be expected that focus on academics took second place for a while. Eventually academics were focused on, for example reading aloud or reading a text and answering questions. This indicates that communication with the students was a priority and underlines the importance of inclusion.

Excerpt 5

> Noen kjørte ett opplegg i klasserom – så hadde man på et kamera og de hjemme var med i undervisningen. Mens andre lagde doble undervisningsopplegg. (*Informant 5*)

Doble opplegg?

> Ja, sånn at de på skolen hadde «live» undervisning, mens de hjemme hadde oppgaver. (*Informant 5*)

Informant 5 works at two high schools and describes two approaches to teaching "online" when schools were partially opened. The first approach was where half of the class is physically in school and the other half at home following the lesson over Teams. The other approach was having half of the class in school and the other half working at home alone on assignments. Having a camera on during class, where students sitting at home can participate in with the other students in the physical classroom encompasses inclusion, activation, and motivation as opposed to giving an assignment to work on alone.

5.1.2 How did the teachers activate their students in learning?

The next excerpts have to do with how the teachers activated their students. My informants have interpreted this both in the physical sense and in connection with including students.

My next informant talks about activating students in a creative way, combining outdoor activity with learning core subjects. In this case math.

Excerpt 6

> Vi tenkte mye på hvordan vi skal få aktivitet blant barna, hva skal vi gjøre? Så vi valgte jo en del av oppgavene å ha uteoppgaver, hvor de var aktive, hvor de hadde bl.a. bingo f.eks. ute, at de skulle finne ting ute, de skulle hente så mange ting, de skulle ta bilde av, skulle lage for eksempel mattestykke i naturen, finne 8 kongler, 8 steiner og, så vi hadde en del praktiske oppgaver. [...] så vi prøvde mange forskjellige kreative måter å få de og foreldre, for vi syns det skulle være lystbetont og derfor dro vi inn foreldre inn i noen av disse settingene. At de skulle sjekke hvor mange ganger mamma kunne hoppe på 1 min. Ta tiden og sånn. [...] med at de var så små digitalt at det var en enkel måte for oss for å få dem engasjert og i aktivitet og også at de hadde også faglig fokus på de oppgavene vi hadde gitt de. (*Informant 2*)

This informant talks about creative solutions when it comes to activating the students. By combining outdoor activities and for example math, the children are both physically active and at the same time learning math. There were also tasks involving participation from parents. The idea was that the activity was pleasurable for both children and parents. Here lies activating the students both physically and mentally, variation in math class with combing an outdoor activity for learning math and promoting engagement and motivation by offering an activity that is fun. Due to the students' young age there were challenges facilitating active participation digitally.

Excerpt 7

> Aktivisere, de har jo hele tiden et sett meg oppgaver som de skal gjennomføre på 60 min f.eks. Så det er laget nok opplegg til dem, sånn at de ikke blir ferdige på 10 min. [...] De ble ganske selvgående på jobb naturligvis, når de har drevet å jobbe for seg selv. Og likens i sånne type fag som gym og valgfag og fysisk aktivitet, det er jo et valgfag. Der har de hatt oppdrag der de har skullet gå ut og finne et eller annet, filme seg selv og ta tiden kanskje, hvis de skal sykle opp en bakke, sjekke pulsen, og sende det inn som en video. Og samme i mat og helse, lage en typ fjernsynskjøkkenet film. Så jeg tror de har hatt nok å holde på med. (*Informant 3*)

One of the subjects Informant 3 teaches is Norwegian and indicates that the format of assignments given digitally in core subjects like Norwegian, were similar to assignments given at school. By this meaning solving written tasks, like an essay. In contrast, electives, like physical education or food and health, were handled differently. Students could send in a video of themselves as if they had their own cooking show on TV. This indicates to me that when it comes to core subjects, there was little change in how assignments were administrated, while for electives students were given the opportunity to be creative when handing in assignments. This again promotes motivation and autonomy for the students being

able to choose alternative methods and having to make decisions on how to carry out their plan.

5.1.3 Collaborative assignments

There was varied use of collaborative work as a method for teaching, where most of the teachers have tried during the pandemic but not all have succeeded due to challenges.

Excerpt 8

> For vår del krevde det at da må du få foresatte til å avstemme med hverandre, Ja det [...] følte som låst - sleit nok med å holde hjulene i gang alle sammen. Nei, det har vi ikke gjort. Men det man kunne gjort er å dele dem igjen inn i breakout rooms. (*Informant 1*)
>
> Har dere brukt det?
>
> Nei, for de er så små. Jeg brukte det et par ganger, men det ble bare kaos. "Jeg skjønner ingenting" "Ååå skjermen er blitt borte" Ja greit - nei så det funka ikke så godt. (*Informant 1*)

Informant 1 works with elementary school children, who are reliant on their parents to follow up and coordinate any type of collaboration the school wishes to do, which indicates that for younger students arranging a collaborative task digitally was not worth the time and effort.

Excerpt 9

> Ja, det har de gjort og jeg har jo hatt elever som har vært på hjemmeskole i et halvt år på grunn av underliggende årsaker. Og de har og vært med på gruppearbeid. For da vi f.eks. hadde gruppearbeid/samarbeid i klasserommet. Og da har de gruppene hatt dem som er med på Facetime fot eksempel. Så det har fungert fint. Så da har de samtaler der, og de er helt vant med å gjøre det, så nå er det ikke - nå spør dem ikke en gang. Sånn der, "Hvordan skal jeg få kontakt med den som er hjemme med korona?" Det er bare å ringe de. Så det gjør de helt på eget initiativ nå, sitte og samhandle med den som er hjemme. De er fryktelig raske til å finn måter å få gjort ting på. Det har de jo fått øvd seg i. (*Informant 3*)

Here informant 3 talks about working together in groups using Facetime, which has worked well. This is something they have continued to use in the classroom due to some students having to stay at home because of underlying causes. Informant 3 also talks about the students being more independent and increased autonomy.

My next informant, who works with high school students, informs me that collaborative tasks in breakout rooms worked well. The excerpt is in connection with the Corona restrictions opening for schools being partially open. In this case my informant taught half of the class in

school, while the other half worked on individual assignments at home. Lack in quality in the students' work led to a change in assignments for those working at home.

Excerpt 10

> Ja, det som hjalp, det som jeg synes kanskje fungerte litt bedre var å lage samarbeidsoppgaver, fordi de som var hjemme kunne finne egne rom. Vi brukte veldig mange såkalte breakout rooms i Teams. Der hvor vi designa oppgaver [...], hvor du var nødt til å samhandle i en video. Da får man [...] mye bedre for arbeidet sånn at man ikke føler seg isolert fremfor å skrive det, lese det. De kan interagere selv om de sitter, som jeg synes er veldig viktig. Og den andre der hvor man filmer bare klasserommet, [...] Til vanlig hvis jeg har en plan og så kastet jeg ut en brannfakkel om et eller annet og så kommer det noe tilbake og så på den måten så får man liksom engasjert og det er ganske vanskelig hvis de er separerte. (*Informant 5*)

> Ja særlig i faget for eksempel instruksjon og ledelse - der har vi alle, der er det gjerne deler gruppearbeid, delt i forskjellige grupper og de har egne kanaler hvor de møtes. Og da ville vi, da ville vi ha diskusjoner og møter som vi lærere bare dukka opp i (*Informant 5*).

Informant 5 informs me that working together on projects increases students´ feeling of inclusion and active participation in contrast to working on an assignment alone. The teacher also mentions the importance of engaging student's active involvement in discussions, which was challenging digitally as opposed to in the classroom.

5.2 Following up students

When asked how the teachers followed up their students, they mentioned challenges with following them up digitally.

