



Online Teaching in the Time of COVID-19:

Academic teachers' experiences in Norway

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Executive Summary

The digitalisation of teaching accelerated at record speed in the wake of the physical closure of universities and university colleges in Norway on 12 March 2020 due to the COVID-19 crisis. This report is based on a survey of academic teachers in Norway and their experience with the first three weeks of full digital teaching in this period. The questionnaire was sent out to members of the *Facebook group Digital Teaching in Higher Education* and we received 172 responses, with significant qualitative content. A mixed methods approach of quantitative and qualitative analysis was used to analyse the results. The report documents what has worked in this period and identifies concrete needs and challenges for the immediate period, building on the survey findings and literature about online teaching.

1. The Zoom Revolution. Despite little experience, academic teachers in Norway have embraced quickly online teaching. Only 30% reported having any previous experience with online teaching, yet 80% now use the video-based software Zoom. Other programmes used included Microsoft Teams, YouTube and Powerpoint Recording. Canvas is surprisingly not the most used software programme even though it is the ‘official digital platform’ in most higher education institutions in Norway.

2. Split on learning outcomes. Teachers were divided over the extent to which online learning was an improvement over ordinary teaching. A third were unsure while for the rest, there was an even split between those who saw weaker outcomes and those who saw the same or better outcomes. Teachers who used live formats reported the highest expectations concerning better learning outcomes.

3. Significant level of interactive online learning. Many teachers sought to use various interactive forms of learning. While pre-recorded lecturing is used by most, many used *live* streaming (40%), discussion (57%) and break-out groups (40%). Discussion and group work in break-out rooms is also a popular form of activity, but concerns are raised about limited follow-up on students’ work.

4. Involuntary teaching reform. The abrupt transition to online teaching meant many changed their teaching methods, and 35% reported that their teaching methods changed significantly. Those that commented in this part of the survey were often positive about the innovations, but it varied dramatically. Positive changes included more varied and interactive teaching, organised seminars and smaller group discussions, use of discrete modules and polling software, and more space for written communication and performance of tasks in advance of a lecture.

5. Collegial competence building and self-help. Many turned to self-help to manage the transition with 70% using online resources and 80% trying things out themselves. However, obtaining support from others, including colleagues, ranked very highly. This included Facebook groups (over 50%), close colleagues (33%), live tutorials (33%), IT-staff (31%), colleagues with technical competence (26%), an academic digital coordinator (25%) colleagues with pedagogical competence (13%) and a pedagogical centre (13%). The limited use of pedagogical support must be further examined (and is possibly increasing now) but an emerging community of practice is positive.

6. Challenges abound. The number of challenges reported was relatively high: 74% reported more than two challenges and only 13% no challenges. A quarter found the overall transition difficult or very difficult and this was highly correlated with the number of needs and challenges.

- Technological challenges and pedagogical insecurity were the main issues identified in setting up online teaching; as well as concerns over data privacy.
- COVID-19 lockdown-related obstacles were frequent: appropriate space at home, care of children and illness, lack of equipment and difficulty in organising practical or lab-based activities.
- Digital overload and pressures over psychological health. Many noted the lack of important direct contact with and feedback from students and colleagues.
- Academics in the natural sciences and junior academics appear to have had an easier transition to teaching online than other categories of respondents.

7. Online learning takes time. Many found it difficult to learn new digital technology and software programmes and re-arrange course design on such short notice. Ensuring sufficient time for adjusting to complete or hybrid digital learning was a priority for many.

Recommendations (Short version)

Based on the findings of this survey study and their interpretation, we provide at the end of the report a range of recommendations – reproduced here in their summary form.

To academics:

1. Request necessary changes to your course plans to accommodate challenges generated by COVID-19 lockdown.
2. Design your online teaching and the learning activities in this period in an informed manner – adjust goals, content, activities and ensure contact with students.
3. Seek help if you do not master the basic functions of the relevant tools or have the necessary technical equipment and software
4. Structure your digital teaching in a plain and clear manner, following pedagogical principles for online learning.
5. Create a diversified teaching plan, which includes different types of activities and addresses needs of various students.
6. Increase the interactivity in teaching and divide it into smaller and specific activities.
7. Ask for feedback from the students on how they experience digital teaching and what should be adjusted.
8. Facilitate questions and activities also in writing – some students feel much more secure if they can do it in written form.
9. Provide clear information to the students about your teaching plan, the activities that are offered and the expectations you have of the students who participate.
10. Assess your teaching plan against any changes to the form of assessment.

To faculties and study administration

1. Ensure an accessible and reliable digital infrastructure and technical support.
2. Make pedagogical expertise available, both at the institution and on other arenas (online).
3. Make sure that all academic teachers are pedagogically equipped to provide digital learning, by offering training and tailored pedagogical guidance.
4. Time was indicated as a factor playing an important role when preparing and ensuring the quality of online teaching – ensure that academics have sufficient time to prepare their online designs.
5. Ensure a detailed and good flow of information about available infrastructure, resources, guidelines, support and training opportunities (both for digital and pedagogical competence).
6. Work to ensure that forms of assessment correspond to the digital tuition that is given and take account of the challenges students and academics face during the COVID-19 lockdown.
7. Develop (or detail) a strategy for online and blended learning, both for short and longer terms.

Table of Contents

EXECUTIVE SUMMARY	2
RECOMMENDATIONS (SHORT VERSION)	3
TABLE OF CONTENTS	4
1. INTRODUCTION	5
2. LITERATURE AND METHODS	5
3. SURVEY RESULTS	8
3.1 PRIOR EXPERIENCE WITH DIGITAL TEACHING	8
3.2 SOFTWARE PROGRAMMES	8
3.3 INTERACTIVE DIGITAL TEACHING	10
3.4 CHALLENGES WITH TRANSITION	10
3.5 WHAT HELPED WITH THE TRANSITION	13
3.6 WHETHER TEACHING METHODS HAVE CHANGED	15
3.7 NEEDS FOR THE IMMEDIATE PERIOD	17
4. OVERALL CHALLENGES AND LEARNING OUTCOMES	19
4.1 DIFFICULTY WITH TRANSITION AND CHALLENGES	19
4.2 LEARNING OUTCOMES	21
SUMMARY POINTS:	27
5. CONCLUSION	27
6. RECOMMENDATIONS	30
REFERENCES	33
ANNEX 1: SURVEY	35

Online Teaching in the Time of COVID-19: Academic Teachers' Experiences in Norway

*Malcolm Langford** and *Crina Damsa***

1. Introduction

The physical closure of universities and university colleges in Norway on 12 March 2020, due to the corona crisis, accelerated the digitalisation of teaching at record speed. Some estimate that such a process would normally take 15 years. Across the country, academics, administrators and IT-support worked at breakneck speed to put in place full online learning. This was supported by a series of bottom-up initiatives including the Facebook group *Digital Teaching in Higher Education*.¹ The result was that digital learning was in place at most institutions in the following week. At one Faculty, 94% students reported receiving digital teaching in that first week (Langford, Damsa, Larsen, Slåttå, Westbye & Wulff, 2020).

This report is based on a survey of academic teachers in Norway and their experience with the first week of full digital teaching in the time of corona. The aim is both short-term and long-term. We wish to document what has worked in this period when teachers delivered online teaching at such short notice, and we wish to identify concrete needs and challenges for the immediate period. At the same time, the report seeks to contribute to existing research on online learning and a better understanding of how it can be facilitated and improved during challenging periods.

The questionnaire was sent out to members of the Facebook group on Sunday 22 March and closed on Friday 3 April 2020. It contained both numerical and open questions permitting both quantitative and qualitative analysis. We received 172 responses which were relatively well spread across different disciplines. However, the number of responses is not very high so the results should be treated with some caution.

The report is structured as follows: Part 2 briefly describes current research on digital teaching and the different methods used in this report. Part 3 presents the descriptive statistics and analyses the free text responses. Part 4 conducts a regression analysis of reasons behind two "outcome" questions about the students' learning outcome and the difficulty of transition. Part 5 summarises and part 6 contains recommendations.

2. Literature and methods

2.1 Research on online teaching in higher education institutions

Learning activities in online arenas and with the use of digital technology, and teaching that facilitates such learning, take place in highly varying forms and are identified under different names (e-learning, digital learning, online learning, technology-based learning, distance learning, etc.). These are variations of teaching and learning where activities are combined in different ways to achieve a meaningful and effective learning process, with blended learning combining both online and traditional methods. Educational theories vary on how learning takes place with digital technology and the role of technology in teaching and learning processes. The most used and pertinent are ideas that digital

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¹ <https://www.facebook.com/groups/134815737970541/> The group has almost 4000 members.

technology is a medium or tool that helps facilitate the communication of structure and content, and to organise and communicate teaching and learning activities (Laurillard, 2002; Säljö, 2010). In this context, the technology should be actively and meaningfully used by those who develop teaching plans.

A survey review by Boelens, De Wever and Voet (2017) identified four key challenges related to blended learning: how to: (1) incorporate flexibility; (2) stimulate interaction; (3) facilitate students' learning processes; and (4) foster an affective learning climate. These challenges require a significant focus in a full online learning environment. When teaching and learning are developed that (only) take place in digital arenas, it is important to create opportunities for the transfer of new knowledge and concepts, but also a clear and accessible infrastructure that facilitates development, organisation and coordination of teaching and learning activities; and not least good dissemination and guidance in the use of technologies (Graham & Wendy, 2013).

Good designs and digital teaching are focused on *interactivity* and *student-driven learning* (Boelens, De Wever & Voet, 2017; Jonassen & Land, 2012). Interaction has both a cognitive and social function. It is not just a matter of offering students information about and participation in new activities and technology. Jeong and Hmelo-Silver (2015) indicate how digital technology can encourage collaboration, by supporting engagement with joint tasks, communication, sharing resources, engagement in productive collaborative learning processes (joint writing, for example), monitoring and regulating collaborative learning, and finding and building groups and communities. *Sharing* of information and ideas, *discussion* and negotiation, and *good structures* for coordination of activities become even more important in digital teaching than when students are in the classroom. Using various strategies to help students to participate, discuss, contribute, share etc. is much more important at times when they do not have physical contact (Borge & Mercier, 2019; Damsa, 2014).

