

# **Return to Campus: Course Design and Classroom Practices of University Lecturers in Time of Crisis**

*A qualitative case study at the University of Oslo in Norway*

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# Abstract

In 2020, the sudden shift to emergency remote teaching in response to the COVID-19 pandemic presented many challenges for lecturers, students, and the entire higher education sector. After nearly two lengthy academic years of online learning, lecturers and students in Norway returned to on-campus hybrid education in the autumn semester of 2021. To address this research topic, I invited eleven lecturers from the University of Oslo for semi-structured interviews, and I subsequently analyzed their insights using NVivo, with abductive reasoning to discuss the findings. The analysis of qualitative interview data generated noteworthy themes relating to how instructors experienced and adapted to the change from remote teaching to hybrid education. These themes centered on the initial phase and how lecturers coped with uncertainty, support from faculty and colleagues, and their experiences with hybrid teaching in the recent semester. Simultaneously, insights into instructors' practices were also documented, namely, the usage of a learning management system (LMS), conducting assessment and examination, using flipped classrooms, implementation of ICT to improve engagement with students, and teaching them to master disciplinary-specific digital tools. By using the Transformative Learning Theory (TLT) and the Community of Inquiry (CoI) framework, this thesis has examined the experiences and teaching practices of academic instructors as they journey through this transition between two learning environments in this time of crisis. Overall, the lectures in this study have shared a wide range of experiences detailing how they demonstrated flexibility, resourcefulness, and being attentive to their students' needs and struggles. The results from this thesis may inform higher education stakeholders to anticipate future crises, improve professional development, and make adjustments to the "new normal" when organizing on-campus education.

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# List of Abbreviations

CoI	Community of Inquiry
CSCL	Computer-Supported Collaborative Learning
CMC	Computer-Mediated Communication
Difi	Direktoratet for forvaltning og IKT (Directorate for Public Administration and ICT)
ERT	Emergency Remote Teaching
GDPR	General Data Protection Regulation
ICT	Information and Communication Technology
LMS	Learning Management System
NSD	Norwegian Center for Research Data
TLT	Transformative Learning Theory
UiO	University of Oslo
USIT	Universitetets senter for informasjons-teknologi (The University's Center for Information Technology)

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# 1 Introduction

## 1.1 Research context

The novel coronavirus SARS-CoV-2 caused the outbreak of the COVID-19 pandemic and was first discovered in the city of Wuhan, China, around January 2020 (Norwegian Institute of Public Health, 2022a). The virus rapidly infected people and traveled across the globe, with the first case of infection in Norway recorded on February 26<sup>th</sup>, 2020, and subsequent waves of infection increased the number of infected individuals and deaths (Tjernshaugen et al., 2021). As of 06.05.2022, the number of reported cases in Norway was 1 428 333 with 3 006 deaths (Norwegian Institute of Public Health, 2022b). There was 90.7% of the population (18 years or older) who have received the second dose of the vaccine; thus, the death toll in Norway has been among the lowest in Europe (Norwegian Institute of Public Health, 2022c). In response to the increasing number of infected cases, universities (universiteter) and universities colleges (høgskoler) needed to make appropriate decisions in line with the government policies, which would affect the forms of educational delivery for students who are enrolled in higher education.

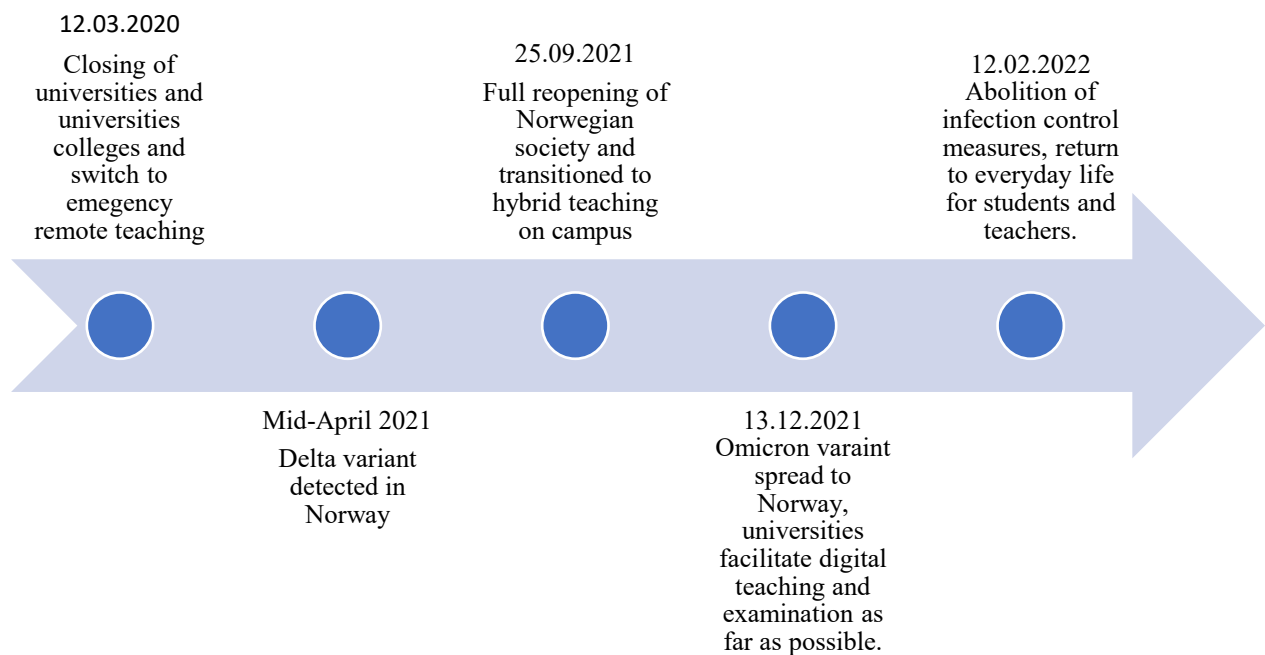
The recent timeline of the outgoing pandemic pointed to the date March 12<sup>th</sup>, 2020, as the initial phase when the Norwegian government implemented the strict measure of closing down all universities and colleges in order to reduce the risk of infection (Ministry of Higher Education and Research, 2020). In practice, this would mean a widespread digitalization process of teaching and learning for students and lecturers, with home-office as the primary working space and the extensive usage of web/online video conferencing software, such as Zoom and Microsoft Teams (Langford & Damşa, 2020). The situation escalated as the Delta variant of the covid virus was identified in mid-April 2021 and overtook the original Alpha variant, thus becoming the dominant strain, leading to tighter counter-measures (Helse-og omsorgsdepartementet, 2021; Seppälä et al., 2021).

With an improved vaccination rate and a reduction in the number of infections and hospitalized patients, the authorities gradually lessened the strict restrictions and allowed the full reopening of Norwegian society on September 25<sup>th</sup>, 2021 (Office of the Prime Minister, 2021a). Consequently, the higher education sector responded with a transition back to face-to-face teaching with hybrid course offerings and a renewed bustling life on campus in the autumn

semester of 2021, with new students being welcomed by the rector, sponsor groups, and assistants who could help them both academically and socially.

Unfortunately, the new highly contagious variant of the coronavirus – Omicron has appeared in the country; thus, the Norwegian government had to respond accordingly and introduce stricter national measures to limit the rapid spread of infection on 13.12.2021 (Office of the Prime Minister, 2021b). With these new measures, it was a requirement that universities, colleges, and vocational schools would return to facilitate digital teaching and examinations. However, campuses would not be closed, and students who depended on skills training and laboratory work were given priority for in-person education. Gradually, there was a positive development in the pandemic situation as the Norwegian Directorate of Health removed infection control measures on 12.02.2022 (Ministry of Health and Care Services, 2022). As a result, the requirement to wear facemasks, maintain a 1-meter distance, and the obligation to go into isolation when an individual was infected with covid would be removed (Office of the Prime Minister, 2022). This recent development marked the recognition that society needs to “live with” COVID-19 to minimize the burden of the restrictive measures, which negatively affected the population, as the high vaccination rate had proven to be effective, and the Omicron variant was far less severe (Ministry of Health and Care Services, 2022; Office of the Prime Minister, 2022). Overall, the timeline of the ongoing pandemic detailed a demanding situation in which the entire higher education sector must address the crisis in a flexible and timely manner to ensure their students can safely pursue their studies, despite limited historical references serving as a guideline.

**Figure 1. Timeline of how infection control measures affected higher education**



## 1.2 Research topic

The master thesis intends to explore the topic of university lecturers' experience, perspectives, and practices in order to facilitate a successful learning environment for students during the transition to on-campus hybrid teaching after an extended period of emergency remote teaching. The research took place at the University of Oslo (UiO), and qualitative data were gathered by collecting interview responses from university lecturers belonging to different faculties and departments. On March 12<sup>th</sup>, 2020, the physical closure of universities and university colleges in Norway was enacted by the government, thus completely transforming the traditional face-to-face education and accelerating the digitalization process of teaching and learning at a rapid speed never before seen (Ministry of Higher Education and Research, 2020). Due to the ongoing Covid-19 pandemic, higher education institutions must adapt accordingly to major changes in governmental measures while also ensuring students can continue following their study programs without disruptions and delays. Despite reopening campuses and transitioning to hybrid education during the autumn semester of 2021, academic lecturers maintained using Learning Management System (LMS) and Web/Online Video Conferencing software. While this transition might feel like a return to something familiar, it will most certainly present new opportunities and challenges for academic lecturers. Although UiO's physical classrooms may be the same, the lecturers in higher education return to them with new

knowledge of educational technology and valuable experiences that will affect their attitudes, beliefs, and classroom practices for a time to come.

### **1.3 Research aims**

The research aims of this master thesis are to examine the university lecturers' experience and usage of digital tools, such as Learning Management System (LMS), video conferencing software, and other types of digital tools to ensure learning success and student engagement. More specifically, the exploration will focus on the lecturers' journey of transitioning to teaching in the online environment and their rationale for designing course curricula, employing teaching methods, and orchestrating activities to boost students' involvement. Towards that end, the study will employ the Community of Inquiry (CoI) framework and the Transformative Learning Theory (TLT) as analytical frameworks to make sense of the complex experience of online teaching and then the rationale behind the innovative practices they employed. More informally, my research interest has emerged in relation to the personal experience I have gained participating in the online teaching and learning during the pandemic and, in a broader sense, my curiosity concerning how digitalization has affected primary processes in higher education.

### **1.4 Research questions**

The following three research questions will guide this study and explore how university lecturers experienced the transition from emergency digital education to hybrid teaching as they adapt, navigate, and utilize different digital resources to ensure successful course completion for their students after a lengthy time away from campus.

- *How do university lecturers experience the transition from remote education caused by the pandemic to hybrid on-campus teaching?*
- *How has the extended period of digital education affected the university lecturers' understanding of course design?*
- *To what extent has the process of digitalization influenced the ways university lecturers teach and facilitate learning?*

## 1.5 Rationale

The study intends to contribute new empirical findings within the field of higher education research and insights into the experiences and practices of university lecturers so that the institutional directives regarding online education, curriculum revision, and faculty staff training can further improve. The author also aims to address the knowledge gap regarding the topic of academic teachers' experience with the transition from prolonged digital education to hybrid on-campus teaching during the recent autumn semester of 2021. The majority of literature mainly prioritized the analysis of students' experience in the beginning period of lockdown and early stage of transition to emergency digital education (Fatani, 2020; Griebel & Smith, 2021; Varela & Desiderio, 2021; Walker & Koralesky, 2021). Hence, the choice of this research topic will provide further relevant and valuable contemporary insights from the perspective of academic lecturers, who are important stakeholders in higher education.

Even though the scholarship on the experience of lecturers' perspectives indicates that many embraces online learning and adapted successfully to the changing teaching environment, scholars also advise future research to further investigate factors affecting teachers' established teaching practices (Damşa et al., 2021; Hjelsvol et al., 2020; Langford & Damşa, 2020; Martin, 2021). Moreover, the study conducted by Jankowski (2020) suggested that the traditional form of assessment and digital competencies of university lecturers could be inadequate, and the facilitation of learning activities in an online environment required a combination of skillful employment of digital resources and being extra attentive to student needs. The body of research in Norway focused mainly on using the CoI model to improve online courses for in-service teachers (Krzyszowska & Mavrommati, 2020); developing a project for co-learning inquiry between mathematics teachers and university didacticians (Bjuland & Jaworski, 2009); and using the CoI framework to better mathematics teaching development (Goodchild, 2014). Regarding the use of transformative learning in Nordic studies, Hofman-Bergholm (2022) recognized the potential of this framework for the improvement of teaching sustainable education, while Steele & Leming (2022) reported a connection between student-teacher acquiring intercultural competence as they underwent the different phases in Mezirow's (1991) theory. Therefore, I aim to use the two theoretical frameworks together to gain a greater understanding of the experiences and practices of university lecturers who had extensively taught during the crisis and refine the usage of these two theories in higher education research.

## 1.6 Digitalization and the case of UiO

Acknowledging the lasting impacts and potential benefits of the digitalization process on higher education institutions, the Norwegian Ministry of Higher Education drafted a comprehensive strategy for the digital transformation of the sector from 2021 to 2025 (*Strategi for digital omstilling i universitets- og høyskolesektoren*). The policy paper depicted how digital infrastructures and services in Norwegian universities have improved steadily over the years; yet, there remains a need to improve the quality and efficient use of ICT solutions, as it is an essential component for a dynamic and excellent university. Indeed, administrative and academic activities in higher education have become increasingly dependent on the use of ICT. As physical libraries, printed pensum, and published research become available on the online database, communication and collaboration amongst staff within and across faculties and universities are facilitated using digital platforms and social networks, and implementation of digital systems to detect cheating, data security, and storage has become a necessity (Kaputa et al., 2022; Tømte et al., 2019). As the primary goal of this document is to provide directions for the holistic approach to digitalize the sector and enhance the quality of education in a post-pandemic world, here is a concise summary of the six key proposals: (1) digitalization as a solution for flexible higher education; (2) digital innovation in teaching and learning; (3) more offerings of courses and teaching contents that have an emphasis on improving students' digital competency, themes, and methods; (4) improve research quality through the use of new digital technologies, research methods, and tools; (5) better utilization of data sharing in the knowledge sector; and (6) strengthen the development of a managerial culture that support digital transformation (Kunnskapsdepartementet, 2021).

Considering the priority stated by the Ministry to further improve quality in higher education through the better adaptation of new digitalized tools and solutions, it would be suitable to focus on the case of the University of Oslo (UiO), as this will demonstrate how policies were realized on an institutional level. It would be relevant to mention how UiO paid attention to the process of digitalization and made the necessary preparation to improve its digital infrastructure, namely its Learning Management System (LMS), and the university's emphasis on creating an action plan to achieve the goals of the mentioned Digitalization Strategy. To raise the quality of educational delivery in universities, Turnbull et al. (2020) stressed the importance of incorporating a management system that automates the administrative tasks, delivery, organization, and documenting of educational content and students' progress

accessible in a web-based platform, as part of an online interactive learning environment. In the case of UiO, the adoption of Canvas as the default learning management system that occurred in 2017 was an executive decision by the university to replace the prior platform Fronter for several justifiable reasons. According to the technical assessment conducted in 2017, feedback from the faculty staff showed a modest satisfaction with the use of Fronter, despite already having established long-term teaching practices using the platform, citing it was cumbersome and hard to navigate (University of Oslo, 2017). Moreover, the risk assessment from Difi (2017) detailed a potential increase in application and technical challenges for future use of Fronter as a LMS, with concerns about the lack of pedagogical tools to support student learning and security risk (Directorate for Public Administration and ICT, 2017). Consequently, in 2018, UiO acquired the licensing for a more modern LMS that could replace Fronter, thus choosing Canvas for its features, which could enhance teaching and learning conditions in the digital space. Regarding Canvas' beneficial features as a learning management system, the platform offers highly customizable modularity, tailoring, workflow, student-centered, adaptive learning, allowing for collaboration arenas, data management, learning resources, and cooperation across courses (Kaliisa et al., 2021).

Regarding the details of the action plan provided by USIT, which handles the management of ICT resources and digitalization at the institutional level at UiO, the center emphasized staff training and support, improving the provision of digital solutions, investing in infrastructure, and ensuring data protection and security (The University Center for Information Technology, 2017, 2018). In addition, USIT also provides IT support catering to the extensive research activities at UiO by offering solutions and guidance for staff to design research effectively, conduct research processes, store data, analyze results, and collaborate tools for research groups (The University's Center for Information Technology, 2017). In relation to UiO's Strategy 2030, USIT's action plan would support the university realize its institutional ambition to "work systematically to achieve more sharing and better accessibility to infrastructure and data resources" and ensure digitalization will be integrated into learning processes across disciplines (University of Oslo, 2020). Overall, the combination of the adoption of Canvas by UiO as a replacement for Fronter, and the strategic action plan to improve the process of digitalization, play an important preparatory role as the university faced the unprecedented crisis caused by the COVID-19 pandemic.

## 1.7 Definition of key terms

**Distance education** is generally considered as a subset of the broad e-learning domain by scholars and refers to learning that occurs away from the actual physical classroom or campus and is equated as fully online learning that takes place entirely on the internet. Distance education has various synonyms and overlapping meanings with related definitions, such as computer-based training, flexible learning, instruction and learning with technology, online teaching and learning, and web-based education (Bernard et al., 2004; Hartnett, 2020; Mehlenbacher & Mehlenbacher, 2020).

**Digitalization** is generally referred to as the employment of technology to simplify, modernize and improve processes and productivity. In the context of higher education, digitalization includes a variety of aspects that affect teaching, learning, and research activities, ranging from technological infrastructure, the system of organization and provision of digital resources, and also affects student mobility based on the offering of online study programs and MOOCs (Gupta et al., 2021; Kaputa et al., 2022; Tømte et al., 2019).

**Emergency Remote Teaching (ERT)** is also known as remote education, which was formulated in connection with how universities responded to the COVID-19 pandemic. It refers to the use of remote and digital solutions and services for both teaching and learning that would normally be offered face-to-face on campus due to crisis conditions. ERT is also meant to be temporarily implemented by higher education institutions with the primary objective to establish quickly a reliable digital educational environment for students during an emergency with the aim of returning to normalcy in the future (Hodges et al., 2020).

**Hybrid learning** is defined as incorporating both online learning and face-to-face education, and if implemented effectively can provide increased access to higher education and allows the learners to enroll flexibly in study courses, as they can synchronously attend online and interact with other classmates and teachers who are physically present on-campus, in the classroom (Gleason & Greenhow, 2017; Niksiar et al., 2021).

**Learning Management System (LMS)** is defined as “web-based software platforms that provide an interactive online learning environment and automate the administration,



organization, delivery, and reporting of educational content and learner outcomes” (Turnbull et al., 2020, p. 1052).

**Online video conferencing** is characterized as a “synchronous model for interactive data, video, and voice transfer between two or more groups and enables real-time, two-way video and audio communication as well as content sharing and messaging between instructors and students” (Fatani, 2020, p. 2).

**Technology-Enhanced Learning** includes the use of digital technologies, such as software, learning management systems, platforms, and computer-mediated communication to support learning activities, whether the learning is on campus or remote (at home or in the workplace). (Sen & Leong, 2020).

## **1.8 Structure of the thesis**

In Chapter One, I have introduced the research topic and clarified the reasons for his interest in exploring the perspectives of academic lecturers and their valuable experiences with the transition from lengthy remote education to hybrid on-campus teaching. In Chapter Two, there will be a review of relevant literature to further elaborate on the research topic and summarize newly found understanding relating to key concepts and ideas. In Chapter Three, there will be a concise summary of the two selected analytical frameworks, Mezirow’s (1991) transformative learning theory and Garrison et al.’s (1999) community of inquiry. In Chapter Four, there will be an outline of the research methodology along with the description of research design, recruiting procedures, qualitative data collection, and analysis, as well as how I would ensure quality in research and address potential ethical concerns. There will be a presentation of the findings in Chapter Five. For Chapter Six, I will use research findings in combination with the two mentioned analytical frameworks to discuss and examine the lecturers’ experiences and practices. Finally, in Chapter Seven, a conclusion will signal the completion of the master thesis, and the acknowledgment of the study’s limitations and recommendations for future research would also be mentioned.