5.2.1 Absences of physical presence

Excerpt 11

> Vanligvis så introduserte vi norsk 2-3 timer i uken [...] kuttet vi det tilbake til 1-2 [...] ..vi håper de har fått meg seg noe. Mye selvarbeid dessverre. (Informant 1)

Here informant 1 tells me that they started out with the same routine as they had before the lockdown, with Norwegian classes 2-3 hours a week. But due to the circumstances and the students young age, the teacher found it best to cut back to 1-2 hours a week, mentioning that the students were left to work alone as a consequence of fewer hours teaching. This effects both learning and participation-

Excerpt 12

> Det er jo det utfordringer er, det er jo å få med de barna som ikke henger med -for det er vanskelig å følge opp, vanskelig å se hvordan de jobber, vanskelig å se

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hvor tunge strategier de har. For jeg klarer ikke helt å se for vi var jo, jeg treffer de på Meet 3-4 ganger om dagen, men imellom øktene når de skulle jobbe for seg selv fikk jeg jo ikke observere de. [...] Og du vet heller ikke hvor mye de gjør, og hvor mye hjelp de får hjemme. Noen foreldre kanskje svarer for de, og jeg kan ikke dobbeltsjekke det på samme måte som når jeg sitter med undervisning selv. Så det er nok de svakeste som trenger oppfølging som på en måte blir taperne i den digitale skolen da. (*Informant 2*)

In this excerpt my informant talks about challenges following up students due to them not being physically present in the classroom, what their strategies are when working with assignments and how much parents contribute to their child's work. Not being able to follow up the student continuously can be a hindrance for adapting learning to what the student needs. This can have effect on learning.

Excerpt 13

Ja, i klasserommet er det mye enklere å få til en sånn umiddelbar, eller en tilrettelegging som fins der og da enn når vi har hjemmeskole. For det er sånn - Jeg vet ikke helt. Sitter den eleven og jobber? - det vet ikke jeg. [...] Så i klasserommet er det mye bedre, det er bedre læringsmiljø der for det er den umiddelbare, og nå ser jeg at han eller hun sitter og strever med noe [...] Du ser det jo på hele kroppsspråket og dagsform og humør. Ja, Det er lettere å få tak i dem i klasserommet, naturligvis. For du ser hele eleven. (*Informant 4*)

[...] De er flinke til å respondere når de får spørsmål. Men de er ikke like flinke til å stille spørsmål selv. Du må følge opp og, hvordan gikk det her, skjønte du det her, eller kanskje justere oppgaven litt sånn at, si at du trenger ikke gjøre akkurat den den der, men å få til resten. Så, det har vært ganske tett oppfølging av de som er hjemme og. (*Informant 4*)

Både ris og ros, det er mye enklere å sei hvis jeg ser at de jobbe godt i klasserommet - oi det var bra, så langt du har kommet, f.eks. Det har jeg ikke sjans til på hjemmeskole. For ser du ikke hva dem holder på med. (*Informant 4*)

Like informant 3 said, Informant 4 had challenges with not knowing how and what the students worked on assignments at home. Informant 4 mentions that this is due to having a more suited learning environment in the classroom, which does not apply to the digital classroom. The informant also mentions the challenge with adjusting learning tasks to the students need due to lack of communication on the students' behalf. In connection with contacting students, the informant tells me that they responded to questions, but did not contact the teacher to ask questions themselves if there was something they didn´t

understand. This indicates that the learning environment does not function optimally for the student.

Excerpt 14

> I starten gikk det mest på å snakke om hvordan det er å være hjemme, den overgangen, det faglig ble litt borte i starten, og etter hvert så kunne det være en høytlesning eller en tekst eller de skulle lese og svare på spørsmål - sånn leseforståelse, eller å forklare hva de skal gjøre i løpet av dagen. (*Informant 1*)

From this I see that inclusion, activating and following up the student's welfare are present in the method my informant used during the first online sessions with the class. Focus on academics was set aside in the beginning.

Excerpt 15

> Vi delte de opp i grupper. Først møtte vi alle barna for å hilse på og se at alle var lissom på plass, og så delte vi de opp i 4 og 4 ift undervisning, for å følge opp undervisningen. Og noen barn hadde vi selvfølgelig en til en med. Så det var veldig forskjell mens både hele klassen og gruppe på 4. Og unntakene er 1-1 for de som hadde behov for det. Og da hadde vi en voksen som fulgte opp de barna. (*Informant 2*)

In this excerpt including students was also important, as well as induvial sessions with those who needed this. In addition, the teacher mentions having smaller groups online in order to follow up on the students and how they were doing academically. This indicates the interest to nurture active participation, inclusion, and activation.

5.2.2   Students' motivation

Because students' motivation surfaced several times during the interviews, I have included this aspect in my study. The reason being that I see this as an important factor in terms of learning.

Excerpt 16

> I starten var den grei, og så begynner det å bli mindre [...] ...merker det etter ca. Tre, fire uker. Det blir mye mindre levert. Folk kommer til sånn målmodus sånn halvveis i april. [...] og igjen så er det fokus på de svakeste elevene. (Informant 1)

Informant 1 tells that in the beginning of pandemic students were motivated to do schoolwork, but after a while their motivation sank. They were not so motivated to hand in assignments as they had been in the beginning. The teacher also mentions that their main focus was on those who struggled academically.

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Excerpt 17

> [...] for et par av de introverte elevene som jeg har hatt, de har fått mer motivasjon. Fordi de har fått roen på å sitte og jobbe og har hatt foreldre som har gitt de, som ser barna sine. Som har gitt de muligheten til å ta den tida de trenger på få å løse oppgaver. Så de har nok fått mer motivasjon, mens andre var helt sånn, de var helt oppgitt, ta fram Chromebooken når de kom på skolen etter pandemien. Det var sånn "Nei, orker ikke mer". (*Informant 2*)

Here informant 2 explains that for some students who have an introvert tendency, motivation to work rose during the period of digital homeschooling. This was due to being able to work at their own tempo, as well as being supported by their parents. On the other hand, when schools opened again, and the children were asked to open their Chromebook for schoolwork, some displayed a strong reluctance. This indicates that there are challenges with both facilitating a digital learning environment and a physical classroom environment when it comes to encompassing the individual needs of a student.

Excerpt 18

> [...] motivasjon, det er mange som har fått bedre arbeidsrutiner tror jeg. Fordi de må passe på klokka, sett seg ned, de må meldes i timen, og de har nok blitt bedre til å lese instrukser. Hva skal skje den timen her, sånn at de får meg seg den type instrukser da. De bli vant til å løs det, for det e det vi legg ut. Du skal gjøre det og det og det. Det har dem fått øvd seg på. Jeg har ikke målt om dem har vært flinkere, men de har måttet lært seg å følge med. I kalender og sånn, hva skjer i dag. Det har vært mer en vane, å sjekk den for det var dem ikke flink til før. Det var sånn, "åå hvorfor skal vi sjekke kalenderen?" For der er all informasjon som du trenger å vite. Det er ikke alle som har lært seg det, men jeg tror de fleste. (*Informant 3*)

Informant 3 says that her students have acquired better work routines when it comes to knowing what is expected of them. During the pandemic they were required to be aware of what was happening when and where, as opposed to being at school where this is embedded in the school structure. In addition, my informant mentions that the students have increased their autonomy during the pandemic.

Excerpt 19

> [...] jeg tror elever som sitter hjemme og bare får en eller annen oppgave føler seg som en satellitt bit der ute, sånn at de ikke legger noe ... arbeidsmotivasjon og som jeg følte sank som en stein. Og det man fikk igjen når man møtte disse elevene for å se hva de hadde gjort hjemme, så var det som oftest veldig dårlig. (*Informant 5*)

Informant 5 tells me that the students´ motivation sank during digital homeschooling. This is also confirmed by my son. Informant 5 compares the students to a satellite, moving on its'

own, without any affiliation to a school community. Lack of motivation was evident in their work performance.