Furthermore, the possibility to *choose* activities, resources, and ways of participating (in lectures, seminars, study groups or group work) increases the likelihood of students understanding abstract material and engaging in work that contributes to increased competence and knowledge (Kearn, 2017). Online designs should be offering the students the means and support to build their own 'learning space' (Damsa, Nerland & Andreadakis, 2019), especially when teaching takes place exclusively online. This involves *flexibility* in the way the curriculum and activities are organised and performed and has the potential to stimulate *participation and engagement*, permitting students to organise their learning activities according to their own needs and pace. It also allows students to provide feedback about their experiences with types of activity, support, or guidance provided. Not least, teachers must be aware of the necessity of differentiating among learning needs and abilities, especially in online environments. Therefore, following principles of universal design are of major importance (Holingshead & Chellman, 2019).

The *digital literacy* (or digital competence) of educators and others involved in the process of implementing online education is paramount. This “involves the confident and critical use of Information Society Technology (IST) for work, leisure and communication. It is underpinned by basic skills in ICT: the use of computers to retrieve, assess, store, produce, present and exchange information, and to communicate and participate in collaborative networks via the Internet” (EU, 2006, p16). Digital competences are envisioned as including: technical competence; the ability to use digital technologies in a meaningful way for working, studying and in everyday life; the ability to evaluate digital technologies critically, and motivation to participate and commit in the digital culture (Ilomaki et al., 2016; Janssen et al., 2017). Other studies indicate that teachers' digital competence can often be underdeveloped, as the technology evolves very fast and teachers may not be able to keep the pace, or underestimate the value of such competence in comparison to other academic competences. It is not uncommon for studies to find that academics possess diversified attitudes towards use of digital technology and teaching online, which has an impact on both the frequency and quality of use, and success of innovations involving technology (Buchanan, Sainter & Saunders, 2013; Littlejohn et al., 2011).

It is important to note that a recent review by Petterson (2018) shows that many higher education institutions still lack a unitary approach with regard to e-learning organisational infrastructures and digital competent leadership. There are no clear conceptual frameworks that can close the gap between research on policy, organisational infrastructures, strategic leadership as well as teachers and their teaching practices, and there is a need to view digital competence not as an isolated phenomenon or through the lens of single actors. Rather, it should be regarded as an organisational task, influenced and driven by several contextual factors embedded within and across a wider institutional context. King & Boyett (2014) point to the importance of institutional infrastructure, academic employees' attitudes and digital skills, students' expectations and participation, and not least, education plans and guidance structure. While infrastructure and attitudes develop over time, education plans, forms of guidance, participation and mutual expectations are aspects where both educators and students are influential.

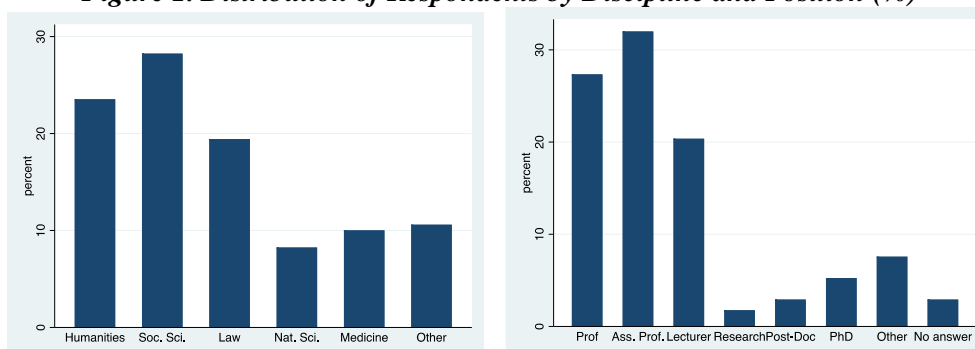
From an organisational change perspective, Allen (2016) and Russell (2009) make clear that there is a need for an integrated understanding of individual academic teachers' decisions, their organisational context and the material learning technologies they use (including everything from books and blackboards to Web 2.0 e-learning tools); rather than dividing our understanding into separate areas of expertise and action. This implies both acknowledgment of the value and input brought in by various parties and areas, as well as the intricate and challenging process of implementing successfully drastic innovations with e-learning (see also Graham & Wendy, 2013). King and Boyett suggest that there is a need for institutional strategies to give e-learning implementation and delivery its greater chance of success. Such a strategy: (1) defines e-learning, or what learning means in the given context; (2) provides a rationale for its use; (3) sets clear expectations for staff and students; (4) models the use of innovative (digital) teaching methods; (5) provides frameworks for implementation that recognise different disciplinary contexts; (6) demonstrates institutional investment for the development of e-learning; and (7) offers staff-appropriate support to develop their skills and understanding.

2.2 Methods in this report

The questions in our survey were based on both existing literature and specific experiences that academic teachers reported during the first week of teaching during the corona lockdown. Through the survey, we wished to document (1) pre-COVID-19 competence in digital teaching; (2) the use of different tools and pedagogical techniques; (3) practical challenges, and (4) potential effects on learning outcomes. The form contained ten multiple-choice questions with the possibility of free text answers (see Appendix 1).

One hundred and seventy-two academics responded to the survey. There was a relatively good spread of disciplines although it was dominated by the “softer” fields of humanities, social science, and law. In relation to positions, the answers are predominately from those with a full teaching load: 50% or greater of the position.

Figure 1. Distribution of Respondents by Discipline and Position (%)



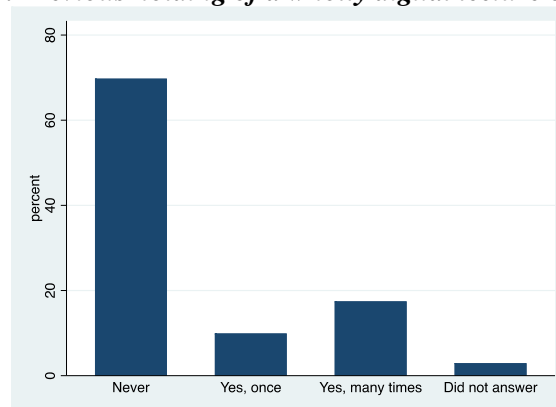
In this report, we utilise the following three methods: descriptive statistics, regression analysis and qualitative analysis of free text answers. We have also chosen to show a wide range of the free text responses to make the assessments more visible and the analyses more connected to the specific responses. The Norwegian answers were translated into English by Kristin Slåttå and the authors.

3. Survey Results

3.1 Prior Experience with digital teaching

We first asked respondents about their experience with digital teaching delivered exclusively online. As all academics have engaged with some form of digital teaching or use of digital technology in their teaching, whether by using email, Powerpoint or basic learning platforms such as Canvas, we focused on whether they had relied *solely* on digital tools. The question was whether they had delivered a lecture digitally: ‘Before the closure of universities and colleges had you held digitally a whole lecture or seminar?’. The response shows quite limited experience amongst those surveyed. As Figure 2 indicates, only 30% had done so at least once before.

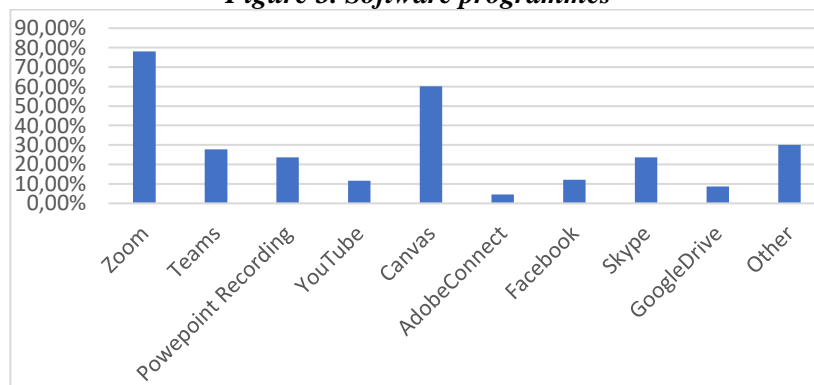
Figure 2. Previous holding of a wholly digital lecture or seminar



3.2 Software programmes

Respondents were then asked about which type of software they used in teaching digitally during the lockdown. The set questions were based on programmes most commonly referred to in the Facebook group and a free text question asked as to others.

Figure 3. Software programmes



The results are relatively clear: see Figure 3. First, like other sectors, there has been a Zoom revolution in online teaching. Almost 80% of respondents reported using the programme. Further behind but still prominent were new programmes or features not commonly used before such as Microsoft Teams, Powerpoint recording and YouTube. As Extract 1 shows, other popular programmes include Kaltura, Camtasia and Mediasite, while some use specialist digital learning platforms such as Blackboard. Second, many use Canvas but this is perhaps not surprising given it has been the standard platform in many universities in Norway for organising course content and communicating to students. However, despite inquiries at major online workshops, we have been unable to locate any lecturer who has managed to use Canvas to engage in active discussions with students, whether synchronous or asynchronous.

Extract 1. Other software programmes

Active presenter	Loom * 2
Audacity	Mediasite * 5
Blackboard Collaborate/Ultra * 5	Mentimeter * 5
Bluebutton	MS Sharepoint for fildeling
Camtasia * 5	OBS
Debut, Windows Movie Maker,	Padlet * 3
Discord	Quicktime * 3
Email * 2	Recording app at University * 2
FaceTime * 3	Screencast-O-Matic * 4
Frame.io	snagit – recording of screen (PP & SPSS)
iMovie * 5	WeVideo to edit content
iPhone camera	Telephone *2
Kahoot	Webex
Kaltura * 8	Website in vortex
Kaltura Capture * 2	WhatsApp
Interfree – University of Bergen	Windows' Video editor

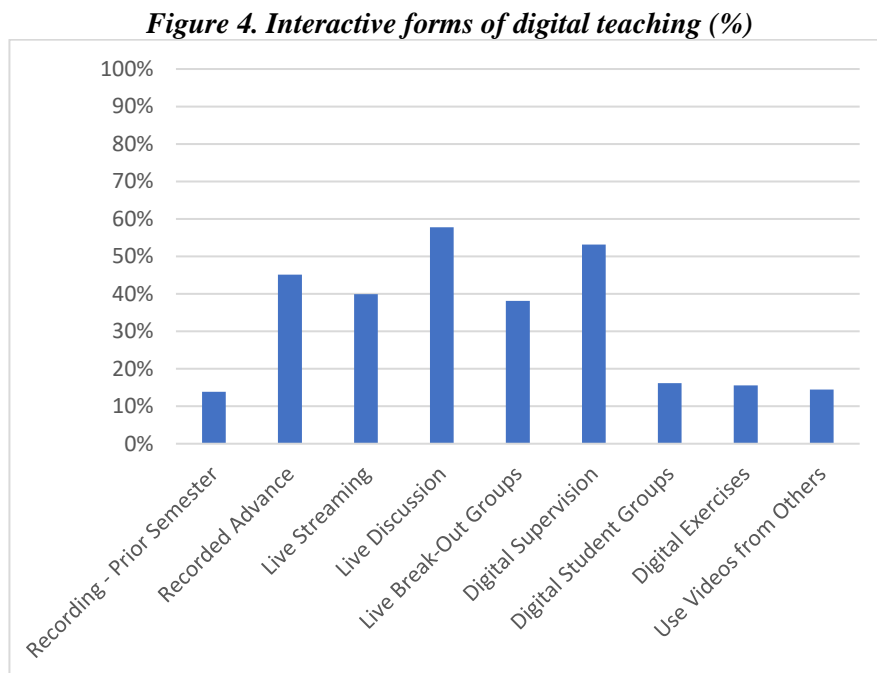
Summary points:

- Zoom is the most popular software programme for teaching;
- Software programmes supporting live teaching (e.g., Zoom, Skype, Teams) appear to be most frequently used;
- Canvas is surprisingly not the most used software programme, even though is the ‘official digital platform’ in most higher education institutions in Norway;
- There is variation in the software programmes used. Categories of programmes can be distinguished that support:
 - Synchronous and asynchronous lecturing (Zoom, Skype vs. Audacity, Camtasia, iMovie, PP recording),
 - Live interactive teaching (Zoom, Skype, FaceTime) plenary or in groups,
 - Organisation of activities, communication, assignments (Canvas),
 - Written communication (email, Padlet),
 - Polling or feedback-based teaching (Mentimeter, Kahoot),
 - Sharing (MS Sharepoint, Google Drive).