## **2 Literature Review**

The literature review will first present some relevant historical accounts of how modern major health crises have affected Norway, and with reference specifically to how universities in Hong Kong responded to the SARS epidemic. Next, the chapter will focus on how contemporary Norwegian higher education institutions handle the Covid-19 crisis, then follow by reviewing studies detailing how universities' academic staff adapted to the teaching conditions during the pandemic. Additionally, the literature that describes important factors that affect academic staff satisfaction with online courses will be included in this chapter to further important issues concerning the main subjects of my study. Subsequently, the review transitions to explain key conceptual terms related to the research topics, namely how distance education, online pedagogy, and computer-supported collaborative learning have been developed and affected the sector.

### **2.1 History of Higher Education Response to Pandemic: Norway and Hong Kong**

The last time when Norway experienced a major pandemic was in 1918, with the Spanish Flu causing the death of 15 000 Norwegians and infecting an estimated 1.2 million inhabitants, or little less than half of the total population at the time (Mamelund, 2005). The Spanish Flu devastated Norwegian society with widespread contagion, and the entire health care system struggled to cope with the disease intensity because neither effective antiviral medicines nor vaccines were available (Mamelund, 2004). To mitigate the spread of infection, the Norwegian government employed measures such as closing down schools and theaters and banning public meetings (Borza, 2001; Mamelund, 2004). During the peak infection season of autumn 1918, the Norwegian Medicines Agency (Medicinaldirektoratet) advised ill people to stay at home and mandated both private and public enterprises to ensure the cleanliness of clothes, food, and drink, as well as advising residents to keep their home well ventilated (Oslo Byleksikon, 2021). Unfortunately, it is rather difficult to find specific literature sources detailing how the Norwegian higher education sector responded to the Spanish Flu pandemic due to the scarcity of historical accounts. Furthermore, scholars would focus on other issues such as the patterns of virus diffusion (Mamelund, 1998), the effects on demographics in terms of mortality rate across different social classes (Mamelund, 2005), and the subsequent baby boom in the following decade (Mamelund, 2004). It is also worth mentioning that in 1918, wider access to

higher education had not been achieved in Norway, and only those with wealthy backgrounds or members of the social elites could afford to study at universities.

A more recent pandemic that affected Norway was the swine influenza virus in 2009, which resulted in an estimated 900 000 infections and 29 deaths by the end of the year (Berg, 2011; The Norwegian Directorate for Civil Protection, 2011). In this much less severe outbreak of the influenza virus, the prevention and containment measures were less instructive due to a well-established system of infection tracking, effective use of antiviral medicines, and provision of vaccines; hence, the closure of schools and universities were not carried out (The Norwegian Directorate for Civil Protection, 2011). Overall, the two most notable pandemics that affected Norway in recent times showcased the improved development in crisis management on a national level, thus highlighting the need to take a proactive stance in mitigating the spread of disease and strengthening vaccination capabilities. To present a more nuanced historical description of how the higher education sector may proactively respond to a major health-related crisis, it would be relevant to mention the case of how universities in Hong Kong managed the widespread transmission caused by the SARS epidemic in 2003.

During the serious outbreak of SARS in Hong Kong, the government ordered universities to halt all formal teaching and learning activities for three weeks to limit the spread of the virus starting on 27 March (Kwok & Hodgson, 2004). In combination with the campus closure, other drastic measures were also introduced, namely mandatory usage of medical masks in the public space and implementation of distance learning via the university's department website, which provided students with course information, video-recorded lectures, and other online learning tools (Chan-Yeung, 2003; Hung, 2003). The quick and temporary shift from traditional face-to-face to emergency distance learning entailed email consultations and phone conversations provided by academic staff to communicate with students (Kwok & Hodgson, 2004). In terms of assessment and examination, all faculties were encouraged to use take-home exams, and formative assessments were also in use (Kwok & Hodgson, 2004). Based on the limited research available, the case of Hong Kong's response to the highly contagious SARS epidemic is potentially the only example of an early model of emergency transition to remote learning in a time of crisis. Therefore, there remains a research gap in understanding the experience of university lecturers during the much more catastrophic and recent COVID-19 pandemic. Although the scope of the crisis in Hong Kong was significantly less severe and the closure of universities was only limited to three weeks, the measures in place were strikingly similar and

provided a much-needed understanding of how crisis management was enacted by the institutions.

## **2.2 Crisis Management in Norwegian Higher Education**

This section will examine the case of Norway, where the author aims to examine the responses that were in place by the higher education sector to mitigate the spread of the virus and ensure the continuation of educational and research activities at an institutional level. In an exceptionally demanding situation in which the understanding and handling of the many issues caused by the COVID-19 crisis were urgently needed, higher education institutions have been paired with the government's crisis management efforts in a collective response to tackling the problems. Regarding conceptual definition, a crisis is either a particular complex incident or event that poses a direct threat to an organization or society at large, with incidents ranging from natural disasters such as earthquakes, floods, and hurricanes, to economic crises and political corruption, disease outbreaks, and pandemics (Riddervold et al., 2021). According to Boin et al. (2013), the definition of "crisis management" is "the sum of activities aimed at minimizing the impact of a crisis. The impact is measured in terms of damage to people, critical infrastructure, and public institutions. Effective crisis management saves lives, protects infrastructure, and restores trust in public institutions" (p. 81). In agreement with Gornitzka & Stølen's (2021) claims, the research-intensive universities indeed play an important role in contributing to the government's capacity for crisis management because higher education institutions are the major source of institutionalized knowledge reservoirs. As with any institution, it would be completely impossible for universities to account for every type of crisis that may arise. Thus, as argued by Riddervold et al. (2021) and Gornitzka & Stølen (2021), institutional stakeholders must create a methodical process to promote sound decision-making in a time of uncertainty and turbulence.

Throughout the outgoing COVID-19 pandemic, academic institutions in Norway have closely followed the government regulations to ensure the wellbeing and safety of their respective students and employees. As the most important role of academic institutions is to provide tertiary education and advance research and development, the challenges caused by the pandemic systematically affected the institution on three levels: the university administration, the faculties and departments, and the various research centers (Bergan et al., 2021; Korseberg et al., 2022; Ørnes et al., 2021). Regarding the highest level of university administration, the

rectors had to decide on reducing university operations on top of the complete campus closure in the early months of the pandemic. This would mean the executive choice of which essential administrative departments (for example, Personnel Support, Finance, and Business Management, Information Technology Services, etc.) and academic and social services (for example, libraries, reading halls, career centers, laboratories, auditoriums, etc.) would proceed to operate or temporary shutdown, in addition to the necessary measures and resources to ensure the facilities were disinfected regularly (Norwegian University of Science and Technology, 2020; University of Oslo, 2020b; University of South-Eastern Norway, 2020). Another pressing issue was the management of international employees, and international students, who would face difficulties with decreasing travel options and increasing entry restrictions that threaten their career and study prospects. Especially students, who relied almost entirely on either loans or part-time jobs to acquire wages covering living expenses, and with the closure of many service venues that employed students, many lost their jobs and were in precarious financial situations. Fortunately, there was a loan scheme for recently laid-off students, and generous offerings to cover the hotel expenses for arrival to quarantine for students were enacted and provided the much-needed financial support (Farnell et al., 2021; Ministry of Higher Education and Research, 2021).

On the second level of faculties and departments, continuous provision of education remotely is a major priority and warrants considerable attention. To mitigate the spread of COVID-19, higher education institutions deemed their employees and students needed to work from home, and the transition to remote education occurred rapidly (Ministry of Higher Education and Research, 2020). The greatest challenge facing academic lecturers was to transfer all lessons, tutorials, and teaching and learning activities online on such short notice. Besides delivering synchronous lectures through online applications, such as using Zoom, Microsoft Teams, and Skype, academic staff also record their lessons and make them available online for students to review (Damşa et al., 2021; Hjelsvold, et al., 2020; Langford & Damşa, 2020). Many teaching courses from different faculties, including group activities, laboratory experiments, and traineeships, were especially difficult to conduct in a virtual learning environment (Dekker-Olsen & Langford, 2020; Hjelsvold et al., 2020; Øvrelid et al., 2020). Both oral and written examinations were moved to a digital platform by implementing open-book tests that aim to evaluate the students' ability to analyze critically the questions and solve problems (Diku, 2021; Ørnes et al., 2021).

Cornering the support schemes the institution had offered to support its staff, a recent case study conducted by Zemliansky (2021) detailed the examination of faculty training offered for staff online course teaching at a Norwegian university. The findings in this study reported lasting benefits and positive responses to training by participants, thus resulting in the faculty administrators including this scheme in their long-term plans (Zemliansky, 2021). Moreover, Zemliansky (2021) identifies localized solutions to tackle the lack of experience in online instruction among a group of university faculty by suggesting (1) active learning and alternative teaching activities instead of traditional lecturing; (2) flexible usage of either synchronous or asynchronous teaching and (3) employ formative feedback to increase interactivity in online courses. Lastly, at the third level concerning the many research centers, the temporary suspension of research activities was in place as clinical trials, laboratory experiments, and field-based research was postponed (Bahmani & Hjelsvold, 2021; Diku, 2021). Subsequently, the prioritization of research projects with fixed deadlines and grants, as well as commercial ventures with industries, had to be reconsidered based on the available resources, minimal staff, and home-office working conditions (Bahmani & Hjelsvold, 2021; Diku, 2021).

## **2.3 Lecturers' Adaptation to Teaching Conditions During the Pandemic**

In the context of Norway, the report by Langford & Damşa (2020) highlighted several notable findings about the experience of academic teachers in the first three weeks of digital teaching in the earlier period of lockdown. It was reported that there was the widespread adoption of video-based software, increased usage of various interacting forms of learning, involuntary reform of teaching methods, and the emergence of collegial competence building and self-reliance (Langford & Damşa, 2020). Many challenges were also identified and, in particular, many academic teachers who had little prior experience with online teaching would encounter technical difficulties due to lack of suitable equipment at home, troubles with organizing lab-based activities, as well as the insufficient time needed to learn new digital technology, software applications, and redesigning course content for distance education (Damşa et al., 2021; Hjelsvold, et al., 2020; Rapanta et al., 2020). Additionally, other emotional and psychological pressures would become apparent as academics were exposed to digital and information overload caused by a lack of direct contact, communication, and feedback from colleagues and students for an extended period of time (Jakimowicz & Maben, 2020; Langford

& Damşa, 2020; Le, 2021). In addition, another recent empirical research identified factors such as level of education, practical experience, and digital competence gained through online course training as important for university instructors to ensure students' academic success in higher education online courses (Martin, 2021). Statistical findings from Martin's (2021) study pointed to the combination of two factors: practical experience and formal/informal online training would correspond to the highest predictors of successful student achievement.

Compared to other education environments in higher education across the globe, Norwegian universities shifted more towards a complete model of remote teaching. Whereas in other contexts, many universities would continue to allow teaching and learning to continue on campus, albeit with many restrictions in place. Concerning the process of creating a safe face-to-face teaching and learning environment, the study conducted by Khan et al. (2021) provided a critical reflection on the on-campus experience of both the lecturers and students. Reflective reports from lecturers of three different institutes in Australia, Pakistan, and the United Kingdom indicated that Covid-19 safety protocols affected university student's motivation for learning and changed their lifestyles, as well as making a lasting impact on their learning outcomes as they adhere to the strict requirements for limited participants in practical activities (Khan et al., 2021). Corresponding to the student's experiences, academic lecturers reported facing fatigue and burnout while delivering courses with all stringent protocols in place and similar to their students, would lose motivation due to lengthy usage of face masks that caused symptoms of vocal tiredness and impairment with up to seven hours of face-to-face teaching a day reported in this study (Khan et al., 2021). Taken as a whole, the mentioned collection of literature depicts the experience of university lecturers in the early phase of adapting to the new learning environment caused by the safety measures that were in place to counteract the spread of the virus while also highlighting their struggles to overcome the initial challenges of new working conditions.

## **2.4 Factors Affecting Staff Satisfaction with Online Education**

As a concept, Bolliger et al. (2014) define *faculty satisfaction* with online teaching as the lecturer's belief that the "process of teaching in the online environment is efficient, effective, and beneficial for the individual" (p. 184). Alongside student satisfaction, faculty satisfaction is two integral aspects that impact each other and are essential to the success of online teaching

and the provision of quality university courses (Bolliger et al., 2014; Marasi et al., 2020). According to the research conducted by Bolliger & Wasilik (2009), there are three important factors for the measurement of faculty satisfaction when teaching online study programs, namely the students, the instruction, and the institution. In greater detail, factor analysis from the research implied that successful handling of student-related issues in the online learning environment is the most important factor, with emphasis on improving student engagement, increasing their involvement in their learning, and ensuring online students can actively communicate with the lecturers. Additional findings from the research also highlighted the importance of instructor-related issues, namely reliable employment of digital tools and creative provision of teaching contents, as well as institutional related issues, which draw attention to notable factors such as “workload, compensation, preparation, and course evaluations” (p. 13). Other studies conducted by Al-Samarraie et al. (2018) and Marasi et al. (2020) emphasized the positive correlation between increased level of faculty satisfaction in the online environment with improved commitment and continuation in online teaching, leading to more effective design and provision of courses; hence, having the potential to increase both student performance and the completion rates of study programs. Expanding on the prior study by Bolliger & Wasilik (2009), results from the hierarchical linear regressions made by Marasi et al. (2020) demonstrate that the four motivators (motivation, flexibility, discretion, and training) and seven hygienes (social, student, policy, time involvement, support, course assistance, and student evaluations) significantly impact faculty satisfaction with online teaching (p. 9).

Taken as a whole, these studies provide consistent evidence arguing for the improvement of faculty satisfaction across the three essential levels: faculty-student interaction, faculty’s self-efficacy with digital tools, and institutional support to create well-functional online study programs. However, these studies remain narrow in focus due to mainly examining the positive relationship between faculty satisfaction and relevant factors that may enhance the experience; thus, it is important to mention the fact that academic staff also undergo difficulties, exhibit reluctance, and express concern about the usefulness of online education. Wingo et al. (2017) depicted several drawbacks negatively affecting faculty satisfaction, namely university instructors are worried about their professional status because online instructions are considered less important in the wider institutional culture and there was uncertainty about how administrators would evaluate staff online teaching in relation to tenure promotion. In addition, three are legitimate concerns about technical proficiency, due to constant change in the



adoption of different digital tools and platforms, lack of social interaction, and cheating risk affecting the legitimate achievement of learning outcomes (Wingo et al., 2017). To address such concerns, some suggestions can be made to enhance faculty satisfaction in the form of robust institution support for training in online instructional skills, better provision of administrative and technical assistance, well-maintained infrastructure, as well as including faculty members in the process of quality assurance. With proper implementation and vertical cooperation between administrators and staff, online teaching ought to be valued on par with traditional face-to-face teaching to maintain staff motivations and commitment.

## **2.5 Distance Education in Higher Education**

The emergence of e-learning has had a major impact on the higher education system all over the world and carries the potential to reshape the learning environment and educational practices. Many forms of information and communication technologies (ICT) have been adopted in higher education as part of the general trend of implementing e-learning, namely learning management systems (LMS), computer-mediated communication (CMC), massive open online courses, e-portfolios, social media, and artificial intelligence. According to Garrison (2017), e-learning is understood as “the utilization of electronically mediated asynchronous and synchronous communication for the purpose of thinking and learning collaboratively” (p. 2). Beyond the umbrella term of e-learning, scholars widely considered two primary forms that constitute e-learning are online and blended/hybrid learning (Garrison, 2017; Guri-Rosenblit, 2005; Moore & Benson, 2012). With that said, modern distance education can be defined as fully online learning that had “its genesis in the field of computer conferencing with its focus on thinking and learning collaboratively” (Garrison, 2017, p. 3) and differs significantly from the traditional distance education that primarily concerns with autonomous learning and individualized content delivery.

Bates (2005) described the first generation of distance education as print-based correspondence education since the reliance on printed texts and post services to deliver books, manuals, and newspapers were important for the communication between students and teachers. In the second generation, multi-media such as radio and television were used in conjunction with printing resources to facilitate distance education in which a third-person tutor would mediate communication with the students (instead of the original authors of the teaching material) (Bates, 2005). Arriving at the current third generation of distance education, the process is

characterized by two-way communication media such as video-conferencing, ICT, and the Internet in which the process of content delivery is dynamic and interactive, thus allowing equal distribution of connectivity between teachers and remote students (also among students themselves). Especially with hybrid education, scholars have acknowledged its potential benefits, due to its utilization of the synergies between online education and onsite learning, and the opportunity it provides for teachers to leverage both forms of teaching formats. As described by Müller et al. (2021), a hybrid teaching course would often incorporate “asynchronous content delivery followed by immersive learning activities during live sessions” (p. 13). Some noticeable advantages that the hybrid teaching format offers are the flexible solutions for course design and lecturing delivery through embedded digital resources in asynchronous and synchronous mediums, in addition to helping lecturers and students reduce classroom time, thus ensuring cost efficiency, and wider access to teaching content across learning space and time (Gleason & Greenhow, 2017; Graham et al., 2013). However, disadvantages associated with implementing hybrid education are also recognized, as there would be an increase in course workload and time management, difficulties in course integration, and more requirements for staff training and investment in digital infrastructure (Gnaur et al., 2020; Niksiar et al., 2021).

## **2.6 Online Pedagogy in Higher Education**

A paradigm shift has occurred in how university students learn and use technological tools to advance their acquisition of academic knowledge and having been brought up being tech-savvy and proficient in the usage of digital media led to more preference for interactive learning environments (Wotto, 2020). Ideally, an interactive learning environment would gravitate toward collaborative and cooperative learning, as well as promote multitasking and critical thinking, which indicates a shift from surface learning to deep learning by emphasizing the socially constructive process and sharing of information (Boettcher & Conrad, 2021; Wotto, 2020). In this digital information age, technology has impacted the way we exchange knowledge, and the ease of access and rapid innovation of technological tools, and the expansion of globalization have made collaborative learning and interaction essential (Lambert & Fisher, 2013; Moore & Benson, 2012). With these demands for ensuring successful learning in university classrooms, “teacher preparation becomes both increasingly important and increasingly challenging as teacher educators seek new ways to integrate 21<sup>st</sup>-century skills, nonlinear thinking skills, and digital-age reflections into coursework” (Lambert & Cuper, 2008,

p. 265). Additionally, Instefjord & Munthe (2016) conceptualized the concept of professional digital competence for instructors with three knowledge areas: technology proficiency, pedagogical compatibility, and social awareness (p. 79-82). In their study, Instefjord & Munthe (2016) underlined the complexity of digital competence, which involves far more than proficiency in technical skills. From this perspective, teachers' digital competence is distinguished from the typical usage of technology in everyday life, due to their focus on content and instruction delivery, as well as feedback provision and assessment.

The sudden acceleration of learning in the online environment has posed an immediate challenge for academic lecturers and forced them to adapt their educational activities. University lecturers were met with the challenges of online teaching and having to further improve their digital competence, as well as the urgent need to improve course design and delivery of learning experience in such an unfamiliar and time-constrained environment. In the study conducted by Damşa et al. (2021), the authors analyzed the teachers' experiences and their organization of learning activities in the beginning month under the COVID-19 lockdown focusing specifically on the understanding of the teacher's agency and its relation to the management of various background constraints. By using a combination of explorative methods and an abductive analytical approach, the study found out that there is a limited variation in the online teaching methods university teachers used, and their responses showed a lack of digital competence and time for planning lectures. Moreover, university teachers were often seeking different sources of digital support beyond the regular institution boundaries. As a result, the study categorized three profiles of teacher's responses, namely: (1) those who mentioned facing many constraints that hindered the delivery of teaching practices; (2) those who managed a moderate adaptation to the changes in online teaching and were less optimistic about their efforts, and (3) those who reported an active usage of new software and methods and thoughtfully handled the constraints, along with changing their way of teaching significantly (Damşa et al., 2021)

In relation to the revised framework of the teacher's agency operating in a time of crisis, the authors suggested a relational perspective that considers online teaching as a dynamic combination of actions, traits, and other external influences (Damşa et al., 2021). Furthermore, the study concluded that the teachers' conduct could be understood as a three-dimensional model, namely iterative, practical-evaluative, and projective, which corresponded to the three profiles of teachers' responses. The results from the study indicate that transformative agency

would emerge because of the mediating relationship between ostensible actions and the occlusive dimension of agency, which, as an example, can be the dynamic between desirable conduct and background constraints.