5.3 Teachers´ experience with teaching digitally

The following excerpts have to do with how the teachers I interviewed experienced teaching online during the pandemic. This includes the teachers' workload in connection with setting up a digital teaching environment, limitations with digital resources and challenges they needed to address.

5.3.1 Workload

Although only one teacher had little experience using digital resources in the classroom, all of my informants experienced challenges arranging a viable digital "classroom" when the lockdown was announced.

Excerpt 20
> Vi har hatt iPad i, nå husker jeg ikke, for det begynner å bli så mange år. (*Informant 5*)

Here informant 5 informs me of their use of digital tools prior to the lockdown

Excerpt 21
> Og planlegge og hvordan gjør vi det framover, for nå blir det hjemmeskole i en uke eller to. Det vet vi ikke. så det har vært mange organiseringsmetoder som vi har prøvd ut. Til slutt gikk det ganske greit. [...] Men det tok kjempelang tid å komme inn i et system som fungerte. (*Informant 3*)

My informants express that organizing teaching digitally has cost them more time during the pandemic than organizing a "normal" physical school day.

Excerpt 22
> [...] vi ble jo kasta ut i det, vi måtte lære oss ting og prøve ting og vi snakket jo sammen ekstremt mye utenom de undervisningsøktene vi hadde, for å gjøre det best mulig da. Og gi hverandre tips og sånn, for vi hadde aldri gjort det før. Så det var jo veldig intenst og læringskurvene var jo, gikk rett til værs (*Informant 4*)

Planning digitals teaching sessions is again confirmed by this informant was time consuming, who also mentions a steep learning curve for the teachers.

Informant 5 tells me that many teachers were "available" 24-7, and that students became accustomed to being able to contact their teacher at all times, something this teacher .

Excerpt 23

> Ja, jeg to fulle klasser på to forskjellige skoler, ikke sant? Ikke alle skriver til meg hele tiden, men det skjer mye med sånn kommunikasjon og jeg kan ikke hele dagen. Jeg sjekker tidlig på morgen og i løpet av arbeidsdagen, men når klokka blir 4 eller noen sånt.. Jeg vil ikke ha på telefonen min med mindre jeg må bruke den for eksempel. Og hvis det er akutt, så må de bare ringe eller sende sms. Men det er veldig sjelden, så det har vært viktig for meg å avgrense. (Informant 5)

Here informant 5 expresses that teaching is a job, in the sense that they are not required to be "online" 24-7. Their job is to facilitate learning in the timeframe of a "normal" school day.

5.3.2 Limitations using digital resources

Limitations in using digital resources is about students not being online when expected to be, challenges facilitating a digital learning environment, as well as what is appropriate for a given teaching scenario. I asked my informants about their use of digital resources.

Excerpt 24

> [...] alt er avhengig av eksterne ressurser. Du kan ikke si at nå er klokka 8:30 hvor er du. Sånn at alt må planlegges, alt blir å alt blir mer komplisert. [...] ..disse elevene går det bra med [...] de redder seg med den kompetansen de har selv, og så har vi den gruppen i mellom som vi vet det går bra, må bare titte litt inn i mellom, og så har du de elevene du vet at her må vi hjelpe til på et eller annet vis. [...] det er som for å holde båten flytende, men det er ikke som en båt som blir større eller kunnskap blir mer. [...] ..de trenger hjelp å møte opp, logge inn [...] ..jeg har hatt elever, de logger ikke inn lenge. [...] ...alt i skolen er læreravhengig. (*Informant 1*)

Informant 1 works with elementary school students and is reliant on parents to follow up on when their child is expected to be online, as well as seeing that their children do the schoolwork. This has to do with both inclusion, engagement, and involvement of parents. However, the teacher mentions categorizing the class into three classifications; those who will do ok, those who need a bit of following up and those who require help so the gap in knowledge does not grow out of proportions. The teacher also mentions students who no longer are online for the class sessions, and has less contact with, mentioning that a functioning school environment on dependent on the teacher and physical classroom.

Excerpt 25

> [...] det blir mindre fleksibelt, de vegres seg for å stille spørsmål, men noen er flinke til å ringe meg underveis i timen og lurer på ting og sånn at jeg for forklart det da. Det blir ganske passivt - både for meg og elevene. Så det syns jeg har vært... det har gått, men jeg er glad vi ikke har det lenger. Jeg syns ikke - det er ikke noe effektiv måte å undervis på. (*Informant 3*)

Informant 3 informs me that digital homeschooling is by no means an effective way to teach due to lack of activity and involvement from the students in the digital arrangement. Some students have posed questions during digital class sessions, but clearly not what can be seen as "active participation" for most of the students.

5.3.3 Challenges

When asked what challenges the teachers faced to ensure a pedagogical digital learning environment, their replies are somewhat similar. This has to do with challenges setting up a functional digital environment that is suited to the age group.

Excerpt 26

> [...] var det mest problematisk hvordan skal vi sette opp dagene. Hvordan skal vi sørge for at vi får gjort noe [...] hva slags krav kan man stille? [...] hvordan skal vi passe på [...] Vanligvis så introduserte vi si norsk, 2-3 timer i uken, og da kuttet vi det tilbake til 1 eller 2 [...] ... vi håper de har fått meg seg noe. (Informant *1*)

Here informant 1 expresses challenges with how to structure the school day digitally, that the students learn, and what kind of requirements could they ask of the students.

Excerpt 27

> [...] hvordan følge opp de og hvordan vi skulle forklare og lage et interessant nok opplegg for så små barn, var jo utfordringen for oss i begynnelsen. Så det var jo mange lange samtaler på kvelden vi lærerne om hvordan vi skulle legge opp undervisningen, og hvor mye digitalt de skulle ha og om det gikk an å legge opp undervisning hvor vi hadde de på Meet, og hadde på en måte mer vanlig klasseundervisning. [...] det var elevene og vår kunnskap om det digitale verktøyet som var den største utfordringen i begynnelsen. (*Informant 2*)

Similar expressions from informant 2 are mentioned, having to do with setting up a digital environment that motivated their elementary school students, as well as how much was enough of digital teaching. Here my informant talks about the importance of engaging and motivating the children. Unfortunately, I do not know whether the teachers met online or in person the evenings they discussed how to set up digital teaching. Informant 2 informs me that the teachers spent long evenings figuring out how they could simulate a "normal"

classroom setting digitally, how it could be done, and how much digital work there should be. The children were second graders at the start of the pandemic.

Excerpt 28
> [...] Jeg hadde ikke tatt med alt hjem [...] og elevene hadde heller ikke med seg materielle hjem. Jeg underviser i fremmed språk og da må man faktisk ha en bok i hånda eller et hefte eller noe. Kan ikke si at jeg fant så mye som var tilpassa vårt bruk i starten. Det har kommet litt etter hvert, men det var et problem. Så materiell for begge parter, oppmøte, det å kommunisere sånn at de visste hva de skulle gjøre og ikke bare anta at de forsto - at de ikke skulle - holdt på å si - forsvinne fra timen. (*Informant 4*)

Challenges informant 4 faced had to do with lack of school materials for both teacher and students, such as books. In addition, how to communicate with students and ensure that they knew what they were to do, and where they were expected to be. This has to do with establishing a structure in the digital school day, as is present in a "normal" school day.

5.4 Privacy protection

The issue of privacy protection (GDPR) was mentioned by 3 of my 5 interviewees. This had to do with children who have an outspoken behavior and were now online for all parents to witness, talking with students in their homes, where they were clearly not comfortable, as well as not offering "online classroom teaching" for fear of cyberbullying.