3.3 Interactive digital teaching

Ensuring online teaching is interactive is both assisted and challenged by the various technologies. On one hand, they can help structure interaction – e.g., speedy creation of a breakout room or question-based tools like Mentimeter and Kahoot that can function for large groups. On the other hand, students and teachers appear to be less used to engaging in interaction in a fully digital educational space.

Figure 4 shows the self-reporting of different interactive forms with an even spread across different categories. A significant number of respondents recorded videos in advance – partly to replace an entire lecture, but partly also to create more time in a lecture for interaction (i.e., a flipped classroom). Live digital teaching was also common: 40% lectured live, 60% held live discussions, 39% held live break-out groups, and 50% engaged in digital supervision. Students were also provided space to learn in a digital environment – with the creation of digital groups (16%) and new digital-based exercises (16%). However, the variation also raises concern about some students not receiving adequate digital teaching, a concern expressed by many students in the earlier student survey (Langford, Damsa, Larsen, Slåttå, Westbye & Wulff, 2020).



Summary points:

- There is a reasonable variation degree between types of online teaching activities organised, from pre-recorded lectures to digital exercise;
- Pre-recorded lecturing is used the most but live streaming is used to a large extent as well, indicating various approaches to conveying the curriculum;
- Discussion and group work in break-out rooms is a popular form of activity, indicating a concern and focus to facilitate interaction;
- Digital exercises are less frequently used, indicating that contact time is mostly used for knowledge transfer or interaction, and to a lesser extent for practice.

3.4 Challenges with transition

Students have reported a range of challenges with digital education in the midst of the corona lockdown (Langford, Damsa, Larsen, Slåttå, Westbye & Wulff, 2020). We put the same issues to teachers, although subtracting some and adding others (concerning pedagogical insecurity and data privacy

concerns with digital technologies and recording). No identified challenge reaches 50% but there is a even spread across the many categories. Many report issues connected directly with *online education* such as lack of technical competence (37%), pedagogical insecurity (39%) and concerns over data privacy (23%). A high number of challenges are *corona-related*, such as care for children (27%), lack of working space (25%) and lack of equipment (20%).

Figure 5A. Challenges with Digital Teaching

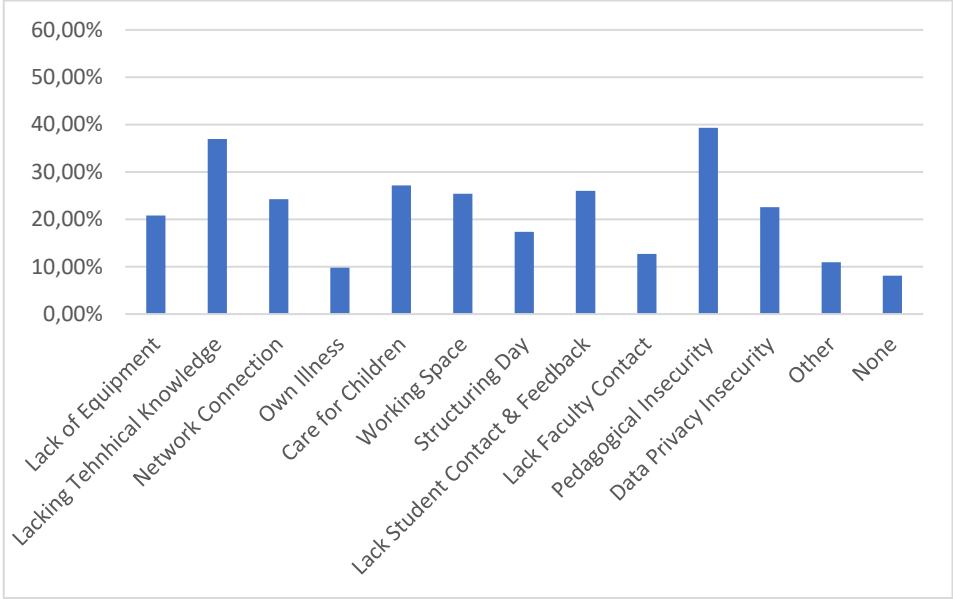
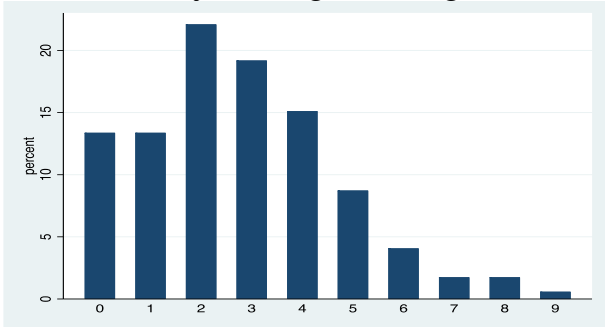


Figure 5B shows the average number of challenges. It was relatively high with 74% reporting more than two challenges. Only 13% reported no challenges.

Figure 5B. Number of Challenges with Digital Teaching (%)



In the open answer field, survey participants indicated variations to the challenges indicated in the quantitative data provided or elaborated on some of those they felt are most poignant (see excerpts from free answer texts below). In line with the closed answers, technical challenges are elaborated upon as one of the main reasons for giving up on shifting to online teaching; these range from inadequate equipment, to internet connection problems or non-functioning digital platforms (e.g., Canvas). Students’ technical challenges also play a role. Lack of digital competence is expressed in insecurity in using new technology on such short notice, and unease about appropriate delivery is also mentioned. The fact that re-designing the teaching is time consuming and the delivery physically and mentally demanding (much screen time) are also mentioned. Pedagogical insecurity seems to play a role, especially in the case where interactive teaching must be converted to interactive online teaching. One comment points to the lack of clarity and support for teaching according to universal design criteria for students with impairment. Some respondents indicated that they enjoy trying out new tools and methods.

Extract 2. Challenges expressed in free text answers

Physically and mentally demanding

- Became mentally very tired
- Physically tired after long periods of Zoom teaching and meetings
- The all-digital everyday life can be quite intense. I struggle with Wi-Fi hypersensitivity and feel nauseous and high heart rate if I sit too long at the machine. This makes it difficult to carry out long sessions, e.g. double lectures, in Zoom. Both for me and for the students, it is also a challenge to be able to prepare well enough since important books and binders are locked away at the Blindern campus.
- Planning teaching sessions takes a lot of time when already made plans need to be rethought, and adapting to a new way of approaching students is time-consuming.
- It's a lot of work

Time consuming

- Used a lot of time to plan, communicate with students and learn new digital platforms.
- First and foremost, lack of time.
- A lot of pressure - digital meetings of various kinds take up most of the day.
- Lack of time to prepare for teaching asynchronously and in smaller groups, so I think we should focus more on the future.
- Unpaid extra work as an hourly course leader who suddenly had to use dissertation time (overtime) to move a very interactive course (5-hour intensive workshops) online and at the same time attend to everyone's needs (see above). I was also in quarantine due to recent teaching abroad + with sick child & home school at the same time. As an hourly employee, you do not have corona-extended rights, such as a care leave. I do believe that we can find a good solution to this locally. But it is important that the institutions in general also have hourly staff on the radar when support measures are discussed - we are several types of employees on this large team!

Technical challenges, lack of appropriate conditions and digital competence (for teachers and students)

- Takes some time to get into the systems. Too much attention is paid to the set-up, organizing "mute / non.mute", etc. at the expense of educational and professional outcomes.
- Used CANVAS to post lectures ... but there were many errors and problems. [...]After this I switched to the use powerpoint with sound.
- I have discovered that the technical aspects steal not an insignificant part of the actual teaching time. Eg. wait for people to hook up, trouble with break out rooms when someone is in poor connection, stop filming and check that people are getting what is shown, write messages instead of saying them, etc. In addition, preparations can take longer.
- The biggest challenge is to hold a split-screen lecture where students do not show faces. It makes the format quite heavy.
- Poor network connection among the students. Students with children / animals at home. Students with poor equipment / good workplace
- Missing some equipment in the office (charger, wires and microphone). And better / more s net at work.
- Students have technical problem with the hardware.
- Online problem in all of Norway on Thursday 18 March.
- Problem with Kaltura Express due to pressure on MittUiB: server is still uploading a video I took three days ago. Have shared it with WeTransfer. Quiz feature on Kaltura Express does not work completely.
- Equipment, workplace, lack of expertise
- Have some teaching which is workshops in music. It is more difficult to implement due to lack of equipment / instruments. It's hard to play together in the digital apps
- Learning how the platforms work by trial and error, day by day. Trying to figure out how something looks from the students' side and not wasting time in class figuring out something I didn't get, stuff like that
- Much had to be learned and tested quickly but it was really quite interesting to do something new. Had more and better contact with the students than usual
- Technology that is not working properly.