## **2.7 Computer-Supported Collaborative Learning**

Computer-Supported Collaborative Learning (CSCL) is defined by Ludvigsen & Arnseth (2017) as learning activities in which learners interact with each other through well-coordinated collaboration mediated by an instructor or between themselves to solve a problem jointly and create a learning artifact with the support of information and communication technologies (ICT). Suthers (2012) also recognized that CSCL, as a concept, widely comprises all forms of incorporating ICT in education, including desktop and laptop computers, mobile phones, tablets, web-based LMS, and educational software. Moreover, the context of implementation for CSCL can occur both in face-to-face and online settings, meaning that learning can be synchronous, which entails lecturing in real-time, or asynchronous, in which lessons and activities are pre-recorded and are accessible at a different time (Lowenthal et al., 2020; Oyarzun et al., 2021; Tam, 2020). Here, ICTs are incorporated as digital resources to enhance collaborative learning through improving learning interaction between students, in addition to also being the learning objectives of the course as students gain the knowledge and skills to become more proficient with using disciplinary-specific analytical tools (Cleveland-Innes et al., 2019; le Roux & Nagel, 2018; Saadatmand et al., 2017).

As pointed out by Tam (2020), CSCL has its theoretical foundation based on constructivist epistemologies, which argue in favor of pedagogical practices that encourage students to build knowledge constructs that spring from their learning experiences with their peers. Taking inspiration from the famous Vygotsky's (1978) concept of the "zone of proximal development" (ZPD) and "scaffolding", Ludvigsen & Arnseth (2017) argued that these two components play a significant role in successfully employing CSCL in the digital learning environment because teachers need to scaffold and provide adaptive support to their students so they can perform more complex tasks, thus reaching the intended ZPD. In greater detail, Ludvigsen & Arnseth (2017) outlined four features in the design of a successful CSCL environment, namely: (1) exploration of learning context so that meaningful tasks for students can be orchestrated; (2) use of simulations and dynamics visualizations; (3) scripting collaboration so that students can better acquire epistemic skills and knowledge; and (4) employing metacognitive strategies to

help students improve their ways of reasoning into more advanced arguments (p. 55). In the present day research landscape, there has been a large amount of attention devoted to mainstream CSCL research into the system and dialogical approaches (Arnseth & Ludvigsen, 2006), with the advocacy for further research into collaboration scripts in different disciplinary domains, scientific inquiry, group awareness, and affordance, as well as feedback provision, in light of the latest advancement in digitalization in the higher education sector (as cited in Ludvigsen & Mørch, 2009).

# 3 Analytical Framework

## 3.1 Community of Inquiry Model (CoI)

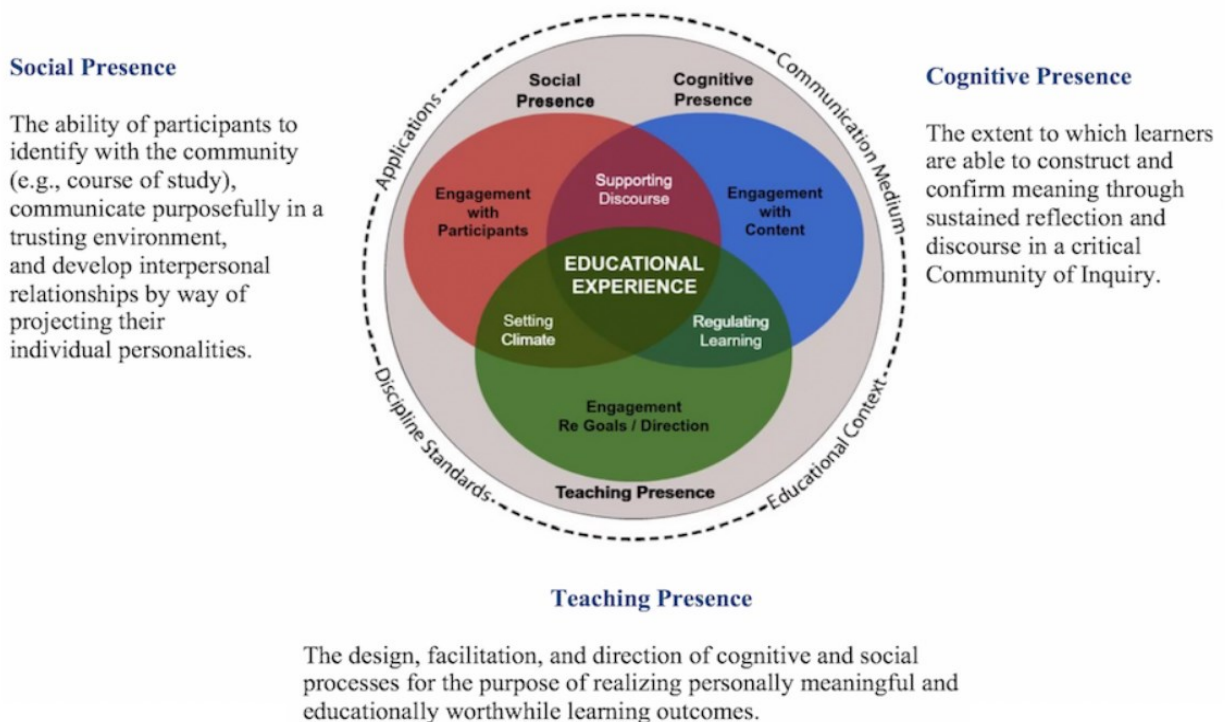
I have selected the Community of Inquiry (CoI) theoretical framework to analyze the practices and methods of university lecturers when they design curricula and facilitate learning activities for students in the online learning environment through the use of the Learning Management System (LMS) and Computer-Mediated Communication (CMC). The reason for selecting this theoretical framework is due to its relevance to my proposed research topic. The three concepts of cognitive presence, social presence, and teaching presence will be used as units of analysis and serve the purpose of answering research questions 2 and 3 regarding how digitalization affected teaching practices and whether it was conducive to sustaining an online community of inquiry.

Randy Garrison, Terry Anderson, and Walter Archer (1999) first introduced the Community of Inquiry (CoI) framework to discuss the challenges of new online graduate programs that depended on asynchronous discussion forums. Founded on constructivist pedagogy and Dewey's educational theories, Garrison et al. (1999) sought to develop a new theoretical model explaining the dynamic of online learning experience in higher education, as opposed to the traditional distance learning models that situated the process of learning as passive, autonomous, and individualistic, thus lacking the much-needed social engagement and feedback provision. In essence, the CoI framework views the overlapping relationship between three dimensions: cognitive presence, social presence, and teaching presence as essential conditions for creating a successful online learning community in higher education. The dimension of cognitive presence refers to "the extent to which the participants in any particular configuration of a community of inquiry are able to construct meaning through sustained communication" (p. 89). Cognitive presence is best understood when contextualizing in a model of critical thinking, which begins as a triggering event that starts the process of exploration in a search for knowledge, which is then followed by integrating the knowledge into a coherent concept, and the final stage would be the resolution of the problem (Garrison et al., 1999). Garrison et al. (1999) defined the dimension of social presence as "the ability of participants in the Community of Inquiry to project their personal characteristics into the community, thereby presenting themselves to the other participants as real people" (p. 89). An example of this dimension can be seen in the form of social-emotional factors present in the

communication process, meaning that if the learners find the interaction in the group personally fulfilling, they will likely remain engaged in the community and follow up on their study progressions. Notably, there are three categories of indicators related to the social presence that Garrison et al. (1999) mentioned, which are emotional expression, group cohesion, and open communication (p. 99). For the third dimension, Garrison et al. (1999) identified two general functions of teaching presence, which alluded to the three indicators: building understating, giving direct instructions, and maintaining instructional management.

Here you will find Figure 2, which depicts the relationship between the three CoI presences, along with several examples of activities corresponding to each presence. Located in the outer circle are the contextual elements that constitute the online learning environment. As noted by researchers who utilized this framework, there is a mediating relationship among the three CoI presences because all three dimensions are considered being equally important to the establishment of a successful online educational experience for the students.

**Figure 2. The Community of Inquiry (CoI) theoretical framework**



Adapted from Garrison et al.'s (2000) original description of the framework and cited in Cleveland-Innes et al. (2019).

Overall, the purpose of Garrison et al.'s (1999) study was to conceptualize a model for the use of computer-mediated communication (CMC) to better support the educational experience in higher education. Each of the three dimensions of the community of inquiry needs to be integrated in a complementary way so that cognitive, social, and teaching presence are combined appropriately. Thus, the desired result of a quality working environment is obtained, leading to a fruitful inquiry process and the development of high-order thinking skills in a collaborative working online environment.

### **3.1.1 Empirical studies using the CoI framework**

This section aims to summarize studies relating to the understanding of how the online learning environment should ideally be sustained by consulting the original CoI framework by Garrison et al. (1999). Relevant studies addressing the strengths and limitations of the CoI framework have been included and were examined chronologically to provide the readers with a comprehensive outlook of some of the latest research on the application of CoI higher education (Arbaugh et al., 2008; Krzyszkowska & Mavrommati, 2020; Shea et al., 2014)

The published research by Arbaugh et al. (2008) detailed the development of an instrument that validated the CoI theoretical framework by administering the survey instrument at four institutions in the US and Canada. In this study, Arbaugh et al. (2008) used an extensive questionnaire to collect data about student perceptions in the online learning environment with reference to the original three dimensions of cognitive presence, social presence, and teaching presence. The survey instrument includes 34 codified items, comprising 12, 9, and 13 sentences about the corresponding cognitive, social, and teacher presence. This survey's instrument's apparent strength was its detailed options of statements probing deep into each of the associating indicators of the three dimensions. For example, the author Arbaugh et al. (2008) included three questions for each of the four indicators of cognitive presence, focusing on the triggering events, then the following phases: exploration, integration, and resolution. To test the instrument reliability level, the authors use Cronbach's alpha and collected results suggesting a high value of significance, namely 0.95 for the cognitive presence, 0.91 for social presence, and 0.94 for teaching presence. The empirical study by Arbaugh et al. (2008) strongly supported "the use of the CoI instrument as a valid measure of teaching, social, and cognitive presence" (p. 135). However, a research limitation can be attributed to the inconsistency between the structure of CoI items and the usage of factor analysis due to the vague wording



of certain items measuring teaching presence. The pioneer results of this study played an important role for later studies to perform extensive reproduction of factor analysis based on Arbaugh et al.'s (2008) survey instrument in other online learning contexts and improved the ability to test the CoI framework in a much more thorough way.

In this research, Shea et al. (2014) proposed extending that framework of CoI by including the learning presence. Shea et al.'s (2014) main argument was that the original three dimensions “do not fully explain the attitudes, abilities, and behaviors that active and engaged students bring to their individual and collaborative online activities” (p. 10). Thus, Shea et al. (2014) proposed that the CoI framework should include a new construct called learning presence, describing the construct as “the phases of forethought, performance, and reflection associated with self-regulated learning, but with emphasis on the goals and activities of online learners specifically” (p.10). Specifically, the forethought phase described the early stages of an online course where the students engage in the process of delegating and planning for the assigned learning tasks to themselves and others. (Shea et al., 2014). The performance phase includes the students' abilities to monitor their learning and implement learning strategies, with emphasis on collaborative monitoring activities with classmates to identify their strengths or weaknesses as learners, recognize the gap in understanding, and provide assistance related to learning tasks (Shea et al., 2014). By employing the two research methods of quantitative content and social network analysis to study the online discussions in a doctoral course, Shea et al. (2014) made a compelling argument highlighting the importance of self-regulatory and co-regulatory processes skills in the CoI framework. The study results showed a strong correlation between a learner's self-regulatory strategies to a high level of cognitive presence, thus validating the argument emphasizing student contributions and self-directed learning behaviors in online learning. The study also validated the high correlations found between social presence and teaching presence, as well as social presence and learning presence.

Turning to the context of Norwegian higher education, the discussion will now turn to the practical application of the model in designing an online course for in-service teachers. The research conducted by Krzyszkowska & Mavrommati (2020) set out to achieve this goal by designing a CoI-inspired questionnaire to elicit student perceptions of learning in an online course, Matematikk MOOC 1. Regarding the category of cognitive presence, the findings suggested that the students of the course considered the teaching subjects highly relevant to their professional knowledge and future practices. As shown by the cognitive trigger score,

Krzyszowska & Mavrommati (2020) highlighted the participants were highly motivated to move to the different stages mentioned in the Practical Inquiry Model (Garrison et al., 1999) by using different activity forms, such as brainstorming, discussion, face-to-face dialogues, and completion of individual assignments. The data results concerning teaching presence pointed to the teachers' preference for the design and organization of the course as significantly higher than the facilitation and direct instruction. A limitation in this study has been identified, namely the low perception of formative feedback and the high rate of missing responses relating to collaborative dialogue to support group cohesion. As for the social presence dimension, Krzyszowska & Mavrommati (2020) reported a low rate of data showing mixed student perceptions about affective expression, group cohesion, and open communication. Overall, A key contribution of Krzyszowska & Mavrommati's (2020) research was the validation of the Community of Inquiry framework because the mode has adequately filled the role of a solid reference for educators to align online course design with the social constructivist theory of knowledge. It would also be prudent to heed the suggestions made by Krzyszowska & Mavrommati (2020) about the potential overemphasis of reducing the learning experience to a simplistic process of product delivery when students primarily focus on completing the assignments and ignore the benefits of inquiry-based learning in a digital learning environment.

### **3.2 Transformative Learning Theory (TLT)**

To address the first research question, I have selected the TLT as a frame of reference to gain a better understanding and examine the experiences as they navigate through the hurdles of remote teaching and transitioning to on-campus hybrid education. Jack Mezirow (1978) first developed transformative learning theory (TLT) based on his extensive research about the experiences of women who were returning to higher education in the late 1970s to explore in-depth their journey to overcome oppressive gender expectations. As an expert in the field of studying adult learners, Mezirow's (1991) TLT aimed to formulate a comprehensive theoretical framework that can adequately address the shortcomings of the behaviorist and psychoanalytic paradigm, which predicate upon anticipated behavioral responses based on stimulation, measurability, accountability and also often contradictory humanist psychology. From his perspective, Mezirow (1991) argued that:

Perspective transformation is the process of becoming critically aware of how and why our assumptions have come to constrain the way we perceive, understand, and feel about our world; changing these structures of habitual expectation to make possible a

more inclusive, discriminating, and integrative perspective; and, finally, making choices or otherwise acting upon these new understandings (p. 98).

Moreover, Mezirow (1991) considered adult learners to be fixated on their own histories and needed to acquire a reflective understanding of what they have experienced in the past to move forward and integrate new understanding to liberate themselves from prior assumptions so that personal development would occur. With that said, Mezirow (1991) formulated his TLT into 10 stages in which the transformative learning will presumably occur:

1. A disorienting dilemma
2. Self-examination
3. A critical assessment of assumptions
4. Recognition of a connection between one's discontent and the process of transformation
5. Exploration of options for new roles, relationships, and action
6. Planning a course of action
7. Acquiring knowledge and skills for implementing one's plan
8. Provisional trying of new roles
9. Building competence and self-confidence in new roles and relationships
10. A reintegration into one's life on the basis of conditions dictated by one's new perspective (p. 98).

Essentially, his theory proposed that adult learning happens through stages where meaning-making becomes clearer as they undergo transformative learning to realize their highest potential through the process of inquiry, problem-solving, and critical reflection. Mezirow (1991) suggested that a disorienting dilemma is a catalyzing event that emerges and creates conflicts to the existing individual's frames of reference and often can be "an externally imposed epochal dilemma such as a death, illness, separation or divorce, children leaving home, being passed over for promotion or gaining a promotion, failing an important examination, or retirement" (p. 98). Progressing to the second stage, the transformative process involves a search for personal integration and making sense of the dilemma one is facing (Mezirow, 1991). In the third stage, adult learners are invited to revisit their prior assumptions, namely the confrontations with why these assumptions have constrained the way we perceive reality (Mezirow, 1991). A vital component to ensure the progression from the fourth stage to the seventh stage was characterized by Mezirow (1998) as critical reflection, as it allows oneself to assess their own prejudices, beliefs, and ideas, even the most long-held ones, resulting in a significant personal development and perspective transformation. The following

stages involve planning new courses of action and acquisitions of new knowledge and skills to cultivate a new role, and thus the process of transformative learning has occurred since the subject is actively participating in critical discourse to substantiate the deep meaning derived from their lived experiences (Mezirow, 1991, 1998). As documented in his other studies, Mezirow (1998, 2003), social learning activities that are conducive to enabling transformative learning can take place through group discussions, role-playing, writing diaries, and open-ended interviews, which promote deep reflection and reflective dialogues. Regarding trying out new roles and practices, Mezirow (1991) argued for the establishment of an educational environment that focuses on life transition, in which participants can find others going through similar experiences and may identify with suitable role models, with emphasis on making norms to “protect learners from personal attack or humiliation, and competition among learners generally is discouraged” (p. 116). As asserted by Mezirow (1991), the final stage of reintegration is not merely adding new information, and skills to previously held ideas, it has the potential to change the person into a new being, thus allowing the adults to improve their basic understanding of themselves in profound ways, namely with furthering the intellectual and epistemological development of the individual.

In essence, the theory of transformative learning provides an analytical framework enabling the researcher to examine the pattern of habits, in addition to the reflection of viewpoints in relation to prior assumptions, then followed by a restructuring of mental processes through engaging in discourse, concluding in the discovery of newly constructed meanings. The theory of transformative learning has the potential to allow people to contemplate their actions and thoughts so that a better understanding could be obtained and new opportunities for growth and acquisition of reflective knowledge can occur. Since the original development of the adult learning theory by Mezirow (1978), other authors have consistently emphasized collective meaning-making through transformative learning as an important factor to enhance a learner’s capacity to think critically, reflect, and generate new meaning from personal experiences and observations, which promise the result of a reformed identity and a renewed sense of purpose (Christie et al., 2015; Eschenbacher & Fleming, 2020; Kitchenham, 2008).

### **3.2.1 Empirical studies using TLT**

Acknowledged by many other researchers, TLT has been applied to a wide array of educational research settings, namely in university staff professional training (Christie et al., 2015); lifelong learning discourse on projects of self-development (Eschenbacher & Fleming, 2020); storytelling as a pedagogical tool in sustainable education (Hofman-Bergholm, 2022); and development of intercultural competence in teacher education courses (Steele & Leming, 2022). Even though the research context in these mentioned studies might be different, the similar analytical patterns the authors have adopted were to first identify the disorienting dilemma, then study how the research subjects critically examined their assumptions and practices, with the final step of investigating how new integration of innovative methods benefit perspective transformation.