This first excerpt was mentioned at the end of the interview, when I asked if there was anything the informant wanted to add.

Excerpt 29
> Det som er utfordringen, det som vi ikke har vært innom er det med personvern. [...] jeg har også et par elever som utagerer og er verbalt ufine da - av forskjellige grunner. [...] og det ble veldig synlig - for alle foreldrene, når Per skriver "fuck" på kommentarfeltet og viser fingeren foran kamera foran hele klassen, roper inn i kamera. Hvor er hans beskyttelse? [...] Selvfølgelig, så det også er jo da, det er bl. a. noen som vil lese høyt og så er det noen som ikke er så trygge på lesingen - som gjerne vil lese høyt. Og så ler de andre eller skriver "Bli ferdig" i kommentarer [...], og det ble så synlig. Og det var vanskelig å stoppe det. Så jeg satt jo med telefonen og sendte meldinger til foreldrene mens jeg hadde undervisning. Og sa at "nå må du komme på kjøkkenet, for dette her er ikke bra!!" (*Informant 2*)

The next excerpt was mentioned in connection with challenges the teachers faced when they were met with the lockdown and met their students online, whether to record lessons, hold them digitally with the whole class or find an alternative for presenting learning material.

Excerpt 30
> Vi hadde litt diskusjoner om det i begynnelsen [...] Ja, jeg synes ikke det egner seg for ungdomsskole. De er så opptatt av utseende og framtoning og alt, sånn at ja, jeg synes ikke det er heldig for dem å sitte og være på skjerm med en gruppe de ikke har valgt selv. Og jeg har heller ikke ønsket at elevene skal være på skjerm samtidig, for det er alltid noen som ønsker å bruke det mot noen, ta bilde av skjermen f.eks. Litt sånn, si digital nettmobbing ut ifra at de har vist seg frampå skjermen i hele klassen så det, så det syns jeg ikke har vært et alternativ. (*Informant 3*)

Here my informant tells me that the school left the decision up to teachers how they would administer teaching digitally. Informant 3 mentions privacy protection in connection with the choice not to hold teaching sessions digitally with a camera, mentioning the risk of "cyberbullying".

Excerpt 31
> [...] jeg så liksom cherroxen hang bak henne og hun hadde, hun har vel 6, 7 søsken. Jeg har vært på badet til folk [...] og noen tok jo av seg hijaben sin - det var bare oss. Så det var på godt og vondt. Men jeg vi prøvde i starten av, hadde alle kamera - før dem skjønte at man kunne faktisk skru det av. Og ingen kunne ta dem for det. Og i førsten hadde alle kamera og etter hvert så slo alle av. Jeg var ikke så opptatt av de måtte ha det på - for jeg synes det ble veldig intenst selv - en hel dag. Det var bare veldig veldig slitsomt. Så det vi har gjort nå da, det siste året er å kreve at de har det på 1-2-3 nå skrur vi på kameraene, og så har vi dem på litt og så kan vi skru av. Men du ser - du ser toppen av hijaben eller hetta og taket deres - og da har de jo hatt på kamera liksom. Og så ble det litt sånn - hvilke kamper skal man ta da? (*Informant 4*)

The three excerpts address three different areas of privacy issues. Informant 2 has a student who is outspoken and both in class and online and brings up the question of where this child's protection. In class the child is in a "safe" environment, but online visible to parents. Informant 3 was very clear in her motivation not to have the class together online. My informant mentions it not being appropriate for that age group due to the risk of cyberbullying. Informant 4 held one-to-one subject discussions with each student. My interpretation of what informant 4 says is invasion of privacy towards the student. Informant 4 also mentions having cameras on in the beginning, but later having cameras on a short time and then off again, mentioning which battles to pick. I assume the reason for having cameras on a short period was to take attendance.

6 Discussion

In the previous chapter, I presented findings from my analysis of how teachers have facilitated teaching digitally during the pandemic. In this chapter I will discuss and answer my research questions with reference to previous research and theoretical framework. The theme for my thesis is how teachers have facilitated online learning during the pandemic.

My research questions are:
- What aspects of facilitating an inclusive digital learning environment did teachers find challenging?
- What challenges did teachers face when motivating students in a digital learning environment?

6.1 What aspects of facilitating an inclusive digital learning environment did teachers find challenging?

The teachers I have interviewed have had similar experiences dealing with the lockdown and having to abruptly go over to teaching digitally. Studies show that due to lack of digital competency and time, planning a digital school environment proved to be challenging (Fjørtoft, 2020; Damsa & Langford, 2021). Although only one of my informants had little experience using digital resources prior to the lockdown, all my informants experienced challenges arranging a pedagogical digital "classroom" when the lockdown was announced. Teachers reported that planning a teaching session online was far more challenging and time consuming than in the classroom (Fjørtoft, 2020). This is also what my informants have said. Informant 2 informs me that the teachers spent long evenings figuring out how they could simulate a "normal" classroom setting digitally (Excerpt 27).

The announcement of lockdown brought on the question of how to arrange teaching online. The teachers' experience was limited to using digital tools such as iPad as a means for handing out assignments and learning apps, not in a teaching capacity (Excerpt 20). The basis for teaching digitally was in place but transitioning from teaching in the classroom to bringing the classroom online had its challenges. The initial challenge was how to set up a

digital learning environment. Informant 2 says that they discussed replicating the physical classroom online using Meet, meaning to actively teach online. This was done to the extent of splitting up the class into groups of four and having one group online at a time (Excerpt 15; Excerpt 27). In between the digital sessions students worked on assignments individually. Informant 2 mentions not being able to oversee their progress, what strategies they used, if they were struggling with a task, and how much parents contributed to their child's work. Gilje et. al.(2020b) report similar findings where teachers said that the physical classroom gave them the opportunity to follow up students in an inclusive manner, something the digital classroom lacked. Not being able to follow up the student continuously can be a hindrance for scaffolding and adapting learning to what the student needs. This is dependent on the teacher knowing where the student currently is academically to provide adequate support for the student (Säljö, 2016) Participation involves linking learning and understanding and is dependent on a social context (Säljö, 2016; Vygotsky, 1978) In the classroom the teacher is present, both teaching and following up students while they work at their desk, where the teacher can scaffold students when needed. In the digital classroom the lack of social context can compromise both learning and participation. The sociocultural perspective indicates that participation in a community (like the classroom or chatroom) where students can discuss their views can contribute to a new understanding and learning. This is supported by Sfard (1998) who discusses distinguishing acquisition and participation metaphors of learning.

Only one of my informants reported that their school had received guidelines from the municipality regarding how to plan digital homeschooling. The guidelines referred to UDL (CAST, 2018), but because the children were second graders at the time, my informant and her collogues thought it not in the best interest for this grade level. This was due to the students' young age. This led to "trial and error", talking with colleagues, and adjusting their teaching as their experience grew, and they saw what worked and what did not. This was overall the method the teachers used, regardless of their digital competence. Having no guidelines from the school or municipality, they were forced to start and pave the way as they went. Although I doubt the method of "trial and error" is recognized as a pedagogical method of teaching, I understand the need for doing this in a crisis for lack of something better. [...] *vi ble jo kasta ut i det, vi måtte lære oss ting og prøve ting og vi snakket jo sammen ekstremt mye utenom de undervisningsøktene vi hadde, for å gjøre det best mulig da. Og gi hverandre tips og sånn, for vi hadde aldri gjort det før.* (Excerpt 22) Results from the report *Teachers'*

experiences with digital home schooling (Fjørtoft, 2020) shows that most teachers also found that the method of "trial and error" was the most appropriate way to handle the situation of planning teaching sessions during the period of digital homeschooling. Also mentioned in the report was seeking guidance from collogues who are more skilled digitally, something my informants mentioned as well. Although the teachers used digital platforms Showbie, Chrome and iPad before the lockdown, all experienced challenges facilitating digital teaching. "Trial and error" can indicate that teachers were not familiar with how to use the digital tools optimally. Damsa and Lanford (2021) mention in their study, *Teachers´agency* (2021) that teachers´ digital competency varied widely prior to the lockdown. They attribute this to lack of pedagogical knowledge in how to use these tools as was intended. This is also mentioned in the study by Blikstad-Balas and Klette (2020) where their report shows that most teachers have not included digital technology in a pedagogical manner due to lack of competency the teachers feel they have in integrating digital technology in their teaching. On the other hand, it is possible that time did not allow for anything else than to get things in place that function.

