

# Responses to emergency remote teaching at Stockholm University- the teacher perspective

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## Summary Report

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**Abstract:** Teachers and students at Stockholm University quickly had to adjust to online course delivery in response to the Covid-19 Pandemic. Despite the challenging circumstances, the spring term 2020 provided an opportunity to collect data on how both students and teachers experienced an emergency transition to online teaching. This report provides a summary of findings and recommendations of the “Impact of the Covid-19 Pandemic Crisis on teaching and learning” project delivered by researchers at the Department of Education, Stockholm University. The questionnaire originated from Stanford university, and was translated and adapted to Stockholm University conditions. The findings suggest course teachers and leaders devote particular attention to issues regarding student participation, both in the formal context of the course and informally, in connection with the course. Additionally, university management is encouraged to include time for educational development for teachers to enable purposeful and research-based teaching as well as hinder stress and fatigue among teachers.

**Keywords:** higher education, emergency remote teaching, online learning, Covid-19.

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## Executive summary

Teachers and students at Stockholm University quickly had to adjust to online course delivery in response to the Covid-19 Pandemic. Despite the challenging circumstances, the spring term 2020 provided an opportunity to collect data on how both students and teachers experienced an emergency transition to online teaching.

This report provides a summary of findings and recommendations of the “Impact of the Covid-19 Pandemic Crisis on teaching and learning” project delivered by researchers at the Department of Education, Stockholm University.

The aim of the project was to explore students’ and teachers’ experiences of the transition to online teaching during the pandemic so that conditions for improved teaching and learning may be developed. Specifically, we wanted to explore:

- What teaching and learning activities worked well for student learning and how do they relate to existing research on student learning?
- How do student level (undergraduate, PhD, etc.), age, gender, disabilities and context relate to their experience?
- How do teacher gender, age, experience with teaching, higher education course participation and context relate to their experience?

A questionnaire developed at Stanford university was translated and adapted to Stockholm University conditions in April 2020 and administered to all students at Stockholm University in June 2020. This report focuses on the findings from the survey directed to teachers.

## Key findings

- Respondent demographics differed somewhat from what can be found about academic teachers at Stockholm University; a larger proportion of the respondents were women.
- 72% of respondents reported that they had taken courses in higher education teaching equivalent to 7,5 ECTS or more.
- Most teachers taught undergraduate students (70%) full-time (72%), with a class size of 10-50 students (47%) or 50-120 students (28%).

- Zoom was the most common way of conducting the teaching (80%), accompanied by assignments with formative (75%) or summative (72%) feedback.
- More than half (58%) of the teachers reported that videos were not used in teaching, but of those who did (42%), a third (35%) of the respondents reported that students were asked questions on the content of the videos and got feedback on their answers.
- Athena was used as learning management system (LMS) by most teachers (84%) at Stockholm University. The LMS was used mainly for course administrative purposes such as providing information (92%), sharing of links to course material, uploading of assignments/assessments and to a lower degree for activating students in their engagement with the learning material with discussions (35%), informal communication (21%) or quizzes (15%).
- More than half (57%) of teachers changed assessment formats in part or completely after transitioning to online teaching. Home exams counted for the largest increase in assessment format used, from 25% to 61%, followed by essay or project work (from 30% to 48%) and participation (from 47% to 59%).
- Feedback on assignments (70%), via a discussion forum (55%) or through virtual drop-in sessions were the most common way for teachers to interact with students in their teaching. However, only 44% of the respondents agreed students used the opportunities for teacher contact regularly. This was lower than the percentage of those who thought students who used these opportunities when the course was on campus.
- The majority of the respondents (61%) agreed students participated more actively in discussion when the course was on-campus compared to online.
- More than half of the teachers (55%) had never taught online before and 78% of the teachers spent more time on teaching related activities during the period than normal, but there were no significant differences related to gender ( $p = .86$ ).
- The most important obstacle teachers faced while developing their online teaching were time management (60%), digital skills (24%) and available digital resources at the university (18%). However, 26% of respondents had no desire to further develop their digital teaching.
- Although the majority of respondents (79%) were ultimately comfortable teaching online, 56% reported they would prefer not to teach online in the future. The interest in use of digital tools, however, has increased, as 75% of the responding teachers will continue to use digital tools in their teaching.