Redesign of regular interactive or practical teaching activities to online interactive activities

- Very difficult to conduct practical, clinical training fully digitally

- Some forms of education – even recording fiction films in accordance with professional industry norms- cannot be replaced with digital teaching in a satisfactory way.
- Reorganisation of lab courses
- In general, it is difficult when I teach a practical oriented study, where we have to rethink everything. Physical workshops where, over a short period of time, we vary between using yellow patches and other physical props, discussions, solitary work, and teacher instruction, it is difficult to obtain a dynamic way in a virtual way. The students plan fieldwork to be completed after Easter, but the situation limits what studies they can do here, we have to think completely new as the students have to do all studies virtually.
- Simply difficult to lecture at home alone, alone. It is completely different then face to face.

Having to find solutions by oneself

- Much had to be learned and tested quickly but it was really quite interesting to do something new. Had more and better contact with the students than usual
- Asked a lot of questions to almost all relevant UiO instances about possible solutions for students with hearing impairment who have had their interpretation interpreted cut off due to the corona measures. Did not get answers or most often answers to something completely different. Eventually found temporary solutions on their own + via testing with current student, and could digitally "move" them (Choice of platform + how to instruct guest lecturers on, for example, is affected by these needs and solutions available). Let's learn: This experience illustrates a clear need for a central mentor for universal access to digital education (reported in several places, most recently via newly established help desk). It is important to take overall institutional responsibility here as soon as the situation and capacity allow. (heard about – but unverified - that lecturers on universal design have been provided without facilitation)

Students having problems

- The students (in this case, teachers-students) did not have time for synchronous teaching, because of things they have to deal with at their own work (they were free to gather, but of course had to prioritize arrangements for their own school / own students) and that they had children at home. .
- Same with a master student: he had to work extra hours for his job (health sector) and postpone planned guidance.
- Students are dissatisfied with the learning outcomes.

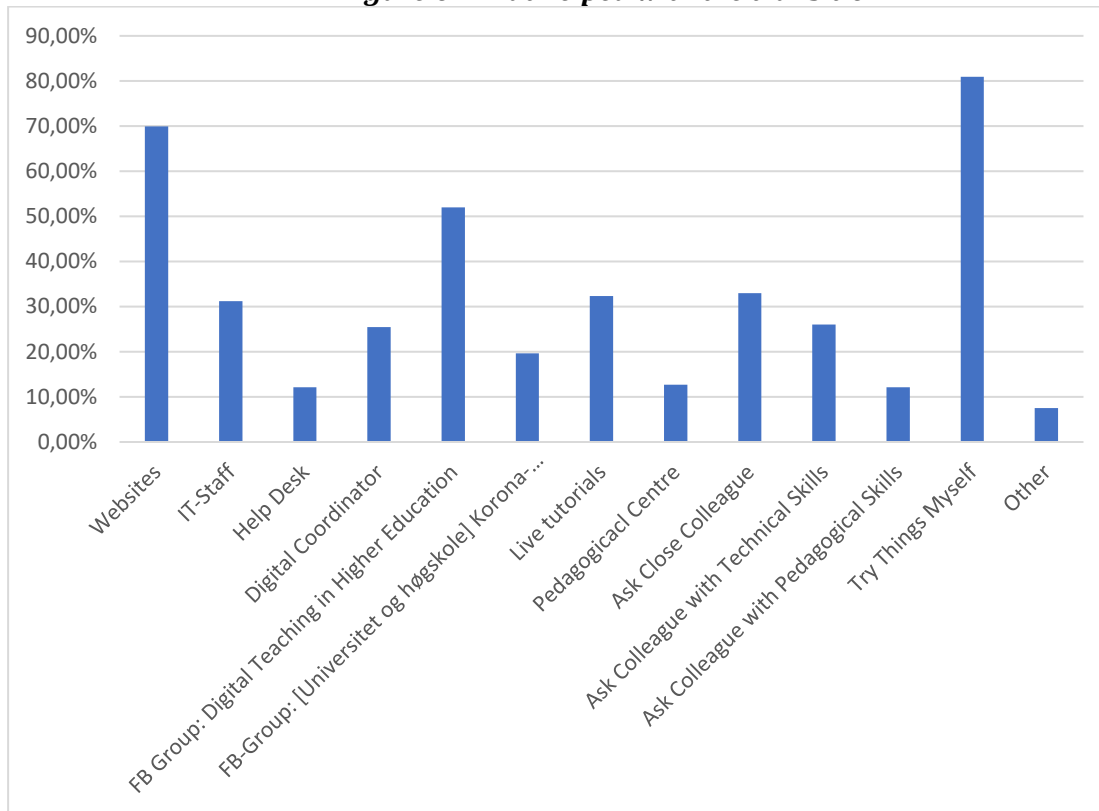
Summary points:

- Technological challenges and pedagogical insecurity are the main issues identified as problematic when setting up online teaching;
- Lack of equipment, having to learn to use new digital technology and software programmes on short notice discouraged many teachers;
- Lack of appropriate space at home and care of children are experienced as obstacles for organising online teaching;
- Some teachers have concerns about data privacy;
- Redesigning interactive teaching into online interactive teaching was experienced as a challenge;
- Lack of contact with students and peer academics, and of feedback from students represented also challenges;
- Teaching that requires practical activities was impossible or difficult to organise online;
- Own health, the extent of work and time needed to redesign represent challenges as well;
- Most respondents experienced two to four concurrent challenges.

3.5 What helped with the transition

Respondents were asked what helped with their transition to digital education. The most popular answer was self-help: reading websites (70%) and trying things out (80%). However, obtaining support from others ranked very highly and can be divided into collegial, specialist and mixed forms. *Collegial spaces* included the Facebook group for Digital Teaching (52%), asking close colleagues (33%), the Facebook group for *Korona Dugnad* (20%). *Specialist spaces* included live tutorials (33%), IT-staff (31%), a pedagogical centre (13%). *Mixed spaces* included asking colleagues with technical competence (26%), an academic digital coordinator (25%) and colleagues with pedagogical competence (13%).

Figure 6. What helped with the transition



Participants' free text answers about what may have helped with the transition to digital teaching can be roughly clustered in a few categories. Previous experiences with online work (taking courses themselves included) and using digital tools for regular teaching are named as a strong benefit. Own motivation to learn how to teach online is coupled with a sense of responsibility for delivering good teaching to help students to learn in this difficult period. Support and help by other people, such as programme or course coordinators, colleagues, administrative staff, or students who expressed learning needs clearly are among aspects that helped as well.

Extract 3. Other things that helped

Previous experiences with online/digital work

- Building on the experience of designing MOOCs and online courses
- We had been preparing for digitization for several years, and facilitated digital collaboration and exams
- Good instructionals embedded in BB Collaborate
- Have participated in digital conferences that have given me greater insight into digital platforms - zoom, basecamp - and how these can be used flexibly (breakout groups, chat) and integrated with different tools (mentimeter, Jamboard). But has also gained greater respect for the importance of digital-educational competence ...
- Various instructional videos on Youtube have been very useful in terms of. to understand Zoom.

Students

- A bit weird you have no answer option that is the students! In medicine, we have had a super assistant in digital teaching, and both that person and the students in general have given lots of help, been patient and made great suggestions.
- Asking students to take contact when they encounter any type of problem
- Ask students what they need

Other people

- The course coordinator did a very good job of teaching us how to use zoom.
- Established international collegiate networks
- Administration.
- Helped by more technically competent cohabitant and borrowed equipment from him.
- Malcolm and employees from other institutes at UiO

Own motivation and professional responsibility

- A personal desire for students to be the least injured
- Own competence
- Think logically within the new framework!
- Testing with student with facilitation needs. Wish we did not have to, but we succeed partly - so it was worth it.
- That I have not allowed the corona situation to contribute to reducing the pedagogical expectations either for myself or for the students,
- Responsibility that I have been assigned (as a resource person for digital education) has helped me to get into new things faster, gain an overview and be motivated to help others.

Summary points:

- Respondents relied mostly on their own competence and efforts to prepare digital teaching. Professional responsibility and own motivation were drivers for trying out new things;
- Other peoples' help is reported as secondly important, with various groups being named (colleagues, IT-support, administration, pedagogical support, dedicated community on social media, international networks);
- Online resources other than institutional were also used (tutorials, websites);
- Students are indicated as a resource, as they either helped directly or specified learning needs;
- Own digital competence and motivation are viewed as important factors.

3.6 Whether teaching methods have changed

The abrupt transition to digital teaching raises questions as to whether traditional forms can be maintained or merely digitized. The clear majority reports a change with 35% reporting that their teaching methods changed significantly: see Figure 7A. This can be both positive and negative. Good online learning requires adjusted methods (see section 2) but the changes may be also motivated only by the corona crisis and represent a second-best. In any case, Figure 7B provides more details on the type of changes. While pre-recorded videos can be perhaps best explained by the corona lockdown (38%), it is interesting that an increased number (40%) have increased the use of discrete modules (a key recommendation for digital learning) and greater use of break-out groups (25%) and student groups (15%).

Figure 7A. Whether teaching methods changed

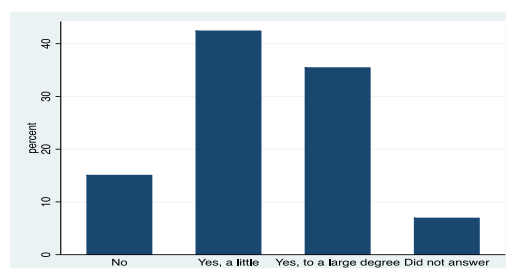
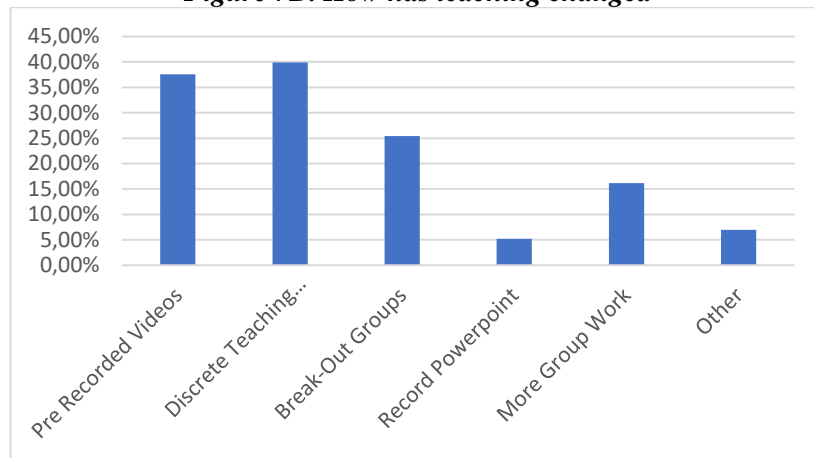


Figure 7B. How has teaching changed



The qualitative data indicates that most respondents have changed various aspects of their teaching. Most of them organised their lectures online, either live or pre-recorded. A high number of those responding have made efforts to re-organise their regular interactive activities (seminars, group work) in such ways that these can take place online (mainly in Zoom). Discussions and group discussions seem to be a popular format. Some have organised work with assignments prior to meetings or being more available for answering questions and providing written feedback online. There are also respondents who report that they only switched their regular teaching to an online context, without many changes.