"Trial and error" can be time consuming, as well as being available for students 24-7. My informants have said that they have been available most of the day, by means of video (zoom and Teams), chat and telephone. Students got used to being able to contact teachers when it suited them, and that it was up to the teacher to set limits. One of my informants surprised me by saying that it was important to set boundaries for the students when it came to being available. Informant 5 tells me that although communication with students is important, it is up to the teacher to define the limits (Excerpt 23). Having less separation between work and home was also mentioned in *Analysis of digital homeschooling during the 2020 corona outbreak* (Frederici & Vika, 2021) and *Teachers´agency* (Damsa & Langford, 2021). This blurring between work and home was not something that was limited to teachers of course, many professions experienced this during the time of working from home. Teachers however are dealing with young children, not yet mature enough to know or reflect on the difference between working vs personal time.

As mentioned in my introduction, an inclusive learning environment is concerned with creating a learning environment where all students feel they are socially, culturally, and academically looked after (Olsen, 2015). As mentioned above when it became known that all schools in Norway would have to transition to full digital teaching in the spring of 2020, no

one was prepared. Teachers had little or no experience with full digital teaching (Federici & Vika, 2020). Although teachers I interviewed confirmed this, their intention was to facilitate a well-functioning digital learning environment.

Dysthe (2001) points out that learning is constructed knowledge through collaboration and interaction within a sociocultural context. Vygotsky (1978) refers to knowledge as a mental process dependent on our social and cultural environment. All my informants reported having tried collaborative assignments, but only some found them useful. The elementary school teachers found that utilizing collaborative assignments digitally required parent follow up and coordination making it not worth their time and effort (Excerpt 8). The junior high school teachers found that collaborative assignments gave the students more independence and autonomy. The students were able to contact each other using a range of digital platforms and needed very little support in doing so. The high school teacher also felt that collaborative tasks worked well and increased the students' feeling of inclusion as opposed to working on assignments alone (Excerpt 9; Excerpt 10). Findings from Gilje, Thuen and Bolstad (2020b) about collaborative activity during the period with digital homeschooling affirms what the elementary school teachers experienced. However, the junior high school and high school teachers reported having success with collaborative work assignments, using breakout rooms in Teams for mediating discussions (Excerpt 3; Excerpt 10). This gave the teacher the opportunity to "pop in" and see how the groups were doing, help with any questions they had and follow up on progress. This is in line with Wertsch (1998), who speaks of mediational means as a way of shaping both social and individual processes. It is interesting to note that the elementary school teachers who tried digital collaborative assignments, because they were used to utilizing them as a teaching method in the classroom, were not able to achieve good results.

Student inclusion is an important factor not only for promoting motivation but also maintaining open lines of communication. This was a priority for the teachers I interviewed when discussing facilitating online teaching, underlining the importance of inclusion, where communicative processes are central when it comes to learning (Dysthe, 2001). Both inclusion and activation of students has to do with the dynamics in a "school" setting, be it in the classroom or digitally. Mediating artifacts such as tablets, PCs and videos have become a more common commodity in classrooms today which is in line with Wertschs (1998) focus on language. These mediating artifacts made it possible for teachers to follow up on and

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shape the students social and individual learning processes during the lockdown. All my informants have used some form of digital resource in the classroom prior to the pandemic, tablet, iPad, Chromebook. So, the transition from classroom to digital homeschooling shouldn´t be so challenging, or is it? Then again, challenges that were mentioned had to do with challenges setting up a well-functioning learning environment outside of the classroom (Excerpt 13) and facilitating for social contact between students, student and teacher as well as involving parents for the younger children (Excerpt 1). This is also reported in the study by Fjørtoft (2020), where most of the challenges teachers faced were related to students' learning environment and social conditions.

For elementary school and junior high school teachers it was important to have a scheduled "formal" meeting to say "hi" and to talk about the plan for the day. For the younger students it was about how they were coping with digital homeschooling, what their plans were for the day and later the academic side was included. One elementary school teacher created a chat room (asynchronous) in the Showbie app, equivalent to the group chat function in messenger, where the students could chat with each other about anything (Excerpt 1). This demonstrates an active measure in respect to including students by facilitating social contact digitally between the students and teacher which would otherwise happen naturally in the classroom. This form of mediating communication allows the students to keep in contact, while at the same time allowing for breaks where they can reflect over what has been discussed (Dillenbourg & Fischer, 2010) Informant 2 says that the classroom offers something the digital classroom does not, the physical presence in a classroom, providing an opportunity to follow up closely to how the student is doing, both academically and mentally. The teachers know their students, who needs a pat on the back, a reassuring word or help with a task (Excerpt 2). This is also what the study by Gilje et al. (2020) reports. Teachers found it difficult to adjust assignments digitally as well as follow up on students' welfare as they do in the classroom. Not being physically present in the classroom would seem to limit the teacher's ability to provide scaffolding where needed. On the other hand, findings from Federici & Vika (2020) show that most teachers reported that they were able to help students with questions they had about schoolwork. For the teachers of elder students in my study, communication was about "touching base" (who is online now) and informing the students of what was expected of them in terms of learning tasks. Informant 3 utilized a calendar to make it easier for students to find information of what was expected of them from day to day (Excerpt 18). All informants felt that the classroom environment had more to offer when it

comes to communication with students. Ensuring that the students felt looked after academically, by being able to answer specific questions about assignments via chatrooms, e-mails or video, worked fine. They did however find the digital learning environment and lack of physical presence more challenging regarding looking after the students socially and culturally.

My informants told me that inclusion for them means to create a learning environment where all students felt they were important. Informant 1 says: [...] *sørge for at alle blir sett* (Excerpt 2). Informant 4 says: *at alle skal føle at deres bidrag er viktig da, og velkomment og naturlig* (Excerpt 3) The way they achieved this by having scheduled online video «meetings». Gilje et al. (202b) reported that only a little over 25% of the teachers felt that the use of video communication with students worked well. Although the study does not mention why it did not work well, it is still surprising that so few of the teachers did not see the importance of utilizing video communication with students to the full potential. My interpretation is that they were not able to understand the affordances mediating synchronous communication could benefit, like motivation to participate in a discussion. According to Dysthe (2001) learning is an active process involving interaction and language. In this case students were deprived of the opportunity to interact. Two of my informants used learning apps in connection with their teaching. Informant 1 mentioned using a speech synthesizer, where the students read and practice sounding out words and can work at their own pace. Informant 2 mentions a math app which is level differentiated, where the app adapts to the level where the student is academically and advances the level of difficulty when the student has mastered that level, i.e. acquired knowledge to build further on (Excerpt 2). Facilitating an online learning environment has proved challenging for my informants. In the classroom the teachers can follow up on students, have spontaneous discussions and give the students who need it support then and there (Excerpt 2; Excerpt 13). Not being able to see what methods students used to work through the assignments made it difficult for the teachers to know when students needed scaffolding, to ask a question or receive a reassuring pat on the back. In other words, they found inclusion academically as possible while inclusion as it pertains to the social aspect more challenging.