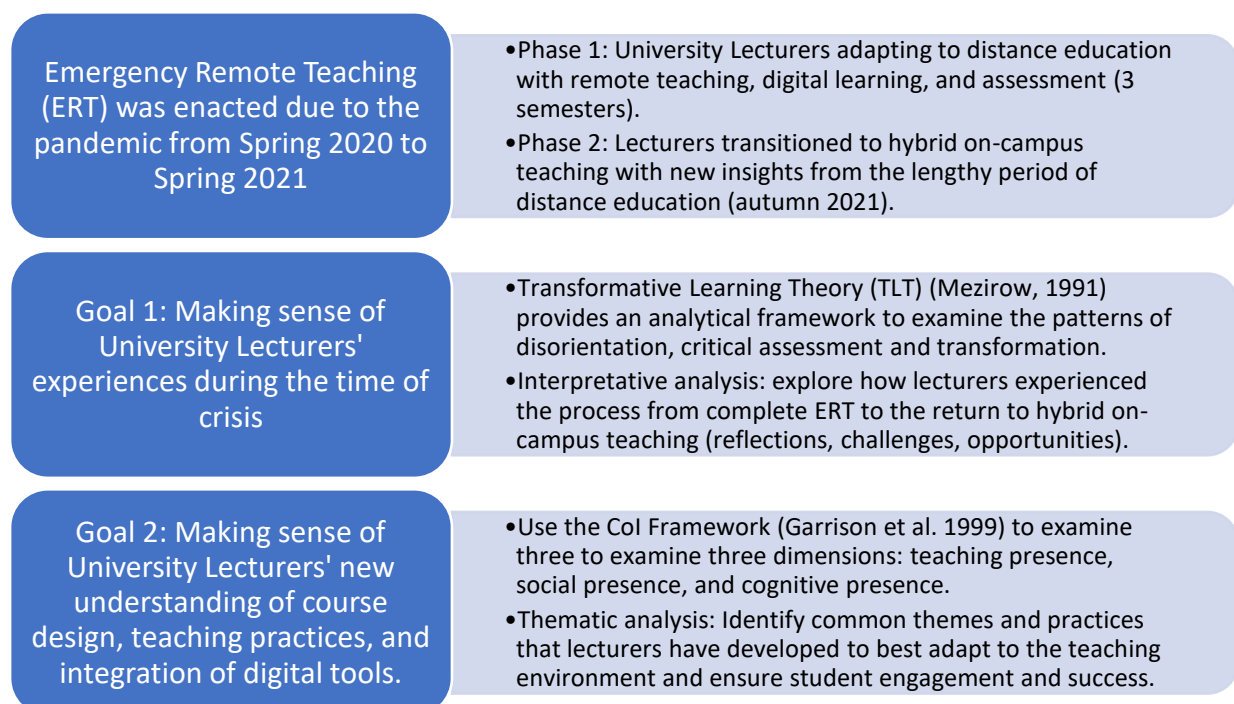
The research most comparable to mine is one conducted by McQuiggan (2012) who uses TLT as an analytical framework to examine qualitatively the change in face-to-face teaching practices of lecturers as a consequence of faculty professional development for online teaching. Similar to my research, the focus of this research focused on examining the experiences of academic staff who have undergone a perspective transformation as they gained new knowledge of online teaching and integrated their new understanding of this education format to improve their teaching methods and course design. Interestingly, the professional development program in this study offered instructions, discussion, and demonstration for preparing hybrid course delivery, which implies an early recognition of the potential benefits of hybrid education ahead of the time when the pandemic caused the total closure of university campuses. Despite a clear difference in research contexts compared to my study, McQuiggan (2012) also highlighted the disorienting dilemma of moving to online teaching, critical reflection of experiences to transform assumptions and practices about teaching, and having a new opportunity to understand more about how to best respond to students' learning in the digital landscape. Additionally, McQuiggan (2012) noted that the advancement from one stage to another is not a straightforward process, but an intermittent journey, in which "training sessions offered only once are not as effective as those offered on an ongoing basis or those that build on each other incrementally" (p. 33). Due to time constraints and habits of practice, the study recognized not all faculty members were willing to reflect on their beliefs and practices, and thus, there remains a barrier to engagement and participation (McQuiggan, 2012). Results from the study conducted by McQuiggan (2012) indicate a clear benefit of

organizing a professional development model inspired by Mezirow’s ideas because this framework provides a method of engagement for faculty staff that humanizes their experiences, valuing the contributions they bring, and not merely focuses on learning the technical aspects of online teaching.

### 3.3 Application of the analytical framework

By using Garrison et al.’s (1999) CoI framework and Mezirow’s (1991) TLT, this master thesis aims to address the three mentioned research questions by achieving two research goals. First, I aim to understand the experience of academic lecturers as they underwent and overcame the challenges of the extended period of remote teaching caused by the pandemic. As part of reflective practices, I would also explore how such experiences inform their new understanding of course design when hybrid education was enacted; hence, a need for comparison and contrast of the two learning conditions is warranted. Second, I want to examine their practices and rationale for implementing new digital tools and methods of engaging students in hybrid educational settings with the return to campus in the recent semester. Thus, I intend to investigate how lecturers demonstrated their abilities to be resourceful and adaptive and how they developed the best practices to ensure student success. The following Figure 3 is a visual representation of how I would use the analytical framework to discuss the findings and illuminate the interplay between both types of knowledge: experiences and practices.

**Figure 3. Application of the two theoretical frameworks**



## 4 Methodology

This chapter outlines how the research would be designed to explore the university lecturers' experience with the transition from the period where complete remote teaching was in place to the return to on-campus hybrid teaching in the recent semester of autumn 2021. It will begin with the rationale explaining the selected methodology, then move to a detailed description of the case study design, which includes information about the research site, research participants, research methods, and the procedures for completion of each stage of the study. The next part will be about data analysis and including how to ensure validity for this qualitative research and address the ethical considerations.

### 4.1 Research Design

I intend to conduct an explorative, interview-based qualitative study of university lecturers' experiences and insights from the transition to on-campus teaching after an extended period of distance education caused by the pandemic. According to Bryman (2012), a case study design encompasses the intensive and detailed examination of a single case in which the term "case" is often associated with a specific and targeted setting, such as a single community, organization, school, family, person, or a particular event. This type of qualitative case study will allow the research participants to discuss their experiences and perceptions in great detail and provide explanations about their decisions and the choices they made. Bearing in mind Bryman's (2012) suggestions of clearly defining the unit of analysis, I have determined the responses and experiences of university lecturers as the chief unit of analysis, which is at the University of Oslo, Norway, as the research site. The usage of in-depth semi-structured interviews will serve as the primary method of data collection to gain a rich and thick description of how the academic lecturers transitioned to continuous online teaching and learning and allowed them to express authentically their opinions and feelings about the topic. In agreement with Bryman's (2012) argument, the case study will elucidate the unique features and contexts where the case took place, adhering to the idiographic approach that highlights its characteristic as exemplifying. The implication of this qualitative case study design also corresponds to what Yin (2009) has mentioned, describing an exemplifying case study as useful research that epitomizes a suitable context to examine key social processes and investigate their implications.

As for the research paradigm, I will adopt the constructivist worldview because this perspective will supplement the application of the transformative learning theory and community of inquiry framework in the later discussion section. According to Schwandt (2000), the fundamental assumption of the constructivist paradigm is that knowledge is socially constructed by people active in the research process, and the researchers should attempt to understand the complex world of lived experience from the point of view of those who live it” (as cited in Mertens, 2019, p. 16). From the constructivist perspective, the process of meaning-making was developed based on the analysis of personal experiences, contextual setting, and employed practices which emerged from the discourse that occurred between the interviewer and the participants in this study.

I will implement the qualitative research design to examine the experiences of the participants who were involved in course design and teaching in the past two academic years. Qualitative methods are specifically designed to help researchers interpret deeper meanings and make sense of the way individuals think, behave, and develop a systematic understanding of social codes and constructs, thus having the potential to yield rich and valuable data (Bryman, 2012; Creswell, 2018). The qualitative research process would involve the description and examination of social conditions in a detailed, systematic, and comprehensive way so that the perspectives of the research participants are given an adequate spotlight (Bryman, 2012). Additionally, Creswell (2018) described qualitative research as interpretative in nature, and the aim is to obtain detailed data describing experience and perceptions. Having considered the advantage of the qualitative research methodology, I consider this approach to be suitable for acquiring descriptive data from in-depth interviews of the university lecturers and allowing the participants to express their authentic understanding and feelings and gain insights into the rationale of their perceptive thoughts, design process, strategies, and implementation of digital tools and resources. Overall, this research design will attempt to interpret the interviewees’ experience and identify the many shared understandings and practices to adapt according to the teaching conditions during the crisis and how they managed the transition to hybrid on-campus teaching and facilitated learning activities to engage their students.

## **4.2 Recruiting Procedures**

Referring to Bryman’s (2012) and Creswell’s (2012) extensive writing on research design, the research will use the method of purposive sampling to identify a sample of suitable participants.



According to Bryman (2012), purposive sampling entails a strategic selection of sample members that differ from each other regarding characteristics and are relevant to the research questions. The sampling process itself differs from both random sampling and convenience sampling because the researcher needs to have clear sets of criteria for the creation of units of analysis with special attention to what these “units” constitute. Following Creswell’s (2012) advice, further adjustments to the initial sample size can be made during the research process to ensure thematic saturation and sufficient data are collected. The accompanying approach would be snowball sampling in which the researcher would request the participants to identify other individuals who also have relevant characteristics and experience to become members of the sample and propose them to join the study (Creswell, 2012, p. 146). Snowball referrals from the participants’ suggestions to contact more willing informants who would be interviewed for the research in case of facing difficulties contacting the initial four participants. Here are the inclusion criteria that I formulated for the selection of academic staff to be interviewed: 1) lecturers from different faculties at UiO; (2) lecturers who designed, taught, and facilitated online learning during the period from March 2020 to December 2021; (3) lecturers who are familiar with the use of digital tools to engage students in both online and physical learning environments. The criteria for the selection of the teaching period of March 2020 were because within this timeframe, emergency remote education was first implemented in all Norwegian universities and the period starting from August 2021 was the first semester in which return to on-campus teaching was implemented at the university.

This qualitative research recruited and gathered interview data from eleven participants who are academic lecturers at a Norwegian public university. To gain the contact emails of each academic lecturer, I first navigated to the University of Oslo main site and start using the search engine, then I use the filtering function in the search engine to navigate the different categories, such as “Faculty” – “Studies” – “Courses” – “Autumn 2021” (only recurring courses from 2020 were considered) – “Timeplan” – “Lecturer page”. Overall, the approach to narrowing down the potential candidates for the interview was deductive and selective, in which the author would begin with creating a set of specific criteria and finding the right matches, thus allowing the creation of a list of contacts. Before conducting the research, the candidate sent emails to heads of departments to ask for permission to interview their staff and received an allowance to do so.

I recruited academic lecturers who are teaching and designing study programs from each of these three Faculties: Educational Sciences, Humanities, and Mathematics and Natural Sciences. Turning to Becher & Trowler's (2001) influential book *Academic Tribes and Territories* as a source of reference, there are four knowledge domains in academia: hard-pure, soft-pure, hard-applied, and soft-applied. Becher & Trowler (2001) provided this framework for understanding the distinctiveness of disciplinary cultures as a reflection of the differences in their epistemic practices to generate and assess knowledge claims. The Faculty of Mathematics and Natural Sciences correspond to the two disciplinary groupings, hard-pure and hard-applied because there are study programs that focus primarily on the quantitative understanding of natural scientific knowledge (bachelor/master's in mathematics, chemistry, biology, physics) as well as specialized study offers in applied professions (bachelor/master's in informatics, computer science, engineering, and IT). Another goal for the selection process is to have diversity in insights and experiences from the university lecturers being interviewed. Additional homogeneous characteristics of the participants are also noted, as they would all have a shared working experience in a similar academic environment. I would begin by formulating some criteria for the selection of the participants for the research. Concerning the university lecturers, their teaching experience, program level/type, disciplinary cultures, mode of teaching, and the student population of their courses would be considered. Having decided on the recruiting procedures, I will get into contact with and interview the intended university academic staff who had experiences with online teaching and learning during the extended emergency remote teaching because of the COVID-19 restrictions and those with recent experience with on-campus hybrid education.

### **4.3 Data Collection**

Semi-structured interviews were the primary source of data collection for this master thesis, as this type of interview would allow the respondents to express freely their views and further elaborate their answers. The employment of semi-structured interview as a data collection method has clear benefits due to the flexibility in how the researcher varies the sequence of questions while also probing deeper by asking follow-up questions that are directly relevant to the conversation and allowing a great deal of freedom for the interviewee to reply (Bryman, 2012; Creswell, 2012, 2018). The interviews were carried out in January and ended in early March 2022, with a total of eleven participants. The choice of interviewing via Zoom was due to necessity and convenience, as at the time, there was a sharp increase in Omicron

transmission in Oslo, so it would be best to limit physical proximity to the interviewees. I did, unfortunately, catch the Covid-19 virus, so I had to stay at home in isolation for one week and required resting time to recover. Once the participant agreed to participate in the project, a virtual interview on Zoom was scheduled, and then the candidate would include an attachment of the project description and consent form in the follow-up email. After receiving a confirmation of time and their signatures on the informed consent, the interview guide would be sent to their email address detailing the key talking points one week before the interview. During the interviewing process, the interviewer played the role of guiding the conversation to ensure we met all talking points in the given time of 45 minutes. Despite knowing the key talking points beforehand, the interviewer needed to listen attentively to the lecturers' answers, ask for clarification when needed, and probe deeper into the lived experiences of each participant.

The recruitment of academic staff from the three select faculties of Educational Sciences, Mathematics and Natural Sciences, and Humanities was deliberate so that their insights and experiences could be comparatively analyzed in connection to the three main objectives detailed in the research questions. Essentially, the discussion during the interviews revolved around three key issues: (1) opportunities and challenges when transitioning back from digital education to on-campus teaching; (2) curriculum design understanding and assessment; (3) how the digitalization process affected teaching and learning practices. Responses to all the questions were audio-recorded with permission from the participants and, I have also processed data regarding the lecturer's academic background, relevant information about their teaching courses, the types of learning activities they facilitate, and the way they provide assessment and feedback. In addition, I took a few screenshots of their teaching modules with permission for later revision, in combination with the audio data for data analysis. Once I have finished transcribing the interview dialogues, the responses will be sent back to the interviewee for member checking.

## **4.4 Data Analysis**

After completing the interviews with each of the lecturers, I downloaded the audio files from Zoom and began the data analysis process. The first step in my data analysis was to transcribe the interview files into Microsoft Word files and remove any unnecessary filler words. The coding process would follow suit as I carefully examined the transcripts and identified common

themes and often repeated phrases or words and logged in the data by using NVivo. As the semi-structured interviews provided the raw transcribed data from the audio recordings, there was a need for a thorough editing to improve text clarity while still preserving the authenticity of the lecturers' accounts. I also used notations with pen and paper in combination with NVivo, as it helps me to remember interesting subtexts and document progress in data analysis. As I uploaded the transcript files to NVivo for coding, I analyzed the transcripts inductively and assigned emergent themes with a corresponding code that illustrated opinions, attitudes, or an approach to tackle a challenge. Adhering to the GDPR (General Data Protection Regulation) and UiO's data storage procedures, I did not use any other form of automatic transcription features (provided by Zoom, NVivo, and Microsoft) because this would mean the data would be uploaded to a third-party platform. As a result, the transcription of audio files was conducted solely by the master's student and all data was secured locally on my laptop. Since the goal of this research project was to examine lecturers' experiences and practices, the emphasis of using the qualitative data analysis software would focus on meaning-making instead of analyzing word frequencies. With that said, as part of the process of narrative analysis, the interpretation of the answers provided by the lecturers was informed by their use of language, which was reflective of their attitudes and experiences, in addition to being context-dependent (Bryman, 2012; Creswell, 2018).

Even though I was informed by the literature about fundamental concepts regarding digital education, the identification of emerging themes and coding process was inductive, drawing from the rich interview data that was collected and being open-minded to the unique experience each respondent had. As recommended by Creswell (2018) & Mertens (2019), it would be prudent to adopt a pragmatic approach to qualitative data coding and leave oneself open to understanding the individual unique journey and perceptions, where meaningful insights could be recognized. According to the definition made by Bryman (2012), a code is a label that is attached to data about the characteristics of the unit of analysis and ultimately aims to turn a large chunk of data into fragments for examination. My understanding of the concept is that a code is a concise description of a specific theme that has been identified in the interview and it is strictly a description and not an interpretation. I did the preliminary coding immediately after the transcription of the interview had been completed with confirmation from the participants about the accuracy of the recorded data. Thus, the usage of a coding frame is needed because it will allow the researcher to construct a list of codes based on either a hierarchical frame to apply them to the unstructured raw data and establish clear rules for their application (Bryman,

2012). For the final step of data analysis, I grouped the collection of cluster themes together based on their relevance, similarities, and interesting outliers.

According to Bryman (2012), several characteristics contribute to the definition of a “theme” in qualitative data analysis as a categorical indicator is identified by the analyst through examining data that are relevant and help answer the research questions and are created based on the coding process of the transcripts or field notes (p. 580–581). Moreover, the “themes” derived from the analysis of transcripts will contribute to the understanding of the theories and concepts I have chosen and assist in examining such elements and strengthen the research focus. Regarding the process of identifying themes, Ryan & Bernard (2003) provided an insightful description of theme discovery techniques that is worth mentioning as a helpful guideline for data analysis. The two authors suggested paying close attention to these elements as you analyze your transcripts: repetitions, indigenous typologies, metaphors and analogies, transitions, similarities and differences, linguistic connectors, missing data, and theory-related material. Across each interview case, I would assign the piece of relevant transcripts the same-colored coding markers, which I would later cross-compared to look for emerging common themes. The subsequent step was to examine each account and connect the emerging themes to highlight their potential relationship and underline the most important experiences and practices using NVivo coding functions.

Corresponding to the proposed qualitative research design, the choice of thematic analysis of the semi-structured interviews is suitable for the goal of identifying patterns in common themes in the data. Bryman (2012) suggests a procedure for thematic analysis as paying close attention to the frequency of repetition of certain words, phrases, and incidents that denote prominent themes relevant to the research focus. In addition, Braun & Clarke (2006) mentioned in much detail the distinction between two levels of thematic analysis, namely: “semantic themes” which aim to identify noteworthy themes within the surface meaning of interview transcripts without further inspection of what the interviewee has said and recorded. Whereas “latent themes” consider the in-depth investigation of underlying assumptions, conceptualizations, and ideas that have an interrelated relationship to forming the semantic level of meaning of the data. Other valuable insights provided by Braun & Clarke (2006) were the six sequential phases of thematic analysis, beginning with the familiarization with the collected data, then generation of initial codes, identifying relevant themes, reviewing the themes, defining and naming the

themes, and finally, producing the report. Appendix 8.6 in the Appendices section will detail the final product of the qualitative data process using NVivo.

Essentially, with the use of inductive logic as a research routine for the data analysis, I would gradually formulate possible findings and fitting explanations that are beneficial for the understanding of the overall journey lecturers embarked on during this time of crisis. As for the following discussion chapter, I intend to use the abduction approach to examine whether the inductive data would correspond adequately to the theoretical constructs mentioned by Garrison et al. (1999) & Mezirow (1991). Based on Charles Sanders Peirce's collection of seminal literature from 1931 to 1935, Reichertz (2010) depicted the abductive research logic as the search for "some (new) order, but they do not aim at the construction of any order, but at the discovery of an order which fits the surprising facts; or, more precisely, which solves the practical problems that arise from these" (p. 8). To be more precise, Reichertz (2014) described three steps in the process of abductive discovery which begins with the selection of a hypothesis or theoretical foundation through abduction, which is followed by formulating predictions based on the theories, and then the third step would be to verify the assumptions based on factual qualitative data. Supported by the reasoning made by Awuzie & Mcdermott (2017) and Timmermans & Tavory (2012), abductive inference has the benefits of combining the best traits of deductive and inductive inquiry, because it carefully progresses beyond reporting facts to confirm the hypothesis while outlining the consequences based on the results, which subsequently comparing findings that were not taken into consideration in the original hypothesis. With that in mind, I deem the abductive reasoning approach to be suitable for the use of discussing the implications of my research findings in relation to the chosen two theoretical frameworks. With abductive reasoning, I will pragmatically examine the meanings and rationale behind the lecturers' practices and opinions and attempt to move back and forth between theory and data to assemble a logical interpretation and assess the plausibility of the theoretical assumptions.

## **4.5 Trustworthiness and Quality Criteria**

Regarding the specificity of assessing the quality of qualitative research, Lincoln & Guba (1985) proposed four key criteria: credibility, confirmability, dependability, and transferability. The first criterion of credibility emphasizes the establishment of internal validity of the research as ensuring high congruence between the researcher's observations and the application of

theoretical concepts (Lincoln & Guba, 1985). Both Bryman (2012) and Lincoln & Guba (1985) recommend two techniques to establish good research credibility, they are “respondent validation” and “triangulation”. My qualitative research will employ qualitative triangulation of methodology by using multiple checkpoints of data examination. I aim to achieve credibility by involving respondents with the validation of the accuracy and authenticity of the interview transcripts by sending back the draft to verify my interpretations of the interviewees’ thoughts and words. The technique of respondent validation guarantees the researcher did not misrepresent respondents’ experiences and perspectives and helps minimize potential and unwanted corruption of data. For the confirmability of methodological rigor, Lincoln & Guba (1985) advised novice researchers not to allow their personal bias and theoretical predispositions to influence the conduct of data collection and analysis. As a result, I will make sure any assumptions about the data have to be linked to the noticeable semantic themes and the confirmation of latent themes that emerge from the analysis. Dependability is an important criterion for the quality of the study and will be achieved by thoroughly checking the transcripts to avoid making potential mistakes during the transcribing process and orchestrating a pilot interview with my supervisor to test how well the interview scenario would occur and gain experience. Lastly, the transferability aspect of the research will be addressed in relation to the question of generalizability. Based on Bryman's (2012), Creswell's (2018), and Lincoln & Guba’s (1985) arguments, it is difficult to apply qualitative research findings to greater population understanding due to its limited research scope for one specialized sample of subjects. Nonetheless, I believe with a thorough analysis and depictions of the context and data, other academics can decide whether the findings and conclusions apply to their circumstances.