Extract 4. Other new methods

Online lecturing and supervision, flipped classroom elements (assignments in advance)

- Lecture via zoom etc.
- Lecture recording 2
- Used powerpoint with audio
- zoom supervision
- We have little lectures and lots of student activity, problem solving and group work as usual. The new thing is that it has gone digital
- Quiz
- Have students present their assignments in advance
- Hand-outs that students can fill out when they see the lecture (as if preparing for a bar exam in the US). More active than just pptx
- Feedback through Canvas instead of printouts.
- Be directly accessible on chat
- Self-study
- Collaboration in groups on syllabus review
- Student presentations via video conference.

Tailoring for activity, group size and interaction

- "Classroom" in Teams seems more intimate and enjoyable than in Canvas. Students seem to digitally "thrive" there! Easy to collaborate with that topic team too, in parallel teamrooms. Very valuable and effective 'Will probably retain this form of cooperation when we return to face-to-face teaching again.
- Zoom to larger meetings, Teams to smaller. Very good. Want to use this more for teaching and cross-border meetings. As well as limiting local travel time (eg to guided tour) something too. Amazing that we have so many good experiences with this now - and kudos to "Digital dagnad" and other local helpers!
- We have a few lectures and lots of student activity, problem solving and group work as usual. The new thing is that it has gone digital
- I have divided the students into groups. BUT they have largely not been able to meet to do group work because of the virus.

- Teaching has become more divided and sectioned in the sense that presentations and discussions have been organised separately, one after the other, instead of the discussion being integrated continuously as they often are in a seminar room. I have also used the discussion room in Canvas to a greater extent to discuss questions that may have been hanging after the session. When I was sick myself, I only used Canvas (not Zoom).
- I often have discussions in small groups or in couples even in regular seminars, but don't call it break out groups. Therefore, consider this question whether I have done this digitally more often than before.
- Zoom meeting with students with general discussion of syllabus and lectures
- More functions in Canvas, like discussions, with limited success

Mainly switching regular teaching to digital context

- Not new ways of working, just new to doing things digital
- Not really, the same starting point - the classroom - only that it is done digitally. Dividing the teaching into smaller sections, video, assignment and discussion, as well as group before and after teaching in addition to so-called breakout groups are methods I use for regular teaching.
- The subject I am already leading is already very student-active, task-centered and dialogue-based, so when we only got a platform that worked for our interaction form (and for everyone, including students with facilitation needs) we continued much as before. The exception is some micro lectures that are now being recorded + get attached to the script (due to plan B for facilitation when no speech-to-text in Teams is secured) & rather longer chat time in chat, rather than "regular" micro lecture with more dialogue. We experience losing valuable dialogue, but since these forms form a small part of the course, things are going well. We also had time to build good trust long before the crisis, and for that reason we also get some questions via the chat.

Increased written communication

- Delivering increased written communication: more often announcements to the students, and increased feedback on previously planned small, mid-term assignments
- Need much more information in writing than before.
- Everything is done differently, but the result is greatly reduced learning outcomes and the exam for the students is threatened.
- Have not been teaching this week (guidance and meetings only), but have started preparing for the next week and have indicated this
- No teaching now, only guidance. Must change completely though, and participate in "everything" I can learn from and from.
- I have let the students do all this, both now and in the past.

Summary points:

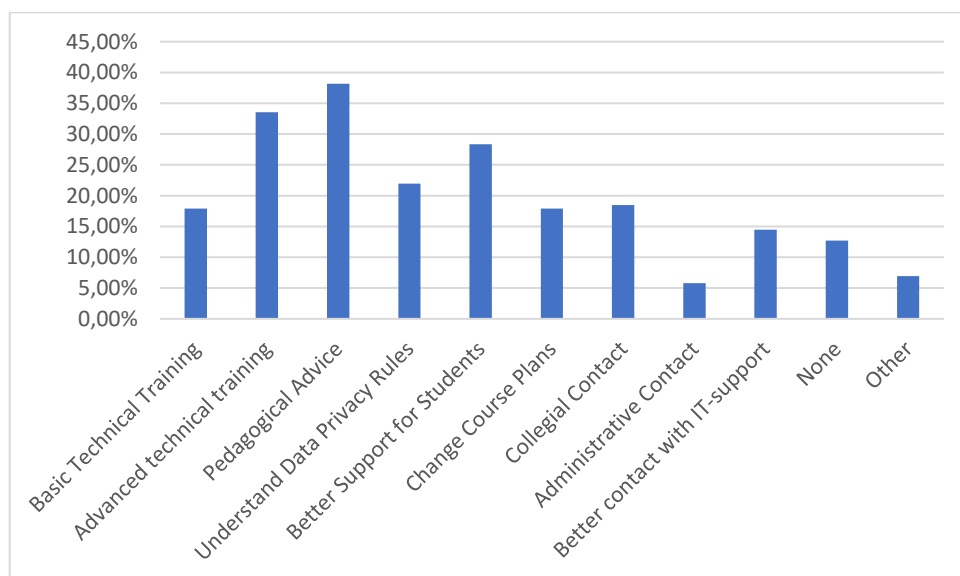
- Majority of respondents reported changes in their use of digital media for teaching;
- Many reported switching to digital lecturing and supervision;
- A large share has maintained interactive teaching and has organised seminars and smaller group discussions, with a reported increase of discrete modules and break-out rooms use;
- Written communication increased, increased feedback and teachers make themselves more available for questions;
- Some respondents have organised teaching according to flipped-classroom principles, with students performing tasks prior to contact time;
- Few report no changes or no teaching in this period.

3.7 Needs for the immediate period

The final basic question concerned coming needs for digital teaching. The most popular answers concern improvement in digital teaching: i.e., advanced training (34%), pedagogical advice (38%) and understanding of data privacy (22%). Others relate to core technical issues, such as basic training (20%) and IT-support (14%); or broader educational environment including support for students (28%) and contact with colleagues (19%) and administration (6%).

For the coming period, responses indicated mainly three needs for continuing teaching in the immediate period. The first is the need for more and better tailored technical support and technologies. Some respondents indicated they need to know more about the technology they must use, receive sustained support from IT-experts, have a better infrastructure at home and be in better contact with the IT-personnel. A second need for the following period is that for pedagogical knowledge and guidance. Improving current designs understanding what works for students, receiving advice on how to design digital teaching and examination from both experts and colleagues are deemed valuable. Finally, a major need is time. Time is required to work on designs for digital teaching and for recovering from screen time and pressure accumulated in this period.

Figure 8. Needs in the coming week



Extract 5. Other needs

More tailored technical support and better facilities

- Tools that are encrypted for use on patients.
- Need new technical aids
- Better equipment (has a small laptop and work on the kitchen table)
- Would love to know something about editing videos, but don't have time to get into it ...
- Quick access to physical facilities, equipment and different forms of work
- Kaltura is not good enough
- The most important thing is to get guidance over the phone step by step when something is going wrong.
- Clarify the possibility for podcasts in the auditorium at another school.
- A little more updated software and better internet at home
- We must conduct a digital oral exam, and will need support to ensure that everything goes smoothly

Pedagogical guidance, collegial support and student feedback

- Mostly to get this under the skin so that you can advance to the next level educationally.
- Student feedback! More time!
- We are very uncertain as to whether all or some of the students are getting into practice training at all, whether the content in practice training will be sufficient since many municipalities have shut down the business
- more time to change the teaching arrangements!

- Absolutely critical: More contact with and between students.
- Quick access to physical facilities, equipment and different forms of work
- collaborate closely with colleagues on changes in the educational program
- Knowledge about the change from written school exam to home exam
- Team solution that can grant speech-to-text service (which is good in English!) Will always work. For everyone: Tutors to ensure universal access to digital education.
- Input for good exam questions when certain assessment parts change from school to home exam.
- Feeling of isolation makes me depressed at work. Would love to meet digitally with others every day.

More time to re-design to digital format

- More time to change the teaching arrangements!
- Time
- Time and quiet
- More time!
- A little more air in my schedule. It is more tiring to have all meetings and teaching in Zoom. I usually tolerate a lot and have a tight calendar but I see that it is too much for me when everything goes digital.
- Digital detox

Summary points:

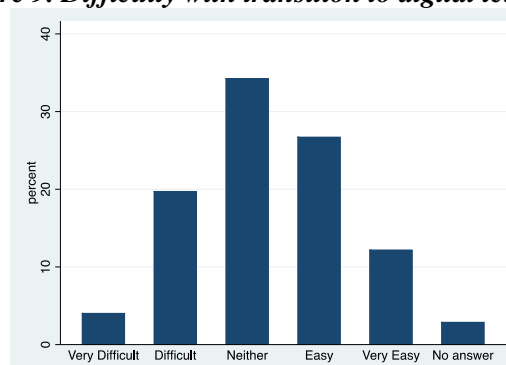
- Pedagogical advice and support for creating a good learning environment for students is the main need expressed, overall;
- There is also need for more tailored support and training on using different technologies, both for teachers and students;
- Knowledge on how to organise digital teaching and to prepare digital exams are identified;
- Better home environment, including technology, are needed;
- More contact with colleagues and IT-support are needed;
- Data privacy knowledge needs improvement.

4. Overall challenges and learning outcomes

4.1 Difficulty with transition and challenges

We asked two broader questions that sought to capture teachers overall experience with the transition. The first relates to the difficulty and the answers show a strong variation. A quarter report that it was difficult or very difficult, a third neither difficult or easy, while the remainder that it was easy or very easy.

Figure 9. Difficulty with transition to digital teaching



We have taken a closer look at why teachers reported such diverse experiences with the transition. It is particularly interesting to examine whether this is related to their disciplinary background, digital readiness/competence or factors related specifically to the COVID-19 lockdown. This can also guide policy responses – is the major challenge digital teaching, the lockdown, or both?