As I mentioned earlier, creating an inclusive learning environment encompasses an environment for learning where all students feel they are socially, culturally, and academically taken care of (Olsen, 2015). Within the physical classroom privacy issues are

not normally something that has to be dealt with, but teaching a class digitally does present challenges. Three of the teachers I interviewed had to consider how they would approach privacy issues concerning the use of cameras online. Could they demand that students have their camera on? Representatives from the Norwegian data protection authority, who administer and enforce the rules for GDPR, explain that it is up to each municipality to make a choice of allowing or refusing use of cameras in connection with digital teaching. They can only recommend that teachers follow the guidelines and that they are conscious of how they use the camera in their teaching online. One must be aware of when one has the camera on and off as well as decide when it is necessary and why it is appropriate (Korsmo, 2020; Nøttveit, 2021).

The Union of Education Norway (Utdanningsforbundet) has received several reports from different school representatives concerning teachers who are not permitted to teach digitally using a camera. The implicated municipalities justify their decision based on violation of GDPR guidelines (Korsmo, 2020). The article by Nøttveit (2021) is based on students' reluctance to using a camera during digital teaching sessions and brings up the question of whether teachers have the authority to demand that students have their cameras during digital teaching sessions. Students mentioned in the article are reluctant to having cameras on during digital classes where the whole class is online. This is backed up by the students' fear of cyberbullying, siblings running around and not feeling at ease being visible to the whole class online. Informant 4 confirms this from a teacher's viewpoint saying it felt like an invasion of privacy towards the student and their family (Excerpt 31). It was also obvious that the students were reluctant to having the camera on, when the only thing the teacher saw was the top of a hijab or cap. The teacher's solution to this was having cameras on a short time and then turning them off. This demonstrates a form for inclusion where the teacher establishes contact with the whole class, but it ends there. The risk is that students become mentally detached and consequently not follow the lesson. Informant 3 found it unsuitable to use cameras in digital sessions where the whole class was together, mentioning privacy protection and the risk of "cyberbullying" (Excerpt 30). In this case digital sessions involving the whole class being present online was not held. This contradicts the concept of inclusion within a classroom scenario. On the same note, a principal who has allowed the teachers to require that students use a camera during teaching sessions, argues that being able to see the face of another is an important part of informal communication, which helps create security

and good relationships between people. Good relationships are a foundation for learning. Not seeing the faces of those you talk to from time to time can have the opposite effect, namely create insecurity, which is something that can hinder learning (Nøttveit, 2021). The principal has å valid point in that the school is obligated to provide a learning environment that facilitates learning, and to ensure that students are stimulated academically, culturally, and socially.

Informant 2 also mentions the question of privacy protection, only under other circumstances. The teacher's challenge was when the whole class met online, where one of the students tends to display aggressive behavior in the classroom, and also online. Having an outspoken student visible online not only to the other students who are used to this, but to the parents as well is questionable. The teacher rightly asked: *Hvor er hans beskyttelse?* (Excerpt 29). This is an important issue and raises several new questions and challenges teachers have not previously had to consider. Who assures the privacy rights of the student with special needs /circumstances are enforced? To what degree does an inclusive digital learning environment trump students' rights to privacy and fears of cyberbullying?

Privacy protection issues regarding online teaching represents a new challenge which needs to be addressed. The Norwegian Data Authority has delegated all responsibilities regarding use of digital technology to the Municipalities, school leaders and teachers (Korsmo, 2020). In other words the use of cameras in connection with teaching a class online is open for interpretation. If there are no definite guidelines from Municipalities or school leaders, it will be the teacher who will have the biggest burden. In all three cases above, the final discission of whether to have cameras on was left up to the teacher, and all three handled it differently.

6.2 What challenges did teachers face when motivating students in a digital learning environment?

Preparing digital lessons was a factor that contributed to the teachers' workload. Informant 3 mentioned having spent long hours in the evening discussing with collogues how they would facilitate digital learning, preferably as a replica of the classroom environment (Excerpt 27). Informant 3 also mentions the time factor [...] *Men det tok kjempelang tid å komme inn i et system som fungerte.* (Excerpt 21). This is confirmed by teachers who were interviewed in

Teachers' experiences with digital home schooling (Fjørtoft, 2020), who reported that planning digital teaching sessions required more preparation than in the classroom. Similar results from the study *Analysis of digital homeschooling during the 2020 corona outbreak* (2021) show that many teachers experience an increase in their workload. This can be one of the reasons teachers chose to give assignments that students worked on individually. The sociocultural perspective regards the activities a student partakes in as a contributing factor for promoting motivation (Danish & Gresalfi, 2018). This is affirmed by informant 5 who mentions the period where half of the class was physically in school while the other half worked at home on individual assignments (Excerpt 19). The teacher refers to the students working at home as "satellites", orbiting on their own account without a class environment around them. The teacher mentions a decrease in the students' motivation that was obvious in the schoolwork they handed in. The teachers' own motivation is also an important contributing factor, meaning how much they put into creating assignments that appeal to the students. This again could be a consequence of the teachers increased workload, that they were not able to follow up and motivate the students who were at home during the period where some students were at school and some at home. However, there is a positive side. The report from *Teachers' experiences with digital home schooling* (Fjørtoft, 2020) shows that over 90% of the teachers feel they have strengthened their digital competency since the lockdown. This corresponds with what the teachers I interviewed have said, *Så det var jo veldig intenst og læringskurvene var jo, gikk rett til værs.* (Excerpt 22). Although it was necessary to strengthen their digital skills, it has benefitted their methods for teaching. They have become more competent using digital resources which has led to varied assignments and alternative ways for the students to hand in assignments. My interpretation is that this contributes to increasing internal motivation in the students to be creative, participate and interested to learn (Danish & Gresalfi, 2018).

My informants experienced a heavier workload during the transition to full digital homeschooling, reporting long hours figuring out how to set up a well-functioning digital environment and keeping "normal" school hours. On the positive side they report having a steep learning curve in connection with facilitating a digital learning environment which has strengthened their knowledge of what is possible to achieve in respect to learning in a digital environment. This is something that wouldn´t have occurred hadn´t they been forced to do so.

In that respect schools are long on their way to following the guidelines of digital skills for students.

Informant 2 surprised me by saying [...] *så det medmenneskelige er jo helt noe annet. Når du har vanlig klasseundervisning, lettere å inkludere sånn sett, men faglig tenker jeg nok maskinen nærmer seg oss.* (Excerpt 2) This implies that digital tools are inclusive in the sense that they are programmed to scaffold and progress with the student in a "personal" way. However, a teacher does not have the same capacity. In some cases, motivation can be triggered by interacting with a learning app that can continuously monitor the student's progression, something the teacher has no chance of doing. Because many learning apps are level differentiated, and advance to higher levels when the student has mastered the current level, it is possible that this can act as a motivating factor for the student. On the other hand, this is at the expense of the teachers' control over monitoring the students' progression, strategi methods or even if the student is just guessing. In this instance the acquisition metaphor comes to mind, where the students work individually, interacting with a mediating tool. Säljö (2016) points out that both the physical aspect of an artifact and the mental aspect of an artifact contribute to mediating learning. Therefor the student may learn through interacting with a learning app (Säljö, 2002; Säljö, 2016). This is under the assumption that the student understands the affordance the app offers and is motivated. This process of learning in this context is in line with the acquisition metaphor, where the student builds on previous knowledge to acquire new knowledge, and then repeating the process.