- Two thirds (66%) of teachers agreed that they discussed their teaching with one or more colleagues to a greater extent than before the teaching transitioned online. There were no significant differences between male and female teachers on this issue ( $p = .58$ ).
- Most teachers (68%) reported that they felt support from their departmental management for educational development activities. 15% did, however, not think they did.
- 25% of respondents did not know their pedagogical contact person at their departments.
- Instructional videos and resources from the IT department, together with CeUL's online teaching webpages and external resources were helpful in the transition to online teaching. 25% of respondents indicated CeUL mailings through pedagogical contact persons were helpful, as well as Zoom-workshops, theme days and courses.
- Compared to senior-level teachers, early-career teachers believed that they spent significantly more time on online teaching during remote education.
- Teachers who had taken 7,5 - 14 ECTS of higher education teaching courses (HE) tended to have the most favorable opinions about online teaching in their responses.

## Introduction

The discourse on student-centered learning forms an important basis for the changed pedagogical practice that has coincided with the digital development in higher education. In this discourse, students are constructed as independent – which greatly frees higher education institutions from responsibilities and obligations towards them - and digital technology has been claimed to be constructed as a solution that will lead to greater student engagement (Clegg et al., 2003). In practice, however, digital systems and tools are often used to copy traditional teaching, for pure information transfer or administrative tasks linked to education (Blin & Munro, 200; Gouseti, 2010; Munro, 2017; Price & Kirkwood, 2014).

So far, research has shown that few teachers turn to scientific literature for support in decisions they make regarding online teaching (Price & Kirkwood, 2014), and that they are concerned about negative consequences such as increased workload, reduced quality of teaching, lost right to own material and insufficient technical competence (Lloyd, Byrne & McCoy, 2012; Ljunqvist, 2018). In addition, online teaching is often associated with a lower status compared to classroom teaching (Erlanson, Helgason & Henning, 2015; Johnson, 2012; Ubell, 2016).

Against this background, Englund, Olofsson and Price (2017) call for more studies that shed light on how teachers teach with digital tools.

Regarding existing research on the effects of digital tools on students' learning, there are currently a number of articles which provide an overview. It is clear from these articles that there is a need to support self-regulated learning (Azevedo, 2005; Winters, Greene & Costich, 2008), where students are stimulated to take responsibility for, and regulate their learning in time, place and study strategies, is central in distance-based teaching that takes place online. This is also supported by a meta-analysis that shows a significant positive relationship between students' ability to self-regulate learning and how well they succeed in online-based courses (Broadbent & Poon, 2015).

Self-regulated learning is described by Zimmerman (1989, Zimmerman & Campillo, 2003), as triadic and cyclical, and is based on a socio-cognitive perspective. This means that learning is affected by both the ability to self-regulate and factors in the environment. For example, one's problem-solving strategy is determined not only by whether one has high confidence in one's own ability to solve the problem, so-called 'self-efficacy beliefs', but also by factors in the environment such as feedback from the teacher and experience of behaviors such as how one succeeded to solve a problem last time. Zimmerman's model highlights three self-regulated phases that follow one another in a cyclical movement: anticipation, performance, and self-reflection.

In the anticipatory phase, students are involved in an analytical process (e.g., setting goals and strategic planning) and self-motivating activities (self-efficacy, expected results, inner interest or evaluation of success). Then comes the performance phase. In this phase, the student engages in processes that involve controlling their own actions (imagining, self-instructing, focusing their attention and strategies for different tasks) and self-observation (experimenting). The third phase, self-reflection, is about judging oneself and determining why it went the way it did, as well as reacting emotionally (being satisfied or dissatisfied, adapting or becoming defensive). These phases are repeated cyclically through the learning process.

Broadbent and Poon (2015) analyzed studies that had looked at the relationship between nine self-regulatory strategies (metacognition, time management, effort regulation, critical thinking, elaboration, exercise, organization, help seeking, and peer learning) in relation to how well

students succeeded online. The results from the 12 studies showed that metacognition, time management, effort regulation and critical thinking were related and had a significant impact on how well one succeeded.

A recently published review article (Wong et al., 2018), shows that the human factor plays a crucial role in how well students should succeed in their online learning. Because online learning creates special challenges, teachers need to use several different strategies in their teaching. For example, the feedback and response students receive on their assignments is central to students' motivation to use the tools (Fryer & Boyee, 2016).