The analysis is based on six variables in the survey that we believe may be related to the difficulty of transition. We have used an ordered logistic regression analysis since the dependent variable is discrete, and looked at the effect of:

- Discipline
- Position
- Prior experience with digital teaching
- Number of challenges (digital teaching versus COVID-19-related)
- Number of needs (digital teaching versus COVID-19-related)
- Whether they answered in the first or second week after the lockdown

The results indicate, not surprisingly, a negative correlation between the ease of transition and the number of needs and challenges and needs. This is statistically significant. Amongst the disciplines, academics in the natural sciences report the highest ease of transition and this is close to the zone of statistical significance. The probability that junior academics (especially associate professors, lecturers, and postdoctoral fellows) have fewer difficulties than professors is an interesting finding and should be examined further in a larger dataset. Those with significant previous experience also report an easier transition on average.

Table 1. Difficulty of transition

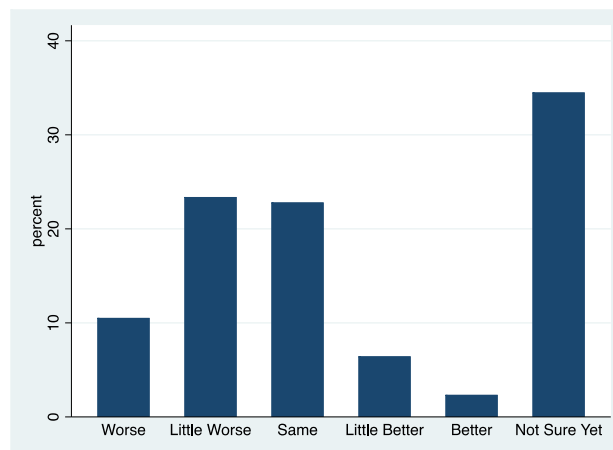
Difficulty	Coef.	Std. Err.	P>z
Discipline			
Humanities			
Social Science	.2046889	.4098186	0.617
Law	.1653743	.4818515	0.731
Natural Sciences	.8885433	.6133679	0.147
Medicine	.0437298	.5746929	0.939
Other	.0984122	.6306526	0.876
Position			
Professor			
Associate Professor	.5563866	.3808893	0.144
Lecturer	.3719968	.4492746	0.408
Researcher	-1.61892	1.702311	0.342
Post-Doc	1.432907*	.7933874	0.071
Ph.D Fellow	-.0131378	.7450638	0.986
Other	1.222885	.7399761	0.098
Experience			
1	-.1453748	.4958961	0.769
2	.5919248	.4130948	0.152
Needs	-.2882851**	.1232279	0.019
Challenges	-.3239987***	.0924275	0.000
Week 2	-.1936786	.3244363	0.551

*** p<0,01 **p<0,05 *p < 0,10

4.2 Learning outcomes

Respondents were asked to evaluate the learning outcomes for students. The results were both similar and different for those reported for law students, whereby 60% reported a similar or better learning outcomes. However, a third of teachers were unsure while there was an even split between those who saw weaker outcomes and those who saw the same or better outcomes.

Figure 10. Learning outcomes: Digital versus ordinary teaching



We have taken a closer look at why teachers have such divided opinions on this issue. It is particularly interesting to be able to see whether this is related to the framework conditions inherent in digitised teaching that can be difficult to change, or whether this is primarily related to the abrupt transition and variables that can be tweaked and adjusted, and by doing so increase the students' learning outcome from digital teaching.

The analysis is based on six variables in the survey that we believe may be related to learning outcomes from a teacher's perspective. We have used an ordered logistic regression analysis since the dependent variable is discrete, and looked at the effect of:

- Discipline
- Position
- Prior experience with digital teaching
- Interactive forms
- Number of challenges (digital teaching versus COVID-19 -related)
- Number of needs (digital teaching versus COVID-19 -related)

The results are, however, difficult to interpret. There is a positive and statistically significant correlation with live break-out groups, which matches the earlier findings with law students. But there is a negative correlation with digital student groups. However, the qualitative answers below indicate concerns about the quality of the effectiveness of digital student collaboration. Interestingly, and quite unexpected, academics in humanities were most optimistic about the effect of digital teaching as were professors – although only the former is statistically significant.

Table 2. Learning Outcomes

Learning Outcome	Coefficient	Std. Err.	P>z
Discipline			
Humanities	.7800195*	.4380938	0.075
Social Science	.3817343	.4830349	0.429
Law	-.1624752	.5762399	0.778
Natural Sciences	-.1145949	.5388112	0.832
Medicine	-.5495683	.5887521	0.351
Other			
Position			
Professor			
Associate Professor	-.5308254	.3935519	0.177
Lecturer	-.2146352	.4423665	0.628
Researcher	.3441352	1.464346	0.814
Post-Doc	-.6368568	.7887394	0.419
Ph.D Fellow	-.2340726	.7811955	0.764
Other	.2088073	.6617058	0.752
Live Discussion	-.0354198	.3251362	0.913
Live Break Out Groups	.4658577	.3352082	0.165
Digital Student Groups	-.7794675*	.411341	0.058
Digital Supervision	.0230852	.305796	0.940
Needs	-.0710106	.1283583	0.580
Challenges	-.0466798	.089514	0.602
Week Two	.0332776	.3337578	0.921

Free text answers

In the qualitative data (see Extract 6 below), the majority indicate that learning outcomes are difficult to estimate. Some indicate that technical problems have had an impact on the quality of the online teaching, which may impact learning outcomes. Some respondents estimate that outcomes will be poorer and that the current situation has led to many students not learning or being sufficiently present. Some report on providing lectures and materials but that it is unclear how students use those resources, as there is no response from students. Also, it is difficult to monitor students' activity and focus attention during online teaching, lecturing especially, and difficult if not impossible to monitor what students do beyond the online contact time. Other respondents suggest the opposite, that students become more aware in this situation, and make better efforts to be engaged and participate. Large variation is expected in the learning outcomes, as there is a large variation between students: some students are motivated and enjoy following lecturing online, at their own preferred pace, others have difficulties keeping motivation and focus, or organising for studying. Some students are less able to work independently, prioritize, organise. The communication/dialogue with students is experienced as being of lesser quality, which makes it unclear whether they understand tasks or content. Reflection appears also difficult to train in online settings, and reduced or no time for practical training may also lead to diminished outcomes.

Some expect positive outcomes from the fact that students could work on assignments and receive guidance online (as opposed to none). Having to work alone at home may be difficult for some students, but some benefit would be that students are learning to be more aware and critical in relation to their work. Students may, for example, learn/make a better effort to self-organise, focus, contribute. There are clearly better expectations of positive outcomes for supervision and interactive work - students are more involved, work with materials, take responsibility. Finally, students provide positive feedback on

the content and form (and for effort) of online teaching, but this is not indicative of their learning outcomes.

Extract 6. Reason for answer on learning outcomes

Online teaching supporting learning but difficult to stimulate quality interaction and follow students' activities during online meetings

- As mentioned, I think it goes well but it is harder to follow/ monitor what students doing; is there attention span similar to class room teaching; or, do sessions have to be broken down even more to maintain attention?.
- Because I can't feel the atmosphere in the room and whether they are actually listening to what I say. It's like being blind
- Because I had either direct contact, or the teaching situation was equally anonymous as it can be in an auditorium with lecture
- There are so many other factors that are part of the everyday life of the students, so I think teaching and syllabus reading are given priority by many. Learning outcomes, I think, can be just as good, and for many there are benefits to being able to take video lectures at their own pace, while others miss the spontaneous conversation with a lecturer that is less possible with over 100 students on zoom ...
- The dialogue with the students is poorer, more unclear if they have understood the tasks, and if they misunderstand it is more difficult to correct
- Too little shared communication and practical problem solving together
- I find it more difficult to engage students and reflecting on Zoom. Usually I get it by moving around the classroom and knowing how they feel and who I can push a little. It is more difficult in an interactive classroom and the breakout feature does not fully compensate for it. So miss personal contact with the students and thinks it has consequences for what learning outcome they have of my hours of hours (which is based on basic epistemological and ethical reflection and not just learning details).
- You never get the same classroom activity online.
- Oral lectures are in dialogue with the students - recorded lectures together with powerpoint become more restricted.
- Students are more passive on Zoom than in regular classrooms and everyone chose to turn off video, perhaps because we were recording, so it was hard to see how well they were watching and what they were responding to.
- Difficult for them to ask follow-up questions, and for me to consider if they got it
- Difficult to have good discussions when we are not meeting in person. Difficult also to lecture online because you do not get immediate response from students.
- Difficult to get good discussions / dialogue with the students
- I have used zoom-recording and know from previous semesters on the same subject that it could be things that would have been best if I could coordinate continuously with the students in the lecture
- Positive that the students can get a recorded power point and can see it when appropriate, but I miss the contact with the students.

Online teaching supporting learning but difficult to follow students' activities outside meetings

- That I have no idea what the students have learned. Post lectures in Canvas, I share explanatory texts, post assignments and the like, and receive no response. Can't see how many people have actually seen or downloaded what I've shared.
- They got to work well on discussion forums and reflection assignments related to the syllabus and written PowerPoint presentations. But some dropped out (did not prioritize / did not have time / are not professionally strong enough to cope when they have to work so independently
- I'm not sure if that's true, but I think those who have participated in the xxx class have been given more time to digest by first getting the tasks assigned with some explanation, then

working on them at home and then discuss them online. On the other hand, there are several who have not been present online when the assignments have been discussed, and I do not know what these students have done. They may have benefited from the teaching.

- I don't see them, get little response to question-submission-request

Online teaching not supporting envisioned outcomes, maybe facilitating others

- We have not been practicing practical-clinical skills, which should have been a major part of the teaching.
- It worked surprisingly well to work in real-time philosophical-dialogic on-line with thorough preparation from the students. Nevertheless, digital dialogic pedagogy cannot replace the same type of pedagogy in physical space
- It provides less opportunity for direct interaction with professional staff than usual. Review of assignments is more thorough, and we have web-based written forums that are used extensively, but ultimately teacher contact in relatively small groups is, in my opinion, a very important element of teaching
- The use of break-out groups contributed to greater activity among the students.
- It's really mixed. Seminars go better, in fact, because the students take even greater responsibility for the implementation, and cannot sit back like this sometimes happens in the classroom. The lectures themselves are characterized by a little too much monologue - more than before - because I can't read the eyes of the students and stop and say something ala "now it looks like I lost you, do you have questions?" Certainly should have made several moves with the lecture form, but right now there is more than enough to complete.
- Just this seminar did not entail as many practice arrangements as I usually would have, so it went well. When I later test out schemes / methods, I am unfortunately inclined to believe that exactly this form of teaching is not ideal digital
- You gain something by making more elaborate powerpoint presentations and by allowing students in quarantine to connect from home, but you lose something when the books are not available.