Motivating students has proven to be a challenge for teachers. Informant 1 says that during the first few weeks, students had fun working digitally, and then their motivation gradually sank. Fewer assignments were handed in (Excerpt 16). This can be an indication that the assignments given were not varied and challenging enough, and that the students therefore did not feel that the assignments added anything of value in their learning. It is also possible that the students experienced the tasks as too challenging, and that they therefore did not feel that they mastered them. Results from *Learning from the COVID-19 Home-Schooling Experience* (Bubb and Jones, 2020) showed that students often experienced the tasks they were given during the pandemic as either too simple and repetitive or too difficult. Informant 2 refers to the fact that some students were motivated by the digital learning environment as it offered them the opportunity to work in peace and quiet at home. (Excerpt 17) This could be explained by Dysthe (2011) who describes one's motivation as being directly related to

ones expectations of the context one is in and the people one is with. Here the context can refer to being physically in a classroom, digitally in an online classroom or isolated doing individual assignments. The people one is with can refer to classmates physically present, digitally present or being isolated. As humans we are all unique and differ as to what we expect and prefer and it is interesting to note that while teachers found teaching digitally challenging, and many students lost motivation due to isolation, some actually thrived and were more motivated. In reference to the previous discussion on challenges in facilitating a digital learning environment the lack of physical presence affected the teachers ability to gauge their students level of engagement and motivation.

I can also draw a parallel here to my inspiration for this thesis, my sons quote about school for him being a place where he doesn't have to think about school. His motivation is greatly affected by the social and cultural context, being physically in a classroom with classmates and the teacher. While there, he is motivated completes assignments as opposed to the digital learning environment where he lacked motivation and had to consciously think about doing schoolwork.

A teacher's job is not only to teach, but also to oversee that their students thrive as well as follow up on students' progress in their schoolwork. Not being in the physical classroom was challenging for the teachers. Informant 2 talks about challenges following up students due to them not being physically present in the classroom, what their strategies are when working with assignments and how much parents contributed to their child's work. *For jeg klarer ikke helt å se for vi var jo, jeg treffer de på Meet 3-4 ganger om dagen, men imellom øktene når de skulle jobbe for seg selv fikk jeg jo ikke observere de. Så noen av elevene var jo jeg sammen med hele tiden, og gjorde oppgaver sammen hele tiden, men du klarer ikke følge opp alle. [...] Så det er nok de svakeste som trenger oppfølging som på en måte blir taperne i den digitale skolen da* (Excerpt 12)

Activating the interest and motivation to learn can be challenging for a teacher. Informant 2 took an interdisciplinary approach which included both activating the students as well as teaching. The teacher describes having math lessons outside, where they were physically active as well as solving a math problem using things they found outside, like finding 8 pinecones and 8 rocks and then taking a picture of them. (Excerpt 6). This demonstrates diversity in the teaching method where the artifacts mediate an image of numbers which the

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student then can process. I see this as a means to motivate the students, combining physical activity along with learning math. In the survey by Babb and Jones (2020), the teachers reported being more creative with some of their assignments, as well as finding it easier to create assignments that were interdisciplinary. In contrast, the report from *Teachers' experiences with digital home schooling* (Fjørtoft, 2020), state that teachers ran out of ideas and therefor offered little variation in the assignments given.

7 Conclusion and final remarks

Clearly digital homeschooling was felt by most teachers in my study as an emergency, something they were not prepared for. All have emphasized the importance of physical contact in the school environment as a contributing factor for learning. The teachers I spoke with use and have used digital tools in their classroom prior to the lock down. They had varying success with the use of collaborative assignments which were meant to establish a sociocultural aspect to the digital learning environment. The majority have reiterated that intended learning occurs in the social context of the classroom and school environment. The teachers have experienced a high learning curve regarding their own digital competency and have been able to incorporate some of the tools they used during the lockdown in the classroom today.

There were many aspects of creating and maintaining a functional digital learning environment that posed challenges for teachers. These include workload, ensuring students were included and had varied and engaging assignments. Their biggest challenges when it came to motivating their students were creating diverse assignments that secured good progression and not being physically present with their students to see and react to their needs.

GDPR was mentioned by several teachers regarding challenges in following up and motivating their students. The issues regarding privacy protection have few guidelines but posed great discomfort for both teachers and students on some occasions. Again, it seems the social and cultural content suffered while the academic content was easier to secure.

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Appendix 1: NSD Assessment

NSD NORSK SENTER FOR FORSKNINGSDATA

Vurdering

Referansenummer

421187

Prosjekttittel

Hvordan har pandemien og overgang til hel/delvis digitalundervisning påvirket skolehverdagen til lærere?

Behandlingsansvarlig institusjon

Universitetet i Oslo / Det utdanningsvitenskapelige fakultet / Institutt for pedagogikk

Prosjektansvarlig (vitenskapelig ansatt/veileder eller stipendiat)

Anders Mørch, anders.morch@iped.uio.no, tlf: 22840713

Type prosjekt

Studentprosjekt, masterstudium

Kontaktinformasjon, student

Mette Strand, mette.strand@iped.uio.no, tlf: 92692615

Prosjektperiode

01.02.2022 - 01.09.2022

Vurdering (1)

03.02.2022 - Vurdert

Det er vår vurdering at behandlingen av personopplysninger i prosjektet vil være i samsvar med personvernlovgivningen så fremt den gjennomføres i tråd med det som er dokumentert i meldeskjemaet med vedlegg, og eventuelt i meldingsdialogen mellom innmelder og Personverntjenester. Behandlingen kan starte.

TAUSHETSPLIKT
Deltagerne i prosjektet har taushetsplikt. Intervjuene må gjennomføres uten at det fremkommer opplysninger som kan identifisere elever.

TYPE OPPLYSNINGER OG VARIGHET
Prosjektet vil behandle alminnelige kategorier av personopplysninger frem til den datoen som er oppgitt i meldeskjemaet.

LOVLIG GRUNNLAG

Prosjektet vil innhente samtykke fra de registrerte til behandlingen av personopplysninger. Vår vurdering er at prosjektet legger opp til et samtykke i samsvar med kravene i art. 4 og 7, ved at det er en frivillig, spesifikk, informert og utvetydig bekreftelse som kan dokumenteres, og som den registrerte kan trekke tilbake.

Lovlig grunnlag for behandlingen vil dermed være den registrertes samtykke, jf. personvernforordningen art. 6 nr. 1 bokstav a.

PERSONVERNPRINSIPPER
Personverntjenester vurderer at den planlagte behandlingen av personopplysninger vil følge prinsippene i personvernforordningen om:

• lovlighet, rettferdighet og åpenhet (art. 5.1 a), ved at de registrerte får tilfredsstillende informasjon om og samtykker til behandlingen
• formålsbegrensning (art. 5.1 b), ved at personopplysninger samles inn for spesifikke, uttrykkelig angitte og berettigede formål, og ikke behandles til nye, uforenlige formål
• dataminimering (art. 5.1 c), ved at det kun behandles opplysninger som er adekvate, relevante og nødvendige for formålet med prosjektet
• lagringsbegrensning (art. 5.1 e), ved at personopplysningene ikke lagres lengre enn nødvendig for å oppfylle formålet

DE REGISTRERTES RETTIGHETER
Så lenge de registrerte kan identifiseres i datamaterialet vil de ha følgende rettigheter: innsyn (art. 15), retting (art. 16), sletting (art. 17), begrensning (art. 18), og dataportabilitet (art. 20).

Personverntjenester vurderer at informasjonen om behandlingen som de registrerte vil motta oppfyller lovens krav til form og innhold, jf. art. 12.1 og art. 13.

Vi minner om at hvis en registrert tar kontakt om sine rettigheter, har behandlingsansvarlig institusjon plikt til å svare innen en måned.