## **4.6 Ethical Considerations**

As a compulsory requirement to pass the data protection course, the master’s students have gained knowledge about routines and regulations in case studies according to the GDPR guidelines that the UiO adheres to. With that said, I am equipped with the understanding of storing and processing personal data, acting in accordance with the principle of transparency, and having a data management plan (Journal of the European Union, 2018). Moreover, I requested an assessment from the Norwegian Center for Research Data (NSD) and submitted the “Notification Form for Handling Personal Data” describing how the research data will be managed. Informed consent was distributed and filled in by each participant prior to conducting

the interview. There will be an option for withdrawal from the research at any point in time with no repercussion as part of the informed consent. I will also make interviewees aware of the purpose of the research so they can make informed choices about the extent of their involvement and how the study might affect them. The right to anonymity and privacy will be treated with almost care in which all research participants have the right to control whether their personal accounts and opinions are being audio recorded. Regarding anonymity, I will remove all personal identifiers from the transcribed data, and I will assign each of the interviewees random initials or pseudonyms. Once the data is completely transcribed, I will send them to the corresponding participants for revision for accuracy and they have the right to delete and clarify any information within the transcripts. All audio recordings will be erased to ensure confidentiality once the master thesis has been approved and handed in.



# 5 Findings

## 5.1 Characteristics of the participants

Eleven participants agreed to be interviewed for this master's thesis and all of them are currently teaching courses at various levels, such as Bachelor's, Master's, and Doctoral programs at the University of Oslo. I selected lecturers based on the criteria that they had experienced remote teaching during campus closure from Spring 2020 and the return to on-campus hybrid teaching in autumn 2021. Table 1 includes information related to their respective disciplinary backgrounds, the faculty, and departments they are employed, and a concise summary of the courses they have taught in the recent semesters. Each lecturer received a pseudonym to protect their personal identity. For the column "Description of Courses", I summarize some key features of their teaching courses, which were mentioned by each lecturer during the interview, besides retrieving further information about the courses from the official UiO website. The order of appearance is chronologically based on when each lecturer was interviewed.

**Table 1. Characteristics of the participants**

<b>Pseudonym</b>	<b>Disciplinary Background</b>	<b>Description of Courses</b>
1. Kevin	Faculty of Educational Sciences  Department of Education	Taught interdisciplinary courses about the interplay between digital technologies and learning. Introduces important theoretical perspectives concerning learning with technology in various contexts. Teaches students to apply theoretical knowledge and develop competencies so that they can incorporate digital technologies for design, practices, and analysis.
2. Kate	Faculty of Mathematics and Natural Sciences  Department of Chemistry	Teaching focuses on introducing students to the subject of structural biology, namely protein structure and function, nucleic acids, and carbohydrates. Train students to conduct specialized experiment methods to study structure determination and make predictions. Emphasis is placed on practical lab works to understand protein crystallography.

3. Yvon	Faculty of Mathematics and Natural Sciences Department of Mathematics	Teaching focuses on introducing students to the subject of algebraic topology and the theory of mathematical representation. Educates students to use complex mathematical theorems to make effective calculations, solve equations, and conduct stochastic analysis. Emphasis is placed on mastering theorems and developing mathematical computational skills.
4. Mike	Faculty of Educational Sciences Department of Education	Interdisciplinary teaching focuses on the nature of higher education and its many corresponding aspects. Students are trained to develop research skills to analyze critically how policies, operations, management, and administrative units would interact and cause changes to the sector. Research-intensive program with an emphasis on developing both qualitative and quantitative research skills.
5. Ron	Faculty of Humanities Department of Culture Studies and Oriental Languages	Interdisciplinary teaching focuses on the study of the many aspects of modernity, which are important for the understanding of contemporary historical, social, and cultural conditions of East Asian nations. Educates students to develop an intra-regional comparative understanding of the complex historical interplay between tradition and modernity. Emphasis is placed on improving students' academic writing and helping them acquire theoretical and methodological skills to analyze ethnographic findings and historical developments.
6. Eric	The Faculty of Mathematics and Natural Sciences Department of Informatics	Students are educated about artificial intelligence and machine learning. The course aims to teach students practical understanding and relevant methods of coding regarding an algorithmic approach, in addition to the ability to design and evaluate coding experiments. Notable teaching topics include machine deep learning, artificial neural networks, reinforcement learning, and optimization of algorithm development.
7. Luke	The Faculty of Mathematics and Natural Sciences Department of Informatics	The courses aim to teach students about modern natural language processing (NLP) focusing significantly on machine learning and probabilistic. Emphasis is placed on improving students' understanding of language data, coding, and evaluation of NLP systems and their applications. Some examples of teaching topics are machine translation, information extraction, and question-answering functions.

8. Tim	Faculty of Educational Sciences Department of Special Needs Education	Taught interdisciplinary courses focused on teaching students about inclusive education in the classroom. Educate students about the interplay between the environmental factors and the educational potential of an individual. Train students to develop research skills based on the biological, psychological, and social understanding of human development.
9. Sam	Faculty of Educational Sciences Department of Education	Introduce students to the theories and applications of educational measurement models and their functions relating to mathematical equation models. Emphasis is placed on training students with advanced quantitative research methods and proficiency in using statistical software to analyze data. Some examples of teaching topics are exploratory factor analysis, matrix notation, latent variable models, and multi-group analysis.
10. Megan	Faculty of Humanities Department of Archaeology, Conservation, and History	Educates students about conservation as both a profession and a scientific examination of works of art and cultural heritage objects. Emphasis is placed on teaching students about key practices and principles of conservation. Relevant academic and research skills are taught so that students can illustrate archaeological information about objects and explain their cultural values and significance.
11. Will	Faculty of Humanities Department of Archaeology, Conservation, and History	Taught interdisciplinary courses focused on the application of scientific methods to conduct research within the field of archaeology. Teaching focuses on the relationship between the different fields of studies, for example, archaeology, ecology, and geosciences (natural sciences and humanities). Students are taught how to use scientific methods to apply to archaeology research, conduct fieldwork, and survey the environment.

## 5.2 Overview of Themes and Examples

For each of the three research questions, the master students formulate a corresponding three main themes:

- Main Theme 1: Lecturers' Experience Throughout the Crisis
- Main Theme 2: Curriculum Design and Assessment
- Main Theme 3: Effects of Digitalization on the Ways Lecturers Facilitate Teaching Activities

Sub-themes were also identified and grouped based on the similar accounts in the answers made by different respondents, in which the author carefully revised the interpretation of meaning from the instructors' statements. Additionally, the author paid close attention to statements and opinions that were noteworthy, particularly those that contradicted the consensus or conveyed a unique approach to handling the issues. As a result, the following Table 2 will summarize all qualitative findings based on the extensive transcribed interview data of eleven participants in a structured, categorial, and comparative manner.

**Table 2. Overview of Themes and Examples**

Themes	Respondents	Examples
<b>Main Theme 1: Lecturers' Experience Throughout the Crisis</b>		
Faculty and collegial support	Will, Megan, Kate, Mike	Provided sufficient support under the circumstances. Limitation in providing instructions on how to implement digital tools in teaching.
	Everyone	Learning through trials and errors. Had clear autonomy over teaching contents and learning activities, but with more workload. Clear communication from the department and faculty. Provision of digital resources and technical support were in place.
	Kevin, Kate, Megan	Teaching assistants: Help keep track of the questions in the Zoom chat.
Feeling about the switch to remote teaching	Will, Megan, Tim, Sam, Yvon, Luke, Mike, Ron, Eric	Felt that it was traumatic, sudden, and full of uncertainty. Rapid adaptation and translation of teaching models and contents and migration to the learning platform.
Experience with remote teaching (Spring 2020 – Spring 2021)	Will, Mike, Ron	Difficult in teaching statistics because no direct supervision of computer usage and a lack of direct support to students with no prior knowledge of R (statistical software) Fieldworks canceled. Impossible to organize as students would have to be in close contact and must follow “corona protocols”. No opportunity for students to travel.
	Sam, Mike	Improved student engagement when the class was divided into smaller groups to work on certain tasks and then came back to the main Zoom room.
	Tim	Difficult in teaching qualitative methods as it required observation and interviewing in real life. The high number of students proved to be impossible to organize this type of teaching virtually.
	Kevin, Kate, Yvon	Required the students to turn on their cameras, but with a large group, many students began switching off their cameras, hence reducing engagement.
	Kevin, Kate	Zoom fatigue: Too much time in front of the computer screen was demanding for both students and teachers, students' motivation decreased.
	Kevin	Insufficient teaching presence when monitoring online students felt like an “intruder” when joining the breakout rooms, interrupting the discussion.

Experience with on-campus hybrid teaching (Autumn 2021)	Will, Eric	Frustration was caused due to the inability to “write” data on the C drive when using university-owned computers at the computing lab. Resolved the problem by receiving assistance from USIT (the university’s IT support center).
	Kevin, Kate	Bad sound due to the computer having to record the physical classroom with lots of discussions, difficult to monitor both online and in-person students.
	Everyone	Recognize that students were livelier on-campus as they were more engaged in classroom activities and discussions, actively raising hands and posing more questions, and coming to class with preparation.
	Everyone	Proactive planning to ensure new equipment in the classroom is ready for hybrid teaching and including online students.
	Megan, Tim Sam, Yvon, Luke, Eric, Mike, Ron Mike	Observed students were shy and insecure when coming back to the classroom, more focus was placed on keeping distance from each other and disinfecting the classroom table.  Virtual collaboration with another university to deliver joint lecturer and classroom learning activities
Changing attitudes caused by the transition back to hybrid teaching on-campus.	Everyone	They thought that remote teaching was only temporary but realized later that it would become extensive and lasting for the full academic year.
	Kate, Megan, Will, Sam	Considered having a digital option as plan B. Prefer either completely digital or fully on-campus teaching. Considered hybrid mode as cumbersome. Positive attitude towards integrating new digital tools into courses.
	Kate, Yvon, Kevin, Luke	Would prefer complete teaching in person than online. Significant efforts have been devoted to adaptation and catering to both groups of students (online and in-person).
	Everyone	Concerned that students and themselves might get infected in person and be sick. Think that the hybrid model has the benefit of easy invitation of guest lecturer to participate and provide feedback to the students. Recognize that hybrid teaching also allowed students to catch up with the learning progression by watching the recorded lectures in case they were sick and had to stay at home.
	Kevin, Tim, Luke, Mike, Eric	Improved digital competency but also a better understanding of the limitations of digital education; thus, a more balanced approach for future implementation. Considered on-campus teaching has the benefit of better engagement, improving students’ motivation, and easier to invite participation (body language + social interaction).

## Main Theme 2: Curriculum Design and Assessment

Course Design	Will, Megan, Sam, Tim, Kate, Kevin, Mike, Ron Yvon, Luke, Eric	Reliance on Canvas to plan the course (ukeplan), communicate with students via the daily announcement function on the platform, and Zoom as the main video-conference software for lecturing. Modular design and topic-focused lecture. Question bank + practice exam. Used the course website instead of Canvas. (Reliance on Vortex)
Learning Outcomes	Everyone	Emphasis on interdisciplinary research skills, ensured students understand important theoretical concepts, and improved students’ critical thinking skills and the ability to apply their knowledge meaningfully. Introduced

		them to the respective disciplinary cultures and academic writing conventions.
Assessment and examination	Everyone	The learning outcomes have been well-defined and structured, only with minor adjustments to adapt to the learning conditions during the crisis. Mandatory assignments must be passed in order to be qualified to take the final exam. E.g., Term papers and exercise solving.
	Everyone	Digital hand-in exam (Inspira): Students picked a topic and formulate research questions discussing the research topic. One-week home exam. Grading was based on explicit criteria based on a rubric that students could review.
	Kate, Yvon, Mike	Oral Exam (conduct digitally via Zoom or in-person)
	Sam, Yvon	On-site examination at Siluervein: 4 hours exam using university computers with exam monitor software and observers.
	Megan, Ron, Mike	Collaborative writing assignment: Students worked on a written assignment with guidance provided by the lecturer at different stages. Not graded. Students learned about the academic writing process and how to analyze the literature. Peer-reviewed by classmates based on a rubric.
	Kate	An unexpected challenge to obtaining statistical information when using Inspira as an examination platform.
Feedback provision	Megan, Luke	Mentimeter (student response system): Digital tool for posing questions and polls the students can answer in class. With Mentimeter, the lecturer can check if the students have understood what they need before the teaching can proceed.
Opinions on students' performance (remote vs hybrid education)	Everyone	Similar grade distribution comparatively across the cohorts attending the different semesters. No noticeable drop in grade performance. Some students struggled to meet deadlines for their master's thesis. A minor increase in drop-out rates. The attendance rate during remote education deteriorated slightly but became more stable with the return to on-campus teaching.
	Kevin	Plagiarism: Due to take-home exams, an increase in cases of cheating was reported.
Student feedback to the professors (formal evaluation + informal)	Will, Megan, Tim, Sam, Kate, Yvon	Received either mid-term or end-of-semester course evaluations from the students. Overall, thought that students were satisfied with the course, which had a clear structure, and appreciated that expectations were communicated.

### Main Theme 3: Digitalization and How Lecturers Facilitate Teaching and Learning

Engaging the students	Will, Ron	In an online setting: randomly call on students (via the Zoom windows) or check on a student whose camera was turned off. On-campus, got to know the students on an individual level and alert the students that they would be called on, so to avoid embarrassment, the learners ought to keep up with the readings.
	Eric, Luke	Mattermost is an online chat platform. It consists of several channels, where users can ask questions and get answers to what they are wondering.
	Megan	Samtavla: Web-based microblogging tool to promote student participation and enhance learning dialogues in the classroom.
Teaching activities (remote teaching, completely online)	Will, Megan	Pre-recorded lectures (asynchronous), students chose when to review the content. Students watched the 45-mins lecture in the first half and then discussed it in the second half of the lecture with the teacher's support-

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		Solved the study questions pre-lecture and then presented and discussed the answers as groups during the lecture. The study questions were topic-focused.
	Kate, Yvon, Luke, Eric, Mike, Ron	Synchronous lectures: live sessions with online student participation + video recording for later review. Adapted certain exercises to allow the students to collaborate virtually via Zoom break-out rooms. Use screen sharing alongside annotated writing on a blackboard to highlight the discussion points and provide explanations, as well as encourage student participation.
	Kevin, Kate, Tim, Mike, Ron, Eric	Zoom Breakout rooms: Groups of students were assigned a chapter/article to analyze in their respective group (student-led). Afterward, each group would present and the whole class would discuss the key issues.
	Kevin, Mike	Discussion function on Canvas: Asked students to post questions, resolve each other's questions, and provide feedback to the answers.
	Kate, Ron	Podcast
	Sam, Luke, Eric	Mini Quizzes and Flashcards (with key concepts). At the beginning of a lesson, every student had to pick three or four cards, and when they were grouped up together in groups of two or three, they had to explain these things to each other.
	Sam	"Group puzzle-solving": An expert phase and an exchange phase: Created groups of students first to learn about one topic within a group, and then mixed the groups, and everybody taught each other a different topic.
Teaching activities (hybrid teaching on-campus)	Kate, Yvon, Kevin, Luke, Eric, Ron, Mike	Video recording was optional. PowerPoints of lectures were published to Canvas for students to review. Hybrid classroom: Some students would join using Zoom while the others would participate in person.
	Will, Megan, Sam, Eric, Ron	Flipped classroom: The learning material was distributed in advance (via pre-recorded lectures, reading assignments, or PowerPoints). The teaching time was used for student-led presentations, solving problems, and discussion. Having interactive sessions where students led the discussion.
	Megan, Mike, Eric, Ron	Group presentation: Collaborative learning activity in which each group presented a topic and then received constructive feedback from another group and also the main lecturer and guest lecturers.
	Will	In-person demonstration of laboratory works. Followed by student discussion afterward.
	Megan	Practical Seminars: Video recorded of the lecturer demonstrating laboratory works. The students would discuss in a group what they saw and exchange interpretations of the procedures afterward.
	Sam, Yvon, Tim	Discussion function on Canvas: Not utilized, thought that students did not actively use it and there are better alternatives to encourage student discussion.
	Kate, Mike	Study groups
Educating students to master digital tools	Will, Sam	Taught students to use R to analyze and compare data. Answered study questions, submitted the answers to Canvas, and received feedback weekly.
	Kate	Pymol: software for molecular visualization
	Luke, Eric	Jupyter notebook: A tool to work with coding software python.

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Having summarized the noteworthy sub-themes with matching examples that are thematically linked, I will continue to present several excerpts from each of the interviews depicting their authentic accounts of how the lecturers responded to the sudden change to emergency remote learning, the ways they have adapted their course design and teaching activities to online education, and the innovative practices they implemented to ensure a smooth transition back to the hybrid on-campus classroom. To address each research question thematically, I would select quotations from the accounts of each respondent to highlight the findings and enhance the presentation of qualitative data. When a quote from an interview transcript is mentioned, I identify the matching lecturers by their pseudonyms and quote their responses verbatim to ensure authenticity.

## **5.3 Lecturers' Experience Throughout the Crisis**

To begin, the master's student will unpack the complex lecturer's experience regarding their transition back to on-campus teaching. Interrelated sub-themes are formulated based on the collected interview data to provide an in-depth description of the research topic and to connect and compare insights across different accounts. I will focus on changing attitudes, reflective accounts of challenges, and efforts to overcome such obstacles.

### **5.3.1 Initial phase and coping with uncertainty**

All informants provided a similar account and agreed that in the initial phase (2 semesters in 2020), the sudden shift to complete emergency remote teaching was indeed unexpected and full of uncertainty. Nevertheless, several informants reported there was a certain positive dimension in how the academic community would come together and address the initial shock with a great sense of collective cooperation and optimism. According to Ron:

Now in the spring of 2020, it was all very sudden right? We all had to make this sudden transition, and nobody knew how Zoom worked. We hadn't really been using it and this caused people [the academic staff] to be worried. But there was also this energy, right? We can do this! This flexibility and this resourcefulness! And so, as I could remember there was still this idea. OK, this is gonna take maybe a month or two and then we will get back to normal right? Yeah, there was a sort of energy, like learning and finding out new ways to teach, being creative and flexible, and putting time into this. Like there is this Norwegian "dugnad" and this spirit, we can do this together! That's what I remember of spring 2020. And we learn new skills in the process, right? Some of my



senior colleagues were like in their sixties. who, let's say, are not really good at digital stuff. And they are even much worse than I am. Even though they can be skeptical, but the situation forces them to adapt. We all did. And we all shared this feeling that OK, we are just going to make the best out of it.

### **5.3.2 Support from the faculty and colleagues**

With regard to this topic of receiving support from the faculty and colleagues, Sam mentioned his experience as follows:

I thought that the university and also the faculty had transitioned very quickly into this online teaching and had also provided very quickly the necessary support that I personally needed. And those I mean, the support has many different forms. First of all, when it comes to communication, I think this decision to say we are doing it fully online was, I think clearly, but also quite early communicated and that I think was one element of this support mechanism to clarify what is the situation, what do you have to do? And speaking a bit more “fine-grained”, what also happened quite quickly was that from my perspective, all the tools needed to implement this. Especially software licenses, especially creating a web page with possible programs, the thing you could just use operationally, I think that also went very well and quickly. I think the provision of the actual tools, and information about it, I think it was brilliant. Of course, I mean the support mechanism in terms of how to effectively teach using those tools took a bit of time and was not very clear. Thankfully, now there are institutions and working groups who are providing this kind of information.

### **5.3.3 Hybrid teaching in the recent semester**

All informants reported that there had been an increase in the adoption of hybrid education for both teachers and students due to Norway experiencing several recorded waves of Covid infection leading to back-and-forth switching from complete remote education to a hybrid combination of on-campus attendance and digital participation. The benefits of the hybrid teaching format, which was implemented across two semesters (spring 2021 to autumn 2021), have been unanimously recognized by all informants because of the advantage of offering flexibility and convenient study options to students, as they could attend lectures either in-person or digitally from various locations, be it in Norway or abroad, thus overcoming the challenge of travel restrictions caused by the pandemic. Similar to the advantage of remote

education delivery, the students would also have the option to review the recorded lectures after the live sessions had ended, in the event they could not come to campus due to sickness or being quarantined because they were close contacts to those infected by the virus. Representing the widely agreed sentiments across all informants, Mike stated that:

Well of course not just in our program, but in others as well. But in general, we are much more flexible now. Through our extended experience with the use of digital tools and digital technology, I think we have developed a much more professional and structured, and effective hybrid mode. And two years ago, that would not have been possible before the pandemic. We would not even have been able to get the allowance to organize it. How we did it, was not maybe completely ideal, but at least we are now able to offer both the first year and the second-year students the full experience this fall semester. We are able to use digital technology in such a way that also students who are not on campus can take part in the lectures.