Students challenges and unpreparedness for online education

- Students have poor working conditions at home. Many people experience stress. Difficult to get students to participate in joint teaching and be active when digital education is not set up beforehand. Also some technical problems among some due to poor equipment and Wi-Fi / network.
- Students also lack a good study environment for distance studies in this situation, and they have not developed self-discipline to work more independently.
- I don't think the teaching has fundamentally changed, but the situations for the students have changed. It is more difficult for students to study these days, so that may affect learning outcomes. But that is not directly teaching-related.
- For some students, group dynamics have reduced challenges. That's good. For the majority, I see that a lack of physical presence with others has made it more difficult to work evenly. This, I suppose, will be more critical beyond that, as today's scheme loses the effect of being new and exciting.
- Students' frameworks have changed completely. They are not prepared for this sudden shift
- It is probably a little harder for students to discipline themselves to work alone from home, and the discussion with fellow students is probably noticeably better IRL than on Zoom - although Zoom works surprisingly well
- Students also lack a good study environment for distance studies in this situation, and they have not developed self-discipline to work more independently.
- Focus is not present for students, many struggle with focus / relate to screen. Hard to work on your own before / after. At school they have 3 hour sessions of 4 times a week which is mandatory. Now only 1 hour 3 times a week.

Trust in the potential of online teaching to support positive learning outcomes

- We become a little less dynamic and dialogic online. But, when we found just the right platform, it became a fantastic plan B - which in particular has meant a lot to relatively isolated, financially insecure and concerned international students
- Student feedback indicates that they are very satisfied with the program, and say they feel they are learning more and have more peace around them. Many students have created colloquium groups in teams as an add-on, following my request and technical assistance.
- In terms of supervision, digital teaching does not really make any difference. It might even structure your time better for mutual benefit of student and professor
- Experienced that the students were very concentrated. They submitted tasks themselves, which worked well.
- It is a very special situation, and one goes a little further than usual to facilitate student learning. At the same time, the transition to fully digital education has been an additional motivating factor for implementing changes in the form of teaching that exploit the opportunities that exist in digital tools.
- Think its positive for the students that the lecture is recorded because this is a method course including assignments in SPSS. Students can see my explanations several times and solve assignments even in SPSS and see my recipe. Received positive feedback on this.
- But (and that's the most important thing): the opportunity to have digital classes is a very good substitute! I can't quite see how we could have coped with this situation without various digital teaching opportunities.
- I think everyone can learn from anywhere if it is facilitated and the student is motivated and has good working conditions where they are. At school / work / digital.
- Have had two different types of teaching 1. Lecture / seminar - slightly worse opportunity for students to ask about things they are wondering. 2. Feedback seminars where they discuss each other's tasks - seems easier for students to give honest feedback in zoom than in the room.
- We haven't evaluated it yet. I see that there are many students who do not attend real-time meetings, and I am therefore unsure about how many students who will go through with the exam. But the students loved having recordings and being able to go back to the lectures. Have used it before and experience that the students do not read the syllabus, but get the surface knowledge from the short videos. So I'm excited to see about the exam result (ie content)
- we have mostly had conversations based on student written assignments
- We tend to discuss a lot in groups, and in addition to the technical challenges (which make things a little more crunchy), there is some practice that is needed to make the conversation flow just as well. Students also have to do print outs to a greater extent.
- We seek to adapt the pedagogy so they will not miss out

Constrains of online teaching impacting learning outcomes

- Digital undervisning og plenum blir sjelden like godt som sanntids møter mellom mennesker; drøfting av utfordringer og faglige problemstillinger i et og samme fysiske rom.
- Students are much more active in regular lectures, there is more room for improvisation according to the needs of the students and you lose a lot of the commitment that you have in direct contact, in addition to body language
- Digital seminars have so far been a bit more messy and the students report some technical challenges and that group dynamics are not completely optimal. (They work a lot in groups)
- In our field, entrepreneurship; dialogue and discussion are important. This is difficult digital.
- Poor network connection in the home office combined with two kindergartens in the living room (where the network is good) make streaming impossible. Time pressure due to childcare (me and the husband working on shifts) means that the videos are not as well completed as I would have liked. Nor have I been properly acquainted with educational principles for video teaching. I get good feedback from understanding students, but it's hard to know how well this actually works. I also know that some have had technical problems.

- Clinical teaching involves personal contact with patients and cannot be replaced with digital tools.
- Lack of interaction with the students.
- Lack of contact and response from the students makes teaching worse, even if you use synchronous design through eg. Zoom.
- Lack of physical contact with and feedback from the students
- My student guidance is based on physical and written dialogue and this is not a problem to maintain unless you have children running around and disturbing.
- We are a number of people who co-teach in the different topics, and a lot of time has gone into organizing a good structure
- *I understand that Malcolm has fallen somewhat in love with digital teaching. But, I miss the contact you get with the students, by meeting physically and the interaction it creates. Not everything is better digital*

Time constrains for teaching

- There has been too little time to optimize the format for online teaching.
- There are study programs that cannot be transferred to fully digital teaching.
- Poorly prepared, but mostly because I should have assembly-based teaching with four almost all-day teaching and so much teaching time it is impossible to transfer to digital teaching. The students have worked on assignments together digitally and I am not sure how well it has worked for the students.

Insufficient time or basis to estimate learning outcomes

- This is impossible to measure now, I think. It's been too little time
- I have received positive feedback so far, but they provide little basis for comparing the yield now with what they had with traditional teaching methods
- I have not given digital education, look over.
- I do not yet have enough information about the students' experience of the form of guidance and teaching
- I have not taught much this semester. Have basically just had one lecture online
- Little feedback, was a guest teacher
- Have received positive feedback from several students, but on the major courses it is impossible to know (unless I had organized a larger survey)
- Have not yet discussed how the students have experienced it, are in the middle of teaching now, no direct feedback yet
- Need to ask the students first.
- I have received positive feedback from students in Zoom, but I have not yet had sufficient teaching capacity to be able to give a clearer answer to question 9.
- Too short a time to evaluate learning outcomes now

- Too soon to tell,
- Not sure how many students have completed my asynchronous program. However, those who have provided feedback are very satisfied.
- Heavy to sit in front of a computer all day
- Lecture at home without the students in the auditorium. Better to have direct contact with students.
- The lecturers 'preparation and the students' attitude
- Impossible to determine so quickly.
- Impossible to assess. Hear nothing from them.
- Would like to hear if the students have understood.

- Waiting for feedback from participants
- Did not have any teaching this week, but started preparations for the week to come
- Not teaching right now
- No empiricism. Hard to see the effects.
- It is hard to evaluate...
- Used pod, students have not provided feedback.

Summary points:

- There is a big spread in the way respondents experienced transitioning to online teaching, with low correlations between ease and challenges. Qualitative responses indicate, however, clear challenges experienced by a high number of respondents.
- Academics in the natural sciences and junior academics appear to have had an easier transition to teaching online than other categories of respondents.
- There is agreement that learning outcomes are difficult to predict for this period, especially due to limited possibilities to monitor students' activities and follow up in terms of guidance and quality of student work.
- A majority of respondents consider positive learning outcomes to be dependent on the level of interaction in teaching (group work in break-out rooms), but less to students self-organised work and collaboration.
- Technical problems (for both academics and students) and limited (quality) interaction and follow up are viewed as limiting factors for positive learning outcomes.
- Learning outcomes related to online supervision are, by comparison to regular teaching, estimated to be more positive.
- Some respondents consider that student motivation and engagement may be lower in this period and would possibly affect learning outcomes, while others expect students to mobilize, organise and perform, as this situation prompts students to take more responsibility.
- Students work with course assignments outside the online contact time and feedback on this work is expected to lead to better learning outcomes.
- It is seen as beneficial to gather feedback from students on online teaching, but not as a guarantee of students achieved learning outcomes.

5. Conclusion

With this survey, CELL aimed at examining the experiences of academic staff with their first weeks of full online teaching. The specific aim was to map their experiences and acquire knowledge in order to make necessary short-term adjustments in the subsequent rounds of online teaching. As the dataset is rather small, due to rather limited response, generalizations and exhaustive conclusions based on these findings are not within the scope of this report. Nonetheless, the study offers a first insight, a first look, into academic teachers' experiences with the drastic change in the delivery of their teaching and provides basic data that can be compared with future evaluations.

Academics have been thrown into a new teaching situation and almost all respondents have sought to do the best they could in the situation. While only 30% reported having any previous experience with online teaching, 80% reported now using Zoom – with the video-based software being the most popular software programme for teaching. Canvas is surprisingly not the most used software programme even though it is the 'official digital platform' in most higher education institutions in Norway. There is a range of other programmes used with large variation for both synchronous and asynchronous lecturing, live interactive teaching, organisation of activities, communication, assignments, written communication, polling, and feedback-based teaching and document sharing.

Teachers were divided over the extent to which they saw online learning was an improvement over ordinary teaching. A third were unsure while for the remainder, there was an even split between those who saw weaker outcomes and those who saw the same or better outcomes. This variation is also evident in the free text answers – between the celebration of innovation and mourning of the loss of physical contact.

Many academics sought to use various interactive forms of learning. While pre-recorded lecturing is used by most, live streaming is used to a large extent as well, indicating various approaches to conveying the curriculum. Those who used this format reported the highest expectations concerning better learning outcomes with online learning. Discussion and group work in break-out rooms is a popular form of activity, indicating a concern and focus to facilitate interaction, and a surprisingly high percentage reported using these forms of online activity. Digital exercises are less frequently used, indicating that contact time is mostly used for knowledge transfer or interaction, and to a lesser extent for practice.

Unsurprisingly, the abrupt transition to online teaching meant many changed their teaching methods and 35% reported that their teaching methods changed significantly. Those that commented in this part of the survey were often positive about the innovations, but it varied dramatically. A large share has maintained interactive teaching and has organised seminars and smaller group discussions, with a reported increase of discrete modules and break-out rooms use. Written communication increased, feedback increased and teachers make themselves more available for questions and some respondents have organised teaching according to flipped-classroom principles, with students performing tasks prior to contact time.

The findings of this survey study align to some extent to the educational research literature, with regard to the design and delivery of online teaching, experiences, and challenges encountered by respondents. Given the exceptional context in which the teaching has happened (i.e., the COVID-19 lockdown), some of the findings can obviously be problematized. Nevertheless, we see a resemblance with the literature in terms of attempts, accomplishments and challenges when engaging with online teaching. Most academic teachers who participated in this survey study have, in an informed or intuitive manner, attempted to create a learning environment that provided some flexibility, as outlined by Boelens, De Weever and Voet (2017), through offering (to the extent possible) the students the basic ingredients for learning: knowledge through lectures, group-based activities, discussions, assignments, and feedback.