FØLG DIN INSTITUSJONS RETNINGSLINJER
Personverntjenester legger til grunn at behandlingen oppfyller kravene i personvernforordningen om riktighet (art. 5.1 d), integritet og konfidensialitet (art. 5.1. f) og sikkerhet (art. 32).

Zoom er databehandler i prosjektet. Personverntjenester legger til grunn at behandlingen oppfyller kravene til bruk av databehandler, jf. art 28 og 29.

For å forsikre dere om at kravene oppfylles, må dere følge interne retningslinjer og/eller rådføre dere med behandlingsansvarlig institusjon.

MELD VESENTLIGE ENDRINGER
Dersom det skjer vesentlige endringer i behandlingen av personopplysninger, kan det være nødvendig å melde dette til oss ved å oppdatere meldeskjemaet. Før du melder inn en endring, oppfordrer vi deg til å lese om hvilke type endringer det er nødvendig å melde: https://www.nsd.no/personverntjenester/fylle-ut-meldeskjema-for-personopplysninger/melde-endringer-i-meldeskjema
Du må vente på svar fra oss før endringen gjennomføres.

OPPFØLGING AV PROSJEKTET
Personverntjenester vil følge opp ved planlagt avslutning for å avklare om behandlingen av personopplysningene er avsluttet.
Lykke til med prosjektet!

Appendix 2: Consent form and Information Letter

Vil du delta i forskningsprosjektet

"Covid 19 og delvis-/heldigital undervisning – Hvordan har skolehverdagen endret seg for lærere?"

Dette er et spørsmål til deg om å delta i et forskningsprosjekt hvor formålet er å se på hvordan lærere har håndtert nedstenging av skoler og overgangen til det å undervise delvis-/heldigitalt. I dette skrivet er informasjon om målene for prosjektet og hva deltakelse vil innebære for deg.

Bakgrunn

Jeg skal skrive en masteroppgave ved Institutt for pedagogikk, Universitet i Oslo, retning Kommunikasjon, design og læring (KDL). Utgangspunkt for prosjektet ligger i en uttalelse fra min sønn, som gikk siste år på Foss vgs våren 2021. På vår kritt-tavle hjemme på kjøkkenet skrev han «For meg er skolen merkelig nokk et sted jeg slipper å tenke på skolen» (direkte sitat). Han følte frustrasjon ved digital undervisning. På den andre siden, uttalte en lærer (intervjuet i Budstikka 21.12.21) at hun opplevde digital undervisning som positivt. I skjæringspunktet mellom elev og lærer, vil jeg se nærmere på hvordan lærere vektlegger ulike aspekter ved digital undervisning, og om det er i tråd med kravene/retningslinjer til universell design for læringsmiljø.

Formål

Gjennom min masteroppgave ønsker jeg å belyse bredden i hvordan lærere håndterer å undervise digitalt. I det ligger hvordan de tilrettelegger undervisning ved hjelp av digitale verktøy og hvordan de bruker det med tanke på inkludering, aktivisering og oppfølging av elever.

Utvalget mitt består av 5 lærere fra barneskole, ungdomsskole, og videregående skole.

Overordnet: Hvordan har pandemien påvirket konvensjonell undervisning og læring sett fra en lærers ståsted?

Forskningsspørsmål:
- Hvordan er undervisning tilrettelagt digitalt ifm inkludering, aktivisering og oppfølging?
- Hvilke forhold har lærere til universell utforming ifm med digital undervisningen?

Hvem er ansvarlig for forskningsprosjektet?

Institutt for pedagogikk er ansvarlig for prosjektet.

Hvorfor får du spørsmål om å delta?

Utvalget består av 5 lærere jeg har kjennskap til via mitt nettverk, og som jobber som lærer i barneskolen, ungdomsskole, videregående skole eller universitet.

Hva innebærer det for deg å delta?

Jeg legger opp til et intervju via zoom som vil ta 45-60 min.

Opplysninger som samles inn har å gjøre med:

- Hva er lærernes erfaring rundt digitalisering
- Studentenes læringsutbytte
- Hvordan virker undervisningen digitalt
- Forhold til universell design mtp læring
- Hvordan blir elevene fulgt opp
- Hvordan legger lærerne til rette for inkludering
- Hvordan blir elevene aktivisert i undervisningen

Hvis du velger å delta i prosjektet, innebærer det at du
- Deltar i et intervju
  - Med lydopptak
  - Varighet 45 – 60 min
- Personopplysninger som samles inn er
  - Navn
  - E-post adresse
  - Telefon

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.

Ditt personvern – hvordan vi oppbevarer og bruker dine opplysninger
Vi vil bare bruke opplysningene om deg til formålene vi har fortalt om i dette skrivet. Vi behandler opplysningene konfidensielt og i samsvar med personvernregelverket.
- Kun jeg og min veileder vil ha tilgang til opplysninger jeg registrerer.
- Av personopplysninger vil jeg registrere navn, e-post adresse og telefon som lagres i en fil på en sikker server.
- De opplysningene vil bare brukes til å kunne kontakte deg.
- Jeg vil passe på at ingen kan kjenne deg igjen når jeg skriver oppgaven. Jeg vil for eksempel skrive informant 1.

Opplysninger som kan komme frem i oppgaven med referanse til lærer vil være av typen informant n fra en barneskole i Asker, trinn 5, informant n som jobber i en videregåendeskole i Oslo. Lærer blir nevnt som informant n (n=1-5).

Hva skjer med opplysningene dine når jeg avslutter forskningsprosjektet?
Lydopptak fra intervju vil jeg slette når jeg har transkribert det vi har snakket om. Filen med kontaktinformasjon vil bli slettet senest 1. sept. 2022 da jeg skal ha levert og er ferdig med eksamen til masteroppgaven.

Hva gir oss rett til å behandle personopplysninger om deg?
Vi behandler opplysninger om deg basert på ditt samtykke.

På oppdrag fra Institutt for pedagogikk har NSD – Norsk senter for forskningsdata AS vurdert at behandlingen av personopplysninger i dette prosjektet er i samsvar med personvernregelverket.

Dine rettigheter
Så lenge du kan identifiseres i datamaterialet, har du rett til:
- innsyn i hvilke opplysninger vi behandler om deg, og å få utlevert en kopi av opplysningene
- å få rettet opplysninger om deg som er feil eller misvisende
- å få slettet personopplysninger om deg
- å sende klage til Datatilsynet om behandlingen av dine personopplysninger

Hvis du har spørsmål til studien, eller ønsker å vite mer om eller benytte deg av dine rettigheter, ta kontakt med:
- Institutt for pedagogikk ved Anders Mørch, anders.morch@iped.uio.no
- Vårt personvernombud: personvernombud@uio.no

Hvis du har spørsmål knyttet til NSD sin vurdering av prosjektet, kan du ta kontakt med:
- NSD ansvarlig ved UV/IPED Jan Dolonen epost j.a.dolonen@uv.uio.no
- NSD – Norsk senter for forskningsdata AS på epost (personverntjenester@nsd.no) eller på telefon: 53 21 15 00.

Med vennlig hilsen

Anders Mørch   *Mette Strand*
(Forsker/veileder)   (Student)

Samtykkeerklæring

Jeg har mottatt og forstått informasjon om prosjektet «*Covid 19 og delvis-/heldigital undervisning – Hvordan har skolehverdagen endret seg for lærere?*», og har fått anledning til å stille spørsmål. Jeg samtykker til:

☐ å delta i *intervju*
☐ å svare på eventuelle oppfølgingsspørsmål etter intervju pr epost

Jeg samtykker til at mine opplysninger behandles frem til prosjektet er avsluttet.

(Signert av prosjektdeltaker, dato)