Based on the interviews, several lecturers expressed frustration, which was caused by hybrid teaching methods because it was demanding to monitor both groups of students and ensure that they were engaged and participated actively during the lecture. According to Kevin:

I remembered a hybrid lesson I had where they [his online students] had bad sound. And then I tried to fix the problem and then they said it is OK. Then after the lesson, I talked with one of them and he said it was really bad and he could not hear much of what was happening. So, all the time they had experienced this, and they did not want to interrupt the class because there were five people online and like twenty-five people physically present [...] So it was, of course, technical challenges and especially in the hybrid situation because then you have to have attention in both directions, right? So, when you are only looking at the Zoom windows, then you know exactly if they can hear you or the microphone is on. But when you are so engaged with the people in the class, and it is hybrid, it becomes harder to check on the people online.

It is also worth mentioning that not all academic lecturers were not so keen on completely transforming their way of teaching and showcased a preference for the traditional usage of blackboard and direct instruction. This suggests that, even though the lecture notes would be published online at a later time for students to review, there would be no video recording of the teaching session. To illustrate this point, here is the account from Yvon:

So, for me, the transition was not new, I guess, because the lecture style we do is pure mathematics. So even when we do hybrid teaching, it is really old-school style with blackboard and chalks. So, I did a sort of very similar thing on my tablet and did screen

sharing showing the texts and equations [...] Of course, the online students had to look at their laptop screens to view what I was writing [...] Yeah, so I was really just using my handwriting, so no special software. But yeah, it was really easy or very practical in person and you have a blackboard and everything at the faculty. I would usually write all the things on the blackboard beforehand and then, as I was giving the lecture, would just share it using the tablet. Yeah, so basically all these sorts of colored highlights are annotations and also, you can see a bit of additional notes around these highlights with more cramped small texts explaining the solutions.

Although the lecturers expressed understanding that it may be necessary to offer hybrid teaching arrangements to reduce the virus infection, several informants believed that the lecturers should have more of a role in deciding whether the teaching would occur remotely, on campus, or in a hybrid format. It was stated that the priority for allowing students to have the convenience to participate in digital lectures ought to be balanced with regard to the need for on-site teaching where valuable discussions, lab work, and learning activities could be facilitated. As an example, Kate would describe her experience as follows:

I offered the hybrid version nevertheless [autumn 2021] because sometimes people were in quarantine, but I mentioned that they [her students] should at least attend in person part-time. Quite a few students wanted to, but most preferred the digital way. But maybe last spring [2021] was the most challenging because I was not allowed to teach in person at all, and I much prefer teaching in person. And, in particular, it was difficult because it was the protein crystallography course which had a lot of theories where I really liked to use the blackboard and demonstrate to them in the lab. I mean some other courses where you use PowerPoint slides it is less challenging to teach digitally, but if you develop things, like long equations and you have limited space online [Zoom windows], then it is not so good.

## **5.4 Course Design and Assessment**

In this section, the master's students will highlight some methods that the lecturers utilized to design and structure their teaching courses, as well as some descriptions of how they would assess their students.

### 5.4.1 Usage of learning management system

For most lecturers, they considered Canvas the primary learning management system for the delivery of lessons, making announcements, listing of compulsory readings, and publishing PowerPoints of practice exercises, in addition to being the place where mandatory assignments and student-made presentations are submitted. Most respondents reported the best practice was to use the Module feature in which teaching topics were systematically structured by weeks and units, which provides a user-friendly approach to the students as they progress in a linear direction to complete the course. Megan provided a very detailed description of how course design was conducted, who said:

I had to adapt and decided then to very quickly make learning parts in Canvas and then just translated my PowerPoint slides into a learning path and wrote out all the texts that I normally would talk about. I wrote it out and put it in exercises for the students. The students went through the learning path online in Canvas and when we meet, online or on campus, we would just discuss the theory and the exercise that they have been doing [...] If you look at this course, I have 10 topics where we go through and every topic has a module in Canvas. And this is a little bit similar to the other courses as well. It goes by weekly topics and then there are units dedicated to each module.

As she was screen-sharing the course description with me, Megan further elaborated on the way she designed her course:

Well, this is the introduction, the opening and then I will have links to the different modules on the front page. The first four or five, let's say five modules are a more general introduction to the course. There are links to PowerPoints, but of course, there is some advice on how to study and ask questions. So then here is the description of the collaborative writing assignment. And here is the examination module they all know about, what is expected [regarding examination procedures]. And at the bottom, there is an English-Norwegian terminology list and then a module on reading and writing academic texts, which basically guides them through the whole course.

Interestingly, three lecturers Eric, Luke, and Yvon from the Faculty of Mathematics and Natural Sciences mentioned it was common to use Vortex in place of Canvas, as the platform is UiO's official online publishing platform for teaching content and announcements. Sharing similar functions to Canvas, Vortex contains web servers in which folders, documents (Microsoft Office, HTML, XML), and audio/video files can be uploaded directly to the course

page while also being well integrated with other software like Leganto, Canvas, Zoom, and Nettskjema. Here is an account from Luke describing how he used the platform:

Yeah, we don't use canvas in our department, and we use Vortex instead [...] Yeah, we have a topic each week and we use course webpages on Vortex for distributing the learning materials. And we make one page for each week, and we always write the learning goals on that page. And this is where the team distributes the videos, the slides, and exercises related to the literature that they should read based on weekly updates.

#### **5.4.2 Assessment and examination**

As for how instructors carried out digital assessment and examination, Sam's account can be seen as a common practice that all lecturers have adopted throughout the recent semesters:

So, for the courses that I am responsible for, there are at least two forms of assessment, so we have got two major assignments throughout the course, and students usually have four to six weeks to work on them. It is a selection of small tasks and it also includes data analysis. We provide them with the data set, but it is also the kind of task that tapped these learning outcomes I mentioned. So, they ask about a specific recording of knowledge and you have to apply something in a specific scenario with an example in those tasks. And this is basically the basic structure, like 3 different types of tasks in each assignment. Two of them, the students would have to hand them in. And the submission of these tasks is basically your entrance card into the exam. The submission of the assignments is basically individually, but of course, students can work in groups, sure, but every student has to submit their own original work.

For the in-person exam procedures, Sam continued to explain:

Yeah, we grade them through Canvas and give feedback in written format on the different tasks. Another purpose of these assignments next to being the entrance card into the exam is to mimic exam tasks. So, for the final exam, these exams are exclusively written exams. And a 4-hour exam at the examination site in Silurveien 2.

Other instructors did also incorporate oral exams, as Yvon described the process:

Well usually we have 30 minutes for each student and then so for the oral exam, I gave out a list of questions that they have to explain in the first half of 15 minutes and so they spent about a week preparing for that. Yeah, we continued with a sort of the second set of problems in the second half so that they had to answer on the spot [...] Basically, so those problems in the second half naturally developed from the problems in the first

half. And I also gave out some mock exams that came two or three weeks before the final exam, so they could see very similar programs beforehand, so I think they had quite a good idea of what could be asked and what was going to be asked.

Regarding the digital platform where the students would hand in their exam submission, Eric confirmed the usage of the popular Inspira, a cloud-based assessment platform:

And of course, for exams, we use what everyone else is using Inspira, which is not that user-friendly, but it is at least nice to make everything fully digital. We do not have to deal with all the papers anymore, right?

## **5.5 Effects of Digitalization on the Ways Lecturers Facilitate Teaching Activities**

I will now examine the different accounts provided by academic lectures to present an overview of the ways they have adapted digital tools into their classroom teaching and the organization of learning activities. Emphasis is placed on reflections on the teaching format, arrangements, and how the lecturers facilitated teaching and learning activities.

### **5.5.1 Innovative practice: Flipped classroom**

A notable innovative teaching strategy that the lecturers have implemented during their return to on-campus hybrid teaching was flipped classroom, in which Megan has provided a detailed account of how she designed the learning activity and supported student-learning at home:

We had some in class and basically because this is also a flipped classroom. There were those in class at the auditorium and the people that met online were just placed in breakout rooms [...] Uh, the course was set up with students going to Canvas. As I said, it was divided up into ten modules with the ten themes that we're going through. There, they worked through each of the learning parts where they got an introduction to what each theme was about. Then they get a list with the keywords and the key terminologies that they should be looking into. I'm not giving any definitions. It is up to the students to find these while they are reading. Then there is a list of links to some YouTube videos on the subject. And then I'm giving them focus questions about the material so they can have those back in their heads while they are reading the material. Yeah, and then they are expected to have done their reading and gone through the focus questions before they come to class.

When the flipped classroom occurred the classroom, Megan further elaborated on how the learning process would take place:

And when they come to class, we will have activities in the auditorium and then they have to discuss these questions in their group, which they have done first prepared by themselves. And then discuss it in the groups and write their answers into Samtavla and then after half an hour mostly, then we come together with the whole group and then discuss these questions. And then the next hour I might have a PowerPoint on the same topic with more image materials to illustrate a little bit more and go through certain topics that I think they really should master.

### **5.5.2 Using digital tools to improve engagement with students**

Several lecturers mentioned that it was important for them to maintain students' engagement throughout the long session of Zoom lectures and further invite them to participate in joint learning conversations. Samtavla was such software to aid social interaction in the digital learning environment since it allows students to write short messages that showcase their ideas and are visible to all members, thus enabling students to build upon each other's understanding, while also allowing the teacher to provide immediate feedback to students' responses. Megan described how she used the tool:

So, I used Samtavla in the class. So that meant the people online and also the people in the class could work on giving answers in Samtavla. And then we had it up in place and everybody could see the answers and that functions very well in this hybrid situation.

In addition to Samtavla, another tool that was used to increase student participation was Mentimeter, which had the added benefit of allowing students to answer questions anonymously. As a student response system, instructors can pose short questions, polls, or quizzes to check if students have understood what they need before the teaching may proceed.

According to Luke:

When I do physical teaching, I can to a certain degree feel whether they understood what I'm saying and whether I'm talking too fast or too slow and whether I have to repeat anything or and so on. And it's also much easier for them to ask questions and stop me and ask me to repeat and to explain. This is definitely something that we miss in digital teaching when it comes to interaction [...] If they ask questions, they write it in the chat, and we also use Mentimeter, and there they can ask questions there. And that's something I think you need an account to have, and you get that through the

University of Oslo, and it's used typically for quizzes, competitions, polls, and things like that. But the students can also ask anonymous questions there.

Allowing back-channel discussion for students during the lecture with the monitoring from the teacher was also reported by Luke and Eric, which can prove to be useful when teaching in a course with large numbers of student participation. In this case, the use of Mattermost was mentioned by the two instructors, explaining that it was a chat platform consisting of several channels where questions are posted in the group channel and direct messaging could be sent to the teacher. Eric described his experience with Mattermost as follows:

So, we ended up using Mattermost last year. And this is a kind of forum system where students can ask questions on different topics, and then the students can answer each other's questions with the help of the student assistance [...] And so we don't have to answer all their questions ourselves. Because it will be overwhelming and just repetitive should we just address every single one of the questions they would have.

### **5.5.3 Teaching students to master digital tools**

As part of the digitalization process in higher education, the focus on educating university students on the understanding and the ability to use disciplinary relevant software has received increasing attention from stakeholders throughout the years. Since the pandemic forcefully accelerated the sector's digitalization process to improve digital infrastructure and professional practices, this section will highlight accounts depicting the university lecturers' methods of instructing their students to ensure they could master the required digital tools as part of achieving the intended learning outcomes. Taken as one example, here is the account from Will, who reported his methods of teaching students using R, the software for data processing, and statistical analysis for his course in archaeology:

These are statistical modules [pointing to the Canvas page and explaining the learning activities]. So, the students are expected to learn the program R and how to do statistics and all modules are set up so that they can just copy and paste the exercises straight into their own computers. And then they have a training exercise at the end. So, they have the arbitrary data, and then they have some kind of made-up data, and then they have to answer these study questions and turn them in every week. So, there are five of these, it just mean, mode, median, standard deviation, T-test, and radiocarbon calibration. When you get to this module, it starts getting very complex like ANOVA, and then they get these other exercises. So, by plotting stable isotopes from soils and



then using this package I use a lot, called “cipher” in R, I will give them all the codes. The codes are essentially dummy data. In this case, this is the stuff that I collected in Brazil, my own field research. This is basically modeled off of the real stuff. And then I will give them the answers to the dummy data that I created. And then I give them the real data to analyze and then they have to compare the dummy data to the real data.

A common digital tool that is used in the field of chemistry and bioscience education is Pymol, which allows the visualization of molecular structures and is compatible with Python software. The usage of Pymol is evident in the courses Kate had been teaching. Here is her account:

I mean for the graphics lab, it was “Pymol” that we used. During corona, they were allowed to do the computer labs from home via zoom and that is in principle not a good idea because it’s much more difficult to teach. And it was also more difficult to see if the students understand because you have many students, so it’s much easier to stand next to them. Of course, they can share their screen and so on, but I think in principle it’s more difficult [...] I mean Pymol is a graphics program, so you can show molecular structures. And mostly we look at proteins so you can download protein entries from the protein databank and then display them and turn them around and look at different properties.

Lastly, another useful tool that instructors from the field of Informatics have used to enhance student learning is Jupyter Notebook. The software itself integrates the coding language Python and allows the students to combine text, images, and videos with coding in an interactive manner. They also reported Jupyter Notebook to be used for assignments and exercise submission as the students could run and adjust their codes and provide answers in the correct format. Here are the insights from Eric about how he taught his students using the software:

And so, in programming, we ended up using one main tool which is called Jupyter notebook, and so they learn to program in Python. And Jupyter notebook looks like a web page, but on that web page you can program Python, and you can see the output of all your programming. And you can also write some text snippets in between to explain stuff along the way so it is quite user-friendly and helps students program and try to understand what is going on. [...] And so, we use that both in classes and also use it for the mandatory exercises. We distribute one of these notebooks and then we put in some text explaining what the students should do, and we leave some spaces blank and those are the spaces where they should fill in with their own code.

Nevertheless, it is important to master fundamental research skills before the lecturers introduce advanced digital tools in their courses. According to Tim:

So, I just finished a course on data analysis, and I decided not to teach Nvivo. Why? Uh, for instance, here they are going to work with a small amount of data like you know few interviews. So, I told them how to do the coding using only Word and Excel. Why? because I want them to learn coding for qualitative research. When you have such limited time, would you spend your hours teaching them how to use Nvivo without teaching them how to code? Yep, so instead of spending their time working on the software, I want them to develop the ability to conduct research. And once you know the logic of coding, it is not difficult to understand, and you just have to learn the special language they use. Like you know, nodes and categories and whatever, but if you do not know what the logic of qualitative coding. It is useless to teach Nvivo or complex software like Max QDA. There is no point in learning complex software if you do not know the fundamentals.

## **6 Discussion**

### **6.1 RQ1: Lecturers' journey from remote teaching to hybrid on-campus education**

To address the first research question, I will examine the findings relating to how the research participants experienced the transition with reference to Mezirow's (1991) theory. Since the university lecturers were suddenly forced to transfer rapidly their lessons and adapt to emergency remote teaching, this event matches the sort of disruption that transformative learning theory would define as "disorienting dilemmas" (Mezirow, 1991, p. 98). Based on the accounts of all respondents, they revealed the pandemic occurred suddenly and caught everyone off guard and unprepared during the spring semester of 2020. There was a great need to migrate quickly and adapt teaching contents and learning activities to the online platform; hence, all lecturers admitted it was a stressful situation with more workload than usual. In all accounts made by the interviewees, they thought that the emergency remote teaching was a temporary measure, without realizing that it would last more than an academic year. The findings confirm Mezirow's starting hypothesis that a major life crisis precipitates a "disorienting dilemma", causing a systematic and transformative alteration (p. 100). Informed by the qualitative data describing how the lecturers navigated through the obstacles when returning to on-campus hybrid education, being resilient and resourceful were recognized as key indicators of reaching the tenth phase of "reintegration" (Mezirow, 1991, p. 99).

The "disorienting dilemma" prompted self-examination and reflection, but in this research, it was the sense of how to best be resourceful and resilient under the circumstances. All respondents stated they felt it was initially traumatic, sudden, and full of uncertainty, but thankfully, faculty and collegial support were in place. On a positive note, many respondents mentioned the spirit of "dugnad" (Norwegian word for collective effort or joining forces to solve shared problems without pay) was present, and faculty staff and colleagues would come together to provide assistance and workshops where advice and instructions for online education could be shared. This arena for communal gathering is evident of a positive collegial practice, in which participants had the opportunity for critical reflection, and is supported by the results from other recent studies conducted by Lindfors et al. (2021); Sjølie et al. (2020) & Tobiason, 2021). With adequate collegial support and access to instructions made by IT staff, it would cause a conducive environment to enable the move to the second stage of

“transformative learning, in which self-examination of lecturers’ prior teaching practices to better transfer and adapt their traditional teaching courses to the online setting (Christie et al., 2015; Eschenbacher & Fleming, 2020). Originally, Mezirow formulated his theory based on studies of women returning to universities after a hiatus to take part in specialized study programs for adult learners to encourage them to overcome restrictive gender expectations in the 1970s (Mezirow, 1978, 1991). Hence, in his study, the findings alluded to the research participants reported a sense of guilt and shame when reentering the university student life and leaving behind their traditional role as mothers and the feeling of inadequacy compared to their younger classmates (Mezirow, 1978, 1991). In my research, the feeling of “guilt and shame” was not an issue in any of the responses from eleven participants. Contrary to Mezirow’s theory, all academic lecturers only stated that the new learning conditions caused by the pandemic initially surprised and overwhelmed them, but eventually, they quickly adapted their planned courses to the online platform.

An interpretation of Mezirow’s (1991) third stage of critical assessment can be linked to the assumptions lectures once had as they gradually accepted that digital teaching would not be temporary (lasted four semesters), thus changing their prior attitude towards online education. Despite almost all interviewees admitting to having some prior experience with online teaching, none mentioned teaching a complete online course with either no physical attendance or hybrid teaching-learning environments. In particular, several lecturers, such as Mike and Ron, stated that online learning was not considered serious enough, only as a supplement to traditional on-campus education, and digital tools were used sparingly as add-ons to enhance in-person learning activities. Findings from this thesis confirm Mezirow’s third phase of the transformative learning process to an extent because of the need to forgo their prior assumptions about online education. It is evident that the lecturers had gradually relied more on LMS (e.g., Canvas and Vortex), thus motivating them to find new ways to engage with students through the use of communicative tools (Samtavla, Mattermost), and also utilizing digital tools more often to support teaching and learning (Zoom, Pymol, Jupyter notebook, etc.) In his book, Mezirow (1991) described the third phase as a drastic re-examination of personal assumptions regarding “epistemic, sociocultural, or psychic” presuppositions (p. 98). In this case, epistemic practices were the key dimension that would be significantly changed, with the sociocultural conditions of working remotely playing an important role, whereas any psychological assumptions cannot be easily identified based on the qualitative data. As the lecturers return to hybrid on-campus teaching in 2021, most

reported somewhat or a much more positive view of online learning, thus implying that they have experienced perspective transformation, drawing similarities to the research findings in studies conducted by (Anthony Jnr., 2022; Bento et al., 2021; Müller et al., 2021).