Clear attempts were made to foster interaction, identified as a major element of successful online learning environments. This was reported as the most interesting by some and most challenging teaching effort, as it required not only more insight into (new) digital technology affordances and decent level of digital competence, but also, pedagogical knowledge and ability to anticipate students' involvement (and lack of it), together with ways to monitor students' activities. Creating opportunities to express ideas, discuss, have a dialogue (mostly using the Zoom, Teams or Skype software) or to try to do joint work (in MS Sharepoint, Google drive, Padlet) are clear illustrations of teachers' concerns for trying to stimulate students to participate and help them interact with the curriculum and each other. This is shown in the literature as ways to trigger and organise interaction, which is conducive to better understanding and more friendly learning environments (see Borge & Mercier, 2019; Jeong & Hmelo-Silver, 2015). The findings are ambiguous on the level of student engagement, as monitoring of student activities was limited, which points out the importance of organisation and digital competence in creating a productive learning process (see Jonassen & Land, 2012).

The findings also point to teachers trying to understand the way their teaching played out, by collecting feedback or by polling (through software such as Mentimeter or Kahoot) and by being accessible to students for answering questions or guidance. Such strategies have the potential to feed back into the subsequent design, but also to offer the students the opportunity to express needs, thoughts, experiences. This creates flexibility and indicates teachers' commitment to create a friendly environment, but also,

to gain insight into students' learning progress, as a way of understanding better and paving the way towards accomplishing desired learning outcomes.

However, the number of challenges reported was relatively high: 74% reporting more than two challenges and only 13% reported no challenges. In addition, a quarter found the overall transition difficult or very difficult and this was highly correlated with the number of challenges and unmet needs. Technological challenges and pedagogical insecurity are the main issues identified as problematic when setting up online teaching. At the same time, COVID-19 lockdown-related obstacles were also frequently reported. Appropriate space at home, care of children and illness, and lack of equipment were experienced as obstacles for organising online teaching, and some found teaching that require practical or lab-based activities was impossible or difficult to organise online. There is also the question of timing: many found it difficult to learn new digital technology and software programmes and re-arrange course design on short notice. Some teachers were also concerned by data privacy, and many noted the lack of important direct contact with and feedback from students and colleagues.

The quality of the enactment of these teaching activities varied, as expected, due to various challenges. While home situations (both of academics and students) were expected to create difficulties in the current circumstances, technical challenges and lack of experience with (new) software and the need for support in managing these proficiently are clearly connected to aspects of digital infrastructure and services (see King and Boyett, 2014), and to academics' digital competence, as identified by Ilomaki and (2016). The qualitative data brings to the fore that both academics and institutions need to be better prepared with regard to available digital technologies, knowledge of how these can be employed for teaching, and skills of managing software for various purposes (lecturing, interaction, communication, joint work).

The findings also indicate the need for pedagogical advice and guidance. Academics have proven to be creative in finding inspiration in various places when designing their teaching, and indicate relying much upon own resources, either found online or relational (colleagues, networks), often outside of their institutions' boundaries. Perhaps surprisingly, while pedagogical expertise was also sought after and institutional resources were accessed in some cases, findings seem to indicate that this was not the main source of support and resources. This situation may be indicative of academic teachers either not being aware of the existing institutional resources and support structures, or of these not really being available or not addressing the very specific needs in this particular context. Another challenge that stands out was the need for time to convert/redesign teaching into online teaching. This challenge is explained by the nature of the situation, as the switch needed to be done on a short notice. At the same time, it may also be indicative of an unclear, possibly not always defined institutional understanding of learning design and conditions important for generating online learning environments that meet the needs of the students and existing digital infrastructure, competence and existing constraints (see Petterson, 2018).

When aligning these findings on expressed challenges and needs with issues raised in the literature, it appears obvious that the positions of Allen (2016) and Rusell's (2009) are applicable. There is a critical need for an integrated understanding of individual academics' decisions, the institutional organisational context and strategies, and the digital technologies they use. Digital infrastructure, digital and pedagogical competence and support, and a community of practice where online learning becomes subject to a joint development effort are pre-requisite to good online teaching. The indicated challenges and needs are thus not aspects that only academics should be concerned with, and feel responsible for; rather, it is a shared responsibility to signal needs to infrastructure, support and competence development, and work together and strategically to achieve these, as per King and Boyett's (2014) suggested strategy.

6. Recommendations

Based on the findings of this survey study and their interpretation, we provide the following recommendations

6.1 To academics:

In light of the reported successes, challenges and needs, and informed by the research literature, we recommend that you

1. Request necessary changes to your course plans to accommodate challenges generated by COVID-19 lockdown.
2. Design your teaching and the learning activities for students in an informed manner
 - Review the aims of the courses you teach and the learning outcomes.
 - Assess what is essential information and competences students must possess, and reduce as appropriate the size of the curriculum.
 - Assess which of the teaching and learning activities you planned are needed to achieve the new learning goals and outcomes.
 - Inform yourself about other possible activities that could be organized online (see pedagogical literature).
 - Assess which of the activities/tasks/assignments could be performed by students prior to live online meetings. Use ideas from the flipped-classroom model, this will save time for discussion when you meet the students.
 - Less is more. Use the time needed to introduce, explain, model, consolidate and collect feedback from the students about the teaching and activities you planned.
3. Seek help if you do not master the basic functions of the relevant tools or have the necessary technical equipment and software
 - Assess your digital competence when you have the chance, in relation to what you intend to teach. You may know more than you expect :)
 - Find information about digital support - most institutions offer colleague guidance, a technical helpdesk, and have a specialist responsible for digital teaching and courses.
 - Search for resources online - there are many open resources and Facebook groups where you can ask questions of others in the higher education sector and participate in real-time courses/tutorials.
 - Request access from your institution for the necessary equipment and software
4. Structure your digital teaching in a plain and clear manner
 - Consider dividing the teaching sessions into less comprehensive and specific activities,
 - Inform students before you start teaching on goals, structure, time plan, ways of providing feedback,
 - Give notice of where you are in the plan and when you move on to a new topic,
 - Set clear requirements for how students are to participate and help steer discussions.
5. Create a diversified teaching plan, which includes different types of activities and addresses the needs of various students
 - Vary between recordings, real-time lectures and interactive parts, and include live teaching as part of the teaching plan. Live teaching can increase contact with teachers and fellow students and interactivity, while variation prevents “Zoom-fatigue” and passivity.

- Create pre-meeting assignments, it will prompt students to prepare and will save time in the meeting. Use Canvas to inform about and explain these assignments.
 - Create opportunities for students to work on shared documents, tasks.
 - Create possibilities for students to organise themselves for discussion, studying, planning, practicing.
6. Increase the interactivity in teaching and divide it into smaller and specific activities such as:
 - Be clear about rules of engagement in the online course space.
 - Split into smaller discussion groups.
 - Create space for interactivity during the teaching session by recording short videos or delivering other teaching materials that the students are to use to prepare themselves in advance.
 - Set aside time in the session to discuss questions from the students in plenum.
 - Facilitate study group work, divide into smaller groups during lectures/courses where you encourage continuing the dialogue after class.
 - Provide feedback on submitted text.
 - Prepare quizzes and use tools like Mentimeter, Kahoot, and Polling in Zoom.
 7. Ask for feedback from the students on how they experience digital teaching and what should be adjusted. For example, Zoom has built-in functionality for this (polling).
 8. Facilitate questions and activities also in writing. Many students find it difficult to ask verbal questions digitally and feel much more secure if they can do it in written form.
 - If you cannot answer questions in the chat feature in real time, answers can be posted in Canvas afterwards.
 - Offer a "question time" either at the end of a tuition series or at the start of tuition.
 9. Provide clear information about your teaching plan, the activities that are offered and the expectations you have of the students who participate.
 - Provide information at the beginning of the session about what you are going to teach today.
 - Clarify what you want/hope students will do.
 - Talk about the type of activities you have planned.
 - Pause teaching on content and check on the students' status, questions, situation.
 10. Assess your teaching plan against any changes to the form of assessment.
 - Home exams are not the same as normal exams; the form requires both training and preparation.
 - Create assignments that allow students to practise the same skills and work with the same type of knowledge required for the exam.
 - Explain – as far as possible – what the new form of examination will look like and how the tuition is designed to prepare for the exam.

To faculties and study administration

1. Ensure an accessible and reliable digital infrastructure. This follows reports by academics that digital technologies and software were not always easily accessible or well-functioning, and the need for technical support and training in using these affordances. Ensure:
 - Sufficient technical equipment and internet access
 - Efficient access to programmes,
 - Access to technical help and digital resources
 - Access to sustained training that helps academics acquire digital competence
 - Communicate clearly about the nature of the resources and how these can be accessed

2. Make sure that all academic teachers are equipped to provide digital learning in an adequate manner through:
 - Assess the nature of pedagogical expertise for digital teaching and learning available at the institution.
 - Create sustainable structures to make pedagogical expertise available and visible
 - Communicate and promote in-house pedagogical resources
 - Offer oversight of good/best practices locally and internationally
 - Offer arenas for academics to meet/discuss their ideas, experiences, and challenges
 - Have an explicit strategy for ensuring tailored pedagogical expertise with regard to teaching with digital technologies.
3. As time was indicated as a factor playing an important role when preparing and ensuring the quality of online teaching, it is recommended to make sure academic teachers have enough time to prepare good digital learning, which can involve:
 - Lessening the strain on other fronts
 - Providing financial-based support through teaching assistants and extra hours in the hourly teaching accounts during the start-up phase
 - Ensuring better access to educational resources
4. Ensure a detailed and good flow of information about available infrastructure, resources, guidelines, support and training opportunities (both for digital and pedagogical competence). This appears to be a crucial aspect in diminishing the amount of challenges, work and insecurity for academic teachers when engaging with design and delivery of online teaching.
5. Work to ensure that forms of assessment correspond to the digital tuition that is given and take account of the challenges students and academics face during the COVID-19 lockdown.
6. Develop (or detail) a strategy for online and blended learning. As indicated by the findings and extensively documented by research literature, a strategic and institutional approach should be taken to organising and delivering online teaching and learning:
 - Develop a plan for Autumn 2020 in the event that is fully online or blended learning, which draws on the positive lessons and challenges from Spring 2020.
 - Develop a long term, strategy for sustainable blended teaching and learning, which takes into account various scenarios and circumstances.

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Annex 1: Survey