The recognition of the problems that emerged due to the transition from the extended online teachings to the more recent hybrid semester can be viewed as a logical progression to the fourth stage of transformative learning. Mezirow (1991) described the fourth phase as where perspective transformation occurs, which involves “sociolinguistic distortions” and “a recognition that what was initially thought to be a private dilemma is shared by others and maybe a public issue” (p. 118). My qualitative findings confirm the hypothesis to an extent, as the lecturers were well-aware of the problems which affected students regarding the decrease in social interaction, missed learning opportunities, and a loss in study motivation that would permeate throughout the three semesters of remote learning. With the return to campus during Autumn 2021, other new forms of challenges were also recognized by the instructors who facilitated hybrid education, thus reinforcing the claims that social actions would bring out changes in relationships, in this case how teachers can effectively engage students across different learning environments (Fleener, 2021; Kaliisa et al., 2021; Tran et al., 2021). The concept of “sociolinguistic distortions” originally refers to a result of “unquestioned, institutionalized social practices that can be changed only through collective political action” (Mezirow, 1991, p. 118). The implication based on the findings is more limited in scope, alluding only to the attempts teachers made to mimic physical classroom activities to maintain student engagement and the implementation of flipped classrooms as a strategy to counter the tediousness of passive online learning. Therefore, unlike the great emancipated effect that Mezirow has suggested, the recognition of social and learning challenges caused by both the extended period of remote teaching and implementing hybrid education can be considered a reactive process, which highlights the ability of lecturers to be attentive to their student needs and struggles.

Mezirow (1991) described the fifth stage in transformative learning as the exploration of options, with the following stages as planning a course of action, acquisition of knowledge and skills, and trying new roles (from the sixth to eighth phase), which can be grouped up and analyzed based on my qualitative findings. Some of the key notable practices are the use of improved course design and innovative lecture delivery, assessment methods, and timely feedback provision. The grouping of these stages can be seen as suitable because applicable

findings are found in each phase. This argument supports Mezirow's (1991) theoretical framework, detailing the journey of each lecturer as unique, reflexive, and non-linear. Despite the formulaic theoretical assumptions, each lecturer employed a variety of teaching practices that catered accordingly to their respective disciplinary cultures, student needs, and available digital resources. The exploration of options for new actions was evident in the lecturers' journey as they reflected on their teaching practices, learning through trials and errors, and with the successful delivery of their courses, ensured that their students would acquire the intended learning outcomes.

The most intriguing result regarding academic lecturers' attitudes towards the whole process of undergoing remote teaching and then transitioning to hybrid on-campus teaching is the well-balanced understanding of how digitalization affects and will influence their epistemic practices in the future. According to Mezirow (1991), for perspective transformation to occur, a change in one's own preconceived opinions would take place as a series of learning activities stemming from the desire to overcome the "disorienting dilemma" and resulting in "a reintegration into one's life context on the basis of conditions dictated by a new perspective" (p. 110). All instructors acknowledged that they have improved digital competency but also a better understanding of the limitations of digital education, based on their experience with both remote learning and hybrid education. As several lecturers have stated, namely Kate, Megan, and Sam, they were now more prepared and considered having a digital option for their courses as a contingency plan. Many of the respondents, such as Will, Kevin, and Luke, had expressed a positive attitude toward integrating more new digital tools into future courses and were equipped with a better understanding of how to use these tools effectively to engage learners and provide students with guidance to best use them. Despite realizing the benefits of hybrid education, many instructors like Tim, Mike, and Eric, had recognized its drawbacks and favored on-campus teaching with physical attendance because this will be significantly beneficial for students' academic and social life. The findings confirm Mezirow's (1991) final stage of transformative learning and draw parallels to research conducted by Lund & Aagaard (2020) & Rapanta et al. (2021), as there is noticeable evidence that points to lecturers refining their epistemic practices based on both positive and negative experiences from the teaching in a time of crisis. Therefore, a paradigm shift has occurred, which will subsequently affect the instructor's future experiences.

## **6.2 RQ2: Lecturers' new understanding of course design and teaching format**

### **6.2.1 Teaching presence in relation to curriculum design and assessment.**

As mentioned in the analytical framework chapter, Garrison et al. (1999) described the indicators for teaching presence as instructional management, building understanding, and direct instruction. Findings from this thesis affirm the Garrison et al.'s (1999) proposition because accounts gathered from the respondents described in great detail how the lecturer employed learning platforms and other digital tools to facilitate the learning process while also considering the ways they interact and engage with their students in the two learning environments (remote and hybrid). The qualitative findings from the recorded interviews regarding the design and organization indicators revealed the rationale behind the designing of their teaching courses and the ways teachers organized teaching topics would follow a relatively standardized structure, including mainly some customization made by the lecturers.

A notable organizational indicator was the usage of Canvas, the premier choice of LMS at UiO, with almost all respondents admitted using it as a communication and content distribution hub during the period of emergency remote online education and the recent switch to hybrid learning on-campus. As reported by all lecturers, it was best practice to use the Module feature of the learning platform in which each module was organized separately according to the learning progression of the course and with corresponding sub-folders including the lecture of each day, literature lists, and video links. Using Canvas was indeed consistent across different faculties, albeit in three cases where Vortex was used instead (as stated by Eric, Luke, and Yvon). The widespread usage and adoption of learning management systems indicate the importance of a user-friendly system that allowed ease of access to teaching and learning content for all students. Moreover, the inclusion of intuitive features on Canvas would allow the teachers to have autonomy over course design and organization. This would ensure direct instruction is conveyed effectively in an establishment learning environment catering to remote teaching, as well as the return to on-campus education; hence, reducing the potential negative disruption caused by this transition (Kovács & Kálmán, 2021; Sjølie et al., 2020).

As confirmed by many respondents, the use of the Announcements feature in Canvas was prevalent because the lecturers wanted to share information about the program teaching in the

most convenient way. Through this communicative function, the students would know new scheduled announcements (e.g., weekly schedules, due date reminders, and pre-lecture readings) and how to better navigate the different modules on Canvas. Students' email accounts were linked to Canvas's announcement, thus making certain that they would receive the latest updates in their email box and avoid misunderstanding or being absent from lectures and seminars. The number of dedicated efforts and attention made by the lecturers were consistent and can be considered as a form of compensation to keep their students engaged and be on track in both the online and learning environment compared to the usual in-person communication and after-class meeting (le Roux & Nagel, 2018; Smeplass & Hylander, 2021). However, all participants would acknowledge that under the crisis circumstances, the educational quality had not been on par with the traditional face-to-face education and their adaptive teaching methods can only do so much to compensate for the lack of social interaction and community-building among students.

The findings revealed that the lecturers had made modifications to their typical course design to adapt quickly to the emergency remote teaching during the spring of 2020 and facilitated a smooth transition to hybrid teaching conditions in the recent autumn semester of 2021. Several common practices reported by the instructors indicate a modest modification in teaching contents and greater emphasis on devising appropriate teaching format and activities to respond to the learning conditions. There were many ways that the process of digitalization had affected the ways teaching format was facilitated during the return to campus, namely the fact that students were not required to attend synchronous online lecturing because the lecture recording was made available for asynchronous engagement, and a clear reduction in the duration of online lecturing (Cunningham, 2021; Tran et al., 2021). Tracing back to the recognition of Zoom fatigue (as reported by Kevin and Kate) being a major factor affecting the level of productivity and engagement of both professors and students, the change in teaching format highlighted the clear drawbacks caused by an extended period of synchronous video conferencing during the pandemic (Khan et al., 2021; Nicola et al., 2022). It was also a noteworthy finding that lecturers, such as Kate, Will, and Sam, often considered whether learning should take place synchronously or asynchronously, as this decision would affect course design and directly influence the amount of class time in each learning environment and the types of teaching activities being organized. Not surprisingly, the rationale behind the decision-making varied widely based on personal preferences, as some instructors like Megan, Will, and Eric would allocate more time for practical seminars. Whereas others would be keen



on organizing supplementary synchronous sessions to provide extra help and feedback to their students, as with Mike, Luke, and Kevin.

Common across all respondents is the revelation that both modes of direct instruction, synchronous and asynchronous, learning were utilized flexibly even though the methods of implementation varied widely. Zoom was the premier tool for video-conferencing alongside Canvas as the primary learning platform adopted widely across different disciplines for both teachers and students. It was documented in other studies that pre-recording lectures was widely used as a key component of online education and essential for teaching presence (Davy & Quane, 2021; Garrison et al., 1999). However, for several instructors in this study, this was their first time employing the flipped learning model for in-person, hybrid learning to a greater extent. As described in the CoI model, teachers in an online setting should make pre-recorded, asynchronous lectures more appealing to students studying off-campus while ensuring that the content was not merely a repeat of in-person lectures (Garrison et al., 2001; Nordmann et al., 2021). A solution to this concern can be found in this practice conducted by Will, Megan, and Sam, in which their recorded lecturers played a role in providing basic understanding and guidance for self-study before the lesson, and then during the discussion seminar on-campus, the students were requested to put the knowledge they had acquired and engaged with the classmates in the process of collective inquiry. The mentioned practice corroborates with the findings in Akyol & Garrison's (2008) study, emphasizing the fact that students valued acquiring knowledge through practical demonstration of skills, and with their viewing and analysis of such content corresponding to improvement in teaching presence which positively contributed to learning progress in both asynchronous and synchronous format.

The qualitative findings did not identify new practices regarding the form of assessment that was implemented in the recent semesters as traditional methods of summative assessment and formative assessment were considered preferable by all lecturers. For example, lecturers mentioned the usage of summative assessments, such as written assessments, lab reports, term papers, take-home or on-site exams, and oral tests; in addition to formative assessments, such as presentations and quizzes. Nevertheless, it was agreed by all respondents that modification to the standard exams in higher education occurred as take-home exams and oral tests via Zoom became regular practices. Consequently, there remains an opportunity for lecturers to consider alternative formats for assessment, namely the practical inquiry model developed by Garrison et al. (2001) which can further support the development of teaching presence. As both Garrison

et al. (2001) and Rapanta et al. (2020) have argued, the types of assessment that promote teaching presence are those that allow students to construct knowledge independently by examining learning problems, collaborating with classmates for project submission, and making learning products that reflect their understanding and demonstrate their fulfillment of learning outcomes.

## **6.3 RQ3: Digitalization and its effects on how lecturers organize teaching and learning**

### **6.3.1 Social Presence in relation to the transition from remote to hybrid education**

The indicators for social presence were described by Garrison et al. (1999) as the expression of emotion, open communication, and group cohesion, which depicts the methods and tools the lecturers have implemented as part of the teaching course to encourage their students to build a community and feel comfortable engaging in collaborative learning activities. Research has found that social presence has an important role in connecting teaching presence with cognitive presence in the CoI framework, highlighting the need to further examine its relation to improved online teaching practices (Charbonneau, 2020; Oyarzun et al., 2021). With that said, findings from the interviews revealed the lecturers were keenly concerned about how social interactions that are often taken for granted in an in-person classroom would be affected by the change to emergency remote online learning.

Even with a return to hybrid on-campus teaching, respondents confirmed that the day-to-day social interaction continued to be heavily affected by the pandemic as “corona protocols” were in place, namely the use of facemasks and keeping a distance between individuals, thus severely reducing the usual classroom dynamic between learners and teachers. Consequently, lecturers reported attempts to alleviate the loss of campus life by incorporating software to promote socialization and engagement in their synchronous online sessions. Notable examples depicting such methods were calling on students in Zoom gallery view as part of lecture check-ins, informal conversations to express concern and care, and scheduling one-on-one Zoom meetings to provide feedback and resolve questions. However, in courses that were asynchronous and primarily pre-recorded, instructors stated it was a major challenge to reach the students and form a connection. Similar to teaching presence, as mentioned by Kevin, Kate,

and Luke, courses with a large number of student enrollment affect the instructors' ability to build rapport with students in the synchronous online learning environment and hybrid on-campus teaching, where two groups of students require more attention. The implications of my findings corroborate with the research done by Chen et al. (2017) and Fiock (2020), who recognized that social presence is developed better in small groups. Moreover, it should be an important consideration for many instructors regarding the requirement for students to turn on their cameras during synchronous online lectures as gradually, students tended to switch off showing their faces and disengage with the lecture, thus resulting in lesser social presence, as reported by Yvon, Kate, and Kevin.

A common practice to build a community of learners and foster open communication was the usage of Zoom break-out rooms, with respondents describing two approaches to the implementation, which were either instructing students to form random groups and mix with different classmates after a set duration of time or asking them to form groups with fixed members for a project. Overall, these two approaches promoted the development of social presence by maximizing the opportunities for students to interact with their classmates and increased group cohesion, in addition to allowing students to spend time in small groups to discuss course topics and collaboratively solve problems in both remote and hybrid classroom environments. Nevertheless, consideration should also be made for students who might feel uncomfortable speaking up in the synchronous online space, which shares a similarity to reserved students needing encouragement to participate verbally on-campus (Saadatmand et al., 2017; Tik, 2020). From the lecturer's perspective, there was a noteworthy reflection on how to best involve themselves in Zoom break-out activities, with many respondents stating that they prefer visiting rooms to monitor discussion progress and offer guidance when needed. Another common practice mentioned by the instructors was the use of the Zoom chat feature to encourage social interaction and open communication in which students could directly post questions to the lecturer or use the chat as a back-channel for student-to-student interaction. However, without the presence of a teaching assistant to help monitor the Zoom chat, it would be very challenging to achieve this task. Megan, Luke, and Eric reported the use of Mentimeter (a student response system) and Mattermost (a back-channel online chat platform), and Samtavla (a web-based microblogging tool), with the common goal to encourage learning dialogues in both remote and hybrid classrooms. It is also worth mentioning that the only two lecturers, Kevin, and Mike, reported the use of the Discussion feature in Canvas as a method

to facilitate learning discussions among their students, whereas the majority expressed dislike for asynchronous online discussion, preferring other means of social interaction instead.

### **6.3.2 Cognitive Presence in relation to the transition from remote to hybrid education**

The indicators for cognitive presence were depicted by Garrison et al. (1999) as to how the teachers guide the students through the inquiry process, which begins with a triggering event that initiates the sense of curiosity and is accompanied by learning activities encouraging students to explore the content, then synthesizes their findings, and concludes with a reflection on the learning. The ways the lecturers in this research described using innovative teaching practices aiming to integrate different digital tools to support student learning both in remote and hybrid classrooms support Garrison et al.'s (1999) depictions of cognitive presence to some extent. Some notable examples of the teaching strategies that were used throughout the recent semesters are using flipped classrooms, asynchronous recorded lectures in combination with inquiry-based classroom discussion, practical seminars, and student-led presentations. With that said, the findings from the interviews also reveal that the lecturers do also prefer mostly the traditional format for content delivery, such as lecturing using PowerPoint and giving assigned readings before the lesson. The findings from the study conducted by Tik (2020) also strengthen the argument that the facilitation of learning activities from the triggering event until the resolution phase is independent of the disciplinary cultures and students' perceived personality traits. Despite the lecturers who were interviewed having taught within different epistemic cultures, be it Humanities, Educational Sciences, or Informatics and Natural Sciences, this is clear evidence detailing their efforts in initiating inquiry-based learning with students as the main actor. Overall, the link between teaching methods and cognitive presence points to the preference of most lecturers to use mostly traditional methods to trigger inquiry-based learning and ensure a resolution phase where reflective learning can take place.

Regarding the methods related to triggering inquiry-based learning as part of CoI's cognitive presence, several instructors mentioned the practice of introducing students to course topics through either synchronous or asynchronous lectures and breaking up their teaching sessions into smaller segments, in addition to providing guiding questions to draw attention to key concepts. The innovative use of digital tools as a complementary method to engage students to

explore and synthesize knowledge during the live-session lesson confirms Garrison et al.'s (1999) depictions of cognitive presence. Some relevant examples of these innovative practices include the provision of podcasts, lab-instructional videos, YouTube videos, and educational software relevant to the disciplines (e.g., R, Pymol, and Jupyter notebook) or inviting guest lecturers who are experts in the field to address course-related topics that students were interested in. Based on the research conducted by Garrison (2017) and le Roux & Nagel (2018), it could be argued that the lecturers, who lessen their primary role as a main source of information and allowed students to explore independently course topics with scaffolding guidance, had created conditions for critical thinking to develop. As previously mentioned, the use of Zoom breakout rooms for student-led interactive discussions would also be conducive to facilitating the exploration and integration phase as part of cognitive presence, as well as the reported usage of the Canvas discussion forum by some lecturers. Moreover, it can be inferred based on the organization of group student-led presentations that the collaborative inquiry process occurred. As groups of students gained more autonomy to negotiate and divide their roles accordingly to achieve the learning tasks, they were more likely to commit to self-regulated learning and, at the same, supported each other as a team. The implications of these findings suggest the lecturers were more in favor of exploring different methods for students to engage with the teaching and literature contents in the middle phases (exploration and integration), which were necessary and act as a proof of adaptation to the learning conditions of remote and hybrid classrooms.

## 7 Conclusion

Through this master thesis investigation, I have provided a detailed examination of the experience of eleven lecturers, who shared with me how they adapted their teaching methods and facilitated learning activities in connection to the transition from remote teaching to on-campus hybrid education. By conducting a qualitative case study, the interviewees have provided in-depth examples of best practices in terms of how they integrated different digital solutions to ensure student learning in a time of crisis. I then examined each identified theme in the research finding to shed light on the corresponding theoretical elements proposed by Mezirow's (1991) TLT and Garrison et al.'s (1999) CoI. The use of semi-structured interviews, coding, and thematic analysis, in combination with the discussion of findings would reveal that throughout the pandemic, the lecturers were able to demonstrate their ability to adapt, adjust, and respond accordingly to the changing learning conditions with flexible and innovative practices. With thorough scrutiny of the interview transcripts, I have produced an overview detailing many shared examples of experiences, opinions, and activities that were reported by the respondents. Nonetheless, many instructors who expressed a favorable view of online education also conveyed their reservations, namely regarding practical excursions and laboratory work which do not transfer well to the digital setting, the limiting social interactions, and lack of engagement with students, as they have now gained a better understanding of both the benefits and limitations of this teaching format. As the shortcomings of hybrid education have been identified and supported by arguments based on authentic accounts made by interviewees, these issues remain to be a challenge that hinders online education offered by universities from reaching its full potential.

The first research question was (1) *How do university lecturers experience the transition from remote education caused by the pandemic to hybrid on-campus teaching?* With the use of Mezirow's (1991) TLT, the findings suggest all lecturers had progressed through the main transformative learning stages, albeit not matching exactly to each stage description, since each lecturer's journey was unique and context-dependent. Most importantly, it was recognized that lecturers had experienced facing a major disorienting dilemma, in which they needed to examine critically prior beliefs and practices, then made the necessary adaptations to the changing teaching environment, and finally, a reintegration of learned experiences into the professional identity. For the second research question (2) *How has the extended period of digital education affected the university lecturers' understanding of course design?* In this

case, the dimension of teaching presence of Garrison et al.'s (1999) CoI framework was employed to examine their new understanding, indicating consistent practices of leveraging all the key functions of the LMS and making incremental adjustments to the format of assessment for their students. Finally, the third research question was (3) *To what extent has the process of digitalization influenced the ways university lecturers teach and facilitate learning?* Regarding this research question, the social presence was applied to examine the use of different digital tools to maintain student engagement and highlighted the lecturers' best efforts to compensate for the lack of social communication between teachers and students. Subsequently, the cognitive presence of the CoI framework was applied to explore how innovative teaching practices can promote effective inquiry learning, with a focus on how the lecturers organized the flipped classroom model and integrated digital tools into their teaching activities.

Consequently, the implications for future improvement of teaching practices in higher education can be drawn based on this study's findings and contribute to better professional development in case the institution provides either remote or hybrid education. Although the focus of this thesis was on how teachers taught remotely and in hybrid courses, the findings may apply to any in-person courses using technology. As the research data is analyzed and examined based on the authentic accounts of the interviewees, it will be possible for other lecturers to relate themselves to the mentioned experiences. Therefore, the qualitative results can become more accessible and relevant to the improvement of pedagogical practices.

### **Limitations and suggestions for future research**

The ability to provide generalizability for a large population of lecturers is a clear limitation for this type of qualitative case study. Therefore, I would recommend future research include a larger sample size of university instructors to investigate and compare whether the findings of this thesis are in accordance with the latest development in the field. With that said, I would also emphasize that the main goal of this research was to interpret and analyze the lived experiences of eleven lecturers employed in three different faculties as they overcame challenges caused by the teaching conditions during the pandemic. Hence, the thesis was able to achieve what it set out to do through the use of an explorative, interview-based qualitative study.

Another limitation of this qualitative research is that the thesis only reflects the perspectives of a selected eleven lecturers who agreed to be interviewed and did not include the viewpoints of any student participants. With the inclusion of students' viewpoints, the qualitative findings will be richer and more insightful. Moreover, the data analysis of the interviews was affected by my own interpretation and could be understood differently by using different analytical frameworks. Ideally, if I was given the chance to take part in the lecturing sessions conducted by these instructors, observational data can be collected, thus providing more credibility to the qualitative results and acting as another form of data triangulation.

As higher education institutions return to normalcy, there remains a need to study the learning and working conditions in the post-covid world. Since this study revealed that digital tools could indeed provide many pedagogical benefits, future research should focus on how to develop teaching practices to better accommodate students learning in the digital environment. A mixed-method case study incorporating CoI wider scale questionnaires and surveys can be administered to provide a much more in-depth overview of both the lecturers' and students' experiences and draw inferences based on statistical analysis, similar to the research conducted by Arbaugh et al. (2008), Chen et al. (2017), and Damşa et al. (2021).



## 8 Appendices

### 8.1 Asking permission to interview academic staff

Kjære instituttleder,

Mitt navn er Minh Le, og jeg er en internasjonal masterstudent ved Institutt for Pedagogikk. Jeg skriver denne e-posten med det formål å be om tillatelse til å gjennomføre intervjuer med noen av fakultets ansatte. Tittelen av masteroppgaven er “Post-covid Course Design and Classroom Practices of Academic Lecturers in Higher Education”. Tematikken er utforskning av forelesernes erfaringer med å gå tilbake til campusundervisning etter en lengre periode med fjernundervisning forårsaket av covid-19.

Datainnsamling vil foregå med intervju. Intervjuene vil bli lagret på lydbånd og jeg vil bruke disse kvalitative dataene til min masteroppgave. Prosjektet vil følge UiO sine retningslinjer for personlig datahåndtering. Prosjektforslaget er godkjent av prof. Peter Maassen og jeg skriver oppgaven min under veiledning av prof. Anders Mørch.

Vennlig hilsen,

Minh Le (masterstudent)

Prof. Anders Mørch, veileder

### 8.2 Recruitment letter

#### Invitation to participate in master thesis research

Dear University Lecturer / Professor,

My name is Minh Le and I am an international master's student from the Department of Education. I am contacting you because you have previously experienced distance learning during the period when the campus was closed and now you have either returned to normal classroom teaching or continue with hybrid learning.

This master thesis aims to explore the topic of university lecturers' experiences and practices regarding course design and teaching practices within the context of transitioning to on-campus teaching after the long period of digital education caused by the Covid-19 crisis. The scope of the project is to gain better insights into a selected sample of university lecturers' usage and adoption of digital tools in their course curriculum design and facilitation of teaching and learning activities.

When you agree to participate, I will contact you to arrange a suitable time for a 45-minute interview. I will also send afterward an information letter and a consent form. In addition, I will also send an interview guide one week before the interview and ask permission for a screenshot capture of your course design in Canvas. I hope you agree with the use of English for the interview because the language of my master's thesis is in English.

Participation is notified by replying to this email. Thanks in advance!

With best regards,

Minh Le (Master's student)

Prof. Anders Mørch, supervisor

[anders.morch@iped.uio.no](mailto:anders.morch@iped.uio.no)

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Kjære universitetslektorer / professor,

Mitt navn er Minh Le, og jeg er en internasjonal masterstudent ved Institutt for Pedagogikk. Jeg kontakter deg fordi du har benyttet fjernundervisning da campus var stengt og nå har du enten gått tilbake til normal klasseromsundervisning eller fortsette med hybrid læring. Hovedmålet med masteroppgaven min er å få en dypere forståelse av overgangen tilbake til undervisningsmiljø på campus etter den lange perioden av digital utdanning under pandemien. Derfor søker jeg deltakere i forskningsprosjektet som ønsker å gi meg innsikt erfaringer med kursdesign, undervisningsaktiviteter, brukt av IKT, og hvordan kan man stimulere studentenes engasjement.

Hvis du samtykker til å delta, vil jeg ta kontakt med deg for å avtale et passende tidspunkt for et 45-minutters intervju. Et informasjonsbrev og et samtykkeskjema vil også bli sendt ut. I tillegg vil jeg også sende en intervjuguide en uke før intervjuet og be om tillatelse til en skjermdump av kursdesignet ditt i Canvas. Jeg håper du er enig med bruken av engelsk for intervjuet fordi språket til masteroppgaven min er engelsk.

Deltakelse meldes fra ved å svare på denne e-posten. Takk på forhånd!

Med vennlig hilsen,

Minh Le (masterstudent)

Prof. Anders Mørch, veileder

## 8.3 Information about the project

### **Return to campus: Course Design and Classroom Practices of University Lecturers in Time of Crisis**

#### **Purpose of the project**

This master thesis aims to explore the topic of university lecturers' experiences and practices regarding course design and teaching practices within the context of transitioning back to on-campus teaching after the long period of digital education caused by the Covid-19 crisis.

The scope of this project is to gain better insights into a selected sample of university lecturers' usage and adoption of digital tools in their course curriculum design and facilitation of teaching and learning activities.

Three research questions would guide this research project, namely:

- *How do university lecturers experience the transition from remote education caused by the pandemic to hybrid on-campus teaching?*
- *How has the extended period of digital education affected the university lecturers' understanding of course design?*
- *To what extent has the process of digitalization influenced the ways university lecturers teach and facilitate learning?*

#### **Who is responsible for the research project?**

The University of Oslo, Department of Education, Faculty of Educational Sciences

#### **Why are you being asked to participate?**

The inclusionary criteria for the selection of academic staff to be interviewed are (1) lecturers from different faculties at UiO; (2) lecturers who designed, taught, and facilitated online teaching and learning during the period from March 2020 to December 2021; (3) lecturers who are familiar with the use of digital tools to engage students in both online and physical learning environments.

The master's student has contacted corresponding heads of departments to gain permission to interview their academic staff. Afterward, recruitment emails are sent to the selected academic staff via their university email address.

#### **What does participation involve for you?**

If you chose to take part in the project, this will involve participation in a semi-structured interview that will last approximately 45 minutes. I will relate the interview questions to the three mentioned research questions and your answers will be audio recorded. I would also like to request a screenshot capture of your course design in Canvas before the interview. The screenshot should include all the course modules. All private information and data that may indicate your personal identity will be removed.

### **Participation is voluntary**

Participation in the project is voluntary. If you chose to participate, you can withdraw your consent at any time without giving a reason. I will then make all information about you anonymous. There will be no negative consequences for you if you chose not to participate or later decide to withdraw.

### **Your personal privacy – how we will store and use your personal data**

I will process your personal data confidentially and act in accordance with the data protection legislation (General Data Protection Regulation and Personal Data Act).

The master's student and his supervisor will have access to the personal data. When analyzing the data, your name and contact details will be replaced with an assigned code. The list of names, contact details, and corresponding codes will be stored separately from the collected data. The data will be stored securely in a locked drawer at the researcher's home.

### **What will happen to your personal data at the end of the research project?**

The project is scheduled to end in July 2022. The personal data, including any digital recordings, will be deleted as soon as the master thesis has been successfully submitted.

### **Your rights**

So long as you can be identified in the collected data, you have the right to:

- access the personal data that is being processed about you
- request that your personal data be deleted
- request that incorrect personal data about you be corrected/rectified
- receive a copy of your personal data (data portability), and
- send a complaint to the Data Protection Officer or The Norwegian Data Protection Authority regarding the processing of your personal data

### **What gives us the right to process your personal data?**

We will process your personal data based on your consent.

Based on an agreement with the University of Oslo, NSD – The Norwegian Centre for Research Data AS has assessed that the processing of personal data in this project is in accordance with data protection legislation.

### **Where can I find out more?**

If you have questions about the project or want to exercise your rights, contact:

- Minh Le, Master student, [vple@uio.no](mailto:vple@uio.no)
- The University of Oslo via Anders Mørch (supervisor), [anders.morch@iped.uio.no](mailto:anders.morch@iped.uio.no)
- NSD – The Norwegian Centre for Research Data AS, by email: [personverntjenester@nsd.no](mailto:personverntjenester@nsd.no) or by telephone: +47 55 58 21 17.

Yours sincerely,

Supervisor

Anders Mørch

Student

Minh Le

### **Consent form**

I have received and understood information about the project *Return to campus: Course Design and Classroom Practices of University Lecturers in Time of Crisis* and have been given the opportunity to ask questions. I give consent:

- to participate in an interview
- to be recorded during the interview (only the audio data will be analyzed)
- for the interview data to be stored and analyzed
- provide a screenshot capture of my course design on Canvas

I give consent for my personal data to be processed until the end date of the project, approx. July 2022.

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(Signed by participant, date)

## 8.4 Approval from NSD

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### Vurdering

**Referansenummer**

641665

**Prosjekttittel**

Return to Campus: Course Design and Classroom Practices of University Lecturers in Time of Crisis

**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: +4748021736

**Type prosjekt**

Studentprosjekt, masterstudium

**Kontaktinformasjon, student**

Minh Vu Phuc Le, vple@uio.no, tlf: 41384654

**Prosjektperiode**

15.11.2021 - 31.07.2022

**Vurdering (1)**

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**16.12.2021 - Vurdert**

Our assessment is that the processing of personal data in this project will comply with data protection legislation, so long as it is carried out in accordance with what is documented in the Notification Form and attachments, dated 16.12.2021, as well as in correspondence with NSD. Everything is in place for the processing to begin.

**TYPE OF DATA AND DURATION**

The project will be processing general categories of personal data until 31.7.2022

**LEGAL BASIS**

The project will gain consent from data subjects to process their personal data. We find that consent will meet the necessary requirements under art. 4 (11) and 7, in that it will be a freely given, specific, informed and unambiguous statement or action, which will be documented and can be withdrawn.

The legal basis for processing general categories of personal data is therefore consent given by the data subject, cf. the General Data Protection Regulation art. 6.1 a).

**PRINCIPLES RELATING TO PROCESSING PERSONAL DATA**

NSD finds that the planned processing of personal data will be in accordance with the principles under the

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General Data Protection Regulation regarding:

- lawfulness, fairness and transparency (art. 5.1 a), in that data subjects will receive sufficient information about the processing and will give their consent
- purpose limitation (art. 5.1 b), in that personal data will be collected for specified, explicit and legitimate purposes, and will not be processed for new, incompatible purposes
- data minimisation (art. 5.1 c), in that only personal data which are adequate, relevant and necessary for the purpose of the project will be processed
- storage limitation (art. 5.1 e), in that personal data will not be stored for longer than is necessary to fulfil the project's purpose

#### THE RIGHTS OF DATA SUBJECTS

As long as the data subjects can be identified in the data material, they will have the following rights: access (art. 15), rectification (art. 16), erasure (art. 17), restriction of processing (art. 18), data portability (art. 20).

NSD finds that the information that will be given to data subjects about the processing of their personal data will meet the legal requirements for form and content, cf. art. 12.1 and art. 13.

We remind you that if a data subject contacts you about their rights, the data controller has a duty to reply within a month.

#### FOLLOW YOUR INSTITUTION'S GUIDELINES

NSD presupposes that the project will meet the requirements of accuracy (art. 5.1 d), integrity and confidentiality (art. 5.1 f) and security (art. 32) when processing personal data.

To ensure that these requirements are met you must follow your institution's internal guidelines and/or consult with your institution (i.e. the institution responsible for the project).

#### NOTIFY CHANGES

If you intend to make changes to the processing of personal data in this project it may be necessary to notify NSD. This is done by updating the Notification Form. On our website we explain which changes must be notified: <https://www.nsd.no/en/data-protection-services/notification-form-for-personal-data/notify-changes-in-the-notification-form>

Wait until you receive an answer from us before you carry out the changes.

#### FOLLOW-UP OF THE PROJECT

NSD will follow up the progress of the project at the planned end date in order to determine whether the processing of personal data has been concluded.

Good luck with the project!

# 8.5 Interview guide

## Addressing RQ1:

- Can you tell me more about your academic background? (years of experience, the courses you are teaching, and the faculty/department you are employed).
- Can you tell me about the experience of teaching remotely during the campus closure? (e.g., workload, adaptation to new teaching and learning environment, support, and training from the faculty). Challenges and opportunities?
- To what extent has the experience changed your attitudes about online teaching now that staff and students have returned to campus?
- In retrospect, how would you describe your students' educational experience during the autumn 2021 semester compared to the previous semesters when digital education was prevalent?

## Addressing RQ 2:

- Can you describe the process of designing your teaching courses? What types of learning outcomes do you expect students to achieve?
- Have you used any new ways of designing the course curriculum during the transition from synchronous online teaching to on-campus teaching? Have you found them to be successful? If so, how?
- To what extent does a Learning Management System (LMS) such as Canvas play a role in the process of designing your course? How would you align your teaching contents to ensure your students meet the learning outcomes?

## Addressing RQ3:

- Have you used any forms of digital tools to aid your teaching either during digital education or in face-to-face teaching?
- To what extent do you think these digital tools are useful as instructional aids? How would you use them for teaching, learning, and maintaining engagement with your students?
- How do you interact with your students and facilitate teaching activities?
- How would you assess your students so that they can demonstrate they have reached the intended learning outcomes?



- Facilitating discourse is when the instructor monitors and manages purposeful collaboration and reflection. How do you facilitate discussion groups with the students?
- In terms of the overall class performance, do you see any progress from the students? Attendance rate and dropout rate?
- What kinds of feedback do you receive from the students?

**Bonus**

Is there anything else about your experience with on-campus teaching during this autumn term you would like to share that we may not have covered or any questions you would like to revisit?

## 8.6 NVivo coding results

Files						
Name	Codes	References	Modified On	Modified By	Classification	
1. audio Kevin (UV)		0	0	24/05/2022 15:02	MINH LE	
Text Kevin (UV)		14	21	24/05/2022 15:02	MINH LE	
10. audio Megan (H)		0	0	24/05/2022 15:06	MINH LE	
10. Text Megan (H)		17	28	24/05/2022 15:06	MINH LE	
11. audio Will (H)		0	0	24/05/2022 15:07	MINH LE	
11. Text Will (H)		14	28	24/05/2022 15:07	MINH LE	
2. audio Kate (MN)		0	0	24/05/2022 15:02	MINH LE	
2. Text Kate (MN)		18	41	24/05/2022 15:02	MINH LE	
3. audio Yvon (MN)		0	0	24/05/2022 15:02	MINH LE	
3. Text Yvon (MN)		12	22	24/05/2022 15:03	MINH LE	
4. audio Mike (UV)		0	0	24/05/2022 15:01	MINH LE	
4. Text Mike (UV)		17	35	24/05/2022 15:02	MINH LE	
5. audio Ron (H)		0	0	24/05/2022 15:03	MINH LE	
5. Text Ron (H)		16	28	24/05/2022 15:03	MINH LE	
6. audio Eric (MN)		0	0	24/05/2022 15:03	MINH LE	
6. Text Eric (MN)		13	22	24/05/2022 15:04	MINH LE	
7. Text Luke (MN)		16	26	24/05/2022 15:04	MINH LE	
7. audio Luke (MN)		0	0	24/05/2022 15:05	MINH LE	
8. audio Tim (UV)		0	0	24/05/2022 15:05	MINH LE	
8. Text Tim (UV)		13	27	24/05/2022 15:05	MINH LE	
9. audio Sam (UV)		0	0	24/05/2022 15:05	MINH LE	
9. Text Sam (UV)		16	27	24/05/2022 15:06	MINH LE	
audio pilot interview with Prof March		0	0	21/12/2021 14:08	MINH LE	
text for pilot interview		0	0	21/12/2021 14:08	MINH LE	

RQ1 Transition to hybrid on-campus teaching from remote teaching caused by the pandemic							
Name	Files	References	Created On	Created By	Modified On	Modified By	
0. Changing attitudes caused by the transition		9	17	23/02/2022 16:57	MINH LE	18/04/2022 00:20	MINH LE
2. Faculty's support + colleagues		9	12	07/03/2022 17:53	MINH LE	18/04/2022 00:21	MINH LE
23. Transition back to f2f (challenges and opportunities)		8	21	12/03/2022 21:55	MINH LE	18/04/2022 00:24	MINH LE
13. Concern for students (no social)		5	9	09/03/2022 12:05	MINH LE	17/04/2022 11:05	MINH LE
11. Teaching presence (supporting ur students)		5	6	09/03/2022 11:48	MINH LE	05/04/2022 15:24	MINH LE
24. Adapting tradition teaching with remote condition		5	7	20/03/2022 11:08	MINH LE	18/04/2022 00:15	MINH LE
5. Screen fatigue		3	3	07/03/2022 18:13	MINH LE	04/04/2022 15:47	MINH LE
3. Communication with students (remote+hybrid)		2	3	07/03/2022 17:57	MINH LE	06/04/2022 16:45	MINH LE
26. Fieldworks during the crisis		2	3	31/03/2022 18:03	MINH LE	18/04/2022 00:27	MINH LE

RQ2 Course design and Assessment							
Name	Files	References	Created On	Created By	Modified On	Modified By	
1. Hybrid Teaching		8	19	25/02/2022 00:31	MINH LE	17/04/2022 11:07	MINH LE
10. Assessment + Exam		11	28	09/03/2022 11:33	MINH LE	18/04/2022 17:24	MINH LE
12. Student's performance (plagiarism + dropout)		9	11	09/03/2022 12:00	MINH LE	18/04/2022 00:26	MINH LE
15. Blackboard and digital teaching		2	5	09/03/2022 14:38	MINH LE	20/03/2022 11:53	MINH LE
17. Course Design + Canvas		10	25	10/03/2022 00:07	MINH LE	18/04/2022 00:19	MINH LE
18. Feedback from the students		7	12	12/03/2022 12:08	MINH LE	18/04/2022 00:23	MINH LE
22. Inspira (assessment)		2	2	12/03/2022 19:25	MINH LE	16/04/2022 00:30	MINH LE
7. Learning outcomes		10	19	09/03/2022 00:55	MINH LE	18/04/2022 00:12	MINH LE

RQ3. To what extent has the process of digitalization influenced the ways university lecturers facilitate teaching and learning							
Name	Files	References	Created On	Created By	Modified On	Modified By	
14. Remote teaching + how lectures are done		5	8	09/03/2022 14:26	MINH LE	07/04/2022 16:29	MINH LE
16. Podcast and digital teaching		3	3	09/03/2022 15:13	MINH LE	18/04/2022 00:17	MINH LE
19. Teaching activities + assignments+ guest lecture		8	22	12/03/2022 12:18	MINH LE	18/04/2022 00:20	MINH LE
20. Pymol (digital tools)		1	3	12/03/2022 12:20	MINH LE	18/03/2022 15:14	MINH LE
21. Python (digital tools) + Jupiter notebook		3	3	12/03/2022 12:22	MINH LE	05/05/2022 17:53	MINH LE
25. Teaching R (statistics)		2	4	30/03/2022 15:23	MINH LE	06/04/2022 16:40	MINH LE
27. Flipped classroom		2	5	01/04/2022 17:18	MINH LE	05/04/2022 17:22	MINH LE
28. Practical seminar (lab demo + Fieldwork)		2	4	05/04/2022 15:32	MINH LE	08/04/2022 00:13	MINH LE
29. Mentimeter (student response system)		2	3	05/04/2022 15:43	MINH LE	05/05/2022 16:04	MINH LE
30. Flashcards		1	2	06/04/2022 17:07	MINH LE	06/04/2022 17:11	MINH LE
31. Stop at the the station (learning activities)		1	1	06/04/2022 17:17	MINH LE	06/04/2022 17:17	MINH LE
32. Quiz		3	3	06/04/2022 17:18	MINH LE	16/04/2022 00:18	MINH LE
33. Teaching qualitative coding		1	4	07/04/2022 18:29	MINH LE	07/04/2022 18:32	MINH LE
34. Vortex		2	4	08/04/2022 15:36	MINH LE	16/04/2022 00:31	MINH LE
35. Piazza + Mattermost + Astroforum		1	4	16/04/2022 00:32	MINH LE	16/04/2022 00:33	MINH LE
4. Maintaining students' engagement (with digital aids)		7	11	07/03/2022 18:08	MINH LE	08/04/2022 15:34	MINH LE
6. Break-out room vs Physical Teaching		3	6	09/03/2022 00:42	MINH LE	18/04/2022 00:14	MINH LE
8. Synchronous lecture + recording		6	6	09/03/2022 01:02	MINH LE	18/04/2022 00:16	MINH LE
9. Discussion on Canvas		6	7	09/03/2022 01:09	MINH LE	07/04/2022 18:25	MINH LE

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