Our study is based on factors that are linked to self-regulated learning, and the strategies identified by Wong et al. (2018) to gain better insight into how online teaching can be designed in a Swedish context and specifically how the sudden shift of all teaching in Stockholm University in the spring of 2020 will be linked to previous research, in the short and long term.

This report shares new empirical insights into the lived experiences of students at Stockholm University during the early days of the coronavirus pandemic when all educational activities were moved online. It is structured as follows.

The survey design and methods are outlined before an overview of the survey sample is presented. Prominent findings from the survey are then shared. Reflecting on these findings, recommendations for the sector are offered in conclusion.

## Aim

The aim of this report was to explore teachers' experiences of the transition to online teaching during the pandemic so that conditions for improved teaching and learning may be developed.

Specifically, we wanted to explore:

- What teaching and learning activities worked well for student learning and how do they relate to existing research on student learning?
- How do teacher gender, experience of teaching, academic position, higher education course participation and context relate to their experience?

## Research design

A descriptive design utilizing an online (Survey & Report) questionnaire was employed, with a mixture of quantitative and two open-ended questions asked. Survey questions were grouped under following themes:

- Course activities and assessment
- Opportunities for student-teacher interaction
- Teachers' online teaching experiences
- Distractions of online teaching
- Overall experience of online teaching
- Support for educational development

The full questionnaire consisted of 32 items covering demographic characteristics (question 1-11), closed questions with five-point Likert scale, frequency, and multiple-choice questions (12-30) and two open-ended questions (31-32). The demographic questions include gender identity, age, position, teaching experience, higher education teaching courses taken, characteristics of the course taught on regarding number of credits, level, number of students and pace.

## Ethics

Ethical approval was sought and granted by the regional ethics committee (2020-04348). A consent form including information about the purpose of the project preceded the online survey. Responses were anonymous. Consent was implied with a submission of survey responses.

## Distribution

After consulting with the university's vice-rectors, the questionnaire was sent to all departments at Stockholm University. Heads of department and pedagogical contact persons forwarded the survey to teaching staff via e-mail.

## Context

Stockholm University has about 29,300 students (full-time equivalents), 1,400 doctoral students and 5700 members of staff. The university is organized into four faculties: Humanities



(8400 students), Social Sciences (14350 students), Law (2500 students) and Natural sciences (4000 students). There is no absolute number of how many members of staff teach in university courses. According to the annual report the university has 1500 teachers. 47% of the teachers are female and 53% male, 87,5% of the teachers have a PhD, and 34% are professors. 34% of the professors are female. Among teaching staff are also several PhD students, as they are allowed to teach up to 20% of their assigned time for the PhD. There are, however, no figures saying how many PhD students teach or identify as 'teachers. The survey was distributed by the departments so it is not possible to say exactly how many people could have responded to the survey.

## Data analysis

The data first were coded for use in SPSS. Demographic and quantitative data were then analyzed using descriptive frequencies. Independent sample *t*-tests and a series of one-way ANOVAs were used to examine significant differences in experiences/perceptions based on gender, years of teaching experience, academic position and higher education course experiences of teachers.

Qualitative data (question 31-32) was analyzed through content analysis in the following way. While reading the comments they were categorized according to different issues that students raised as important for their learning. When a new comment had a similar meaning as a previous one, it was added under the same heading. If a comment did not fit into an already existing heading, a new heading was constructed. When all comments were categorized, headings were compared and some were fused into one. Descriptions for each category were written and reported under findings.

## Survey Respondents

The dataset contains responses from 637 individual teachers at Stockholm University.

### Demographics

Table 3.1, below, sets out the key demographic characteristics of the survey sample. The survey attracted 58.9% of female and 38.8% of male respondents. In other words, out of the total number of female employees, more females responded to the survey, and out of the total number of male employees, fewer males responded to the survey. Teachers are also considered by age group. More than half of the respondents who participated in the survey were over 50 years old (50.8%).

Table 3.1 Demographics of the survey sample

<b>Variable</b>	<b>N</b>	<b>Percentage</b>
<b><i>Gender</i></b>		
Female	375	58.9
Male	247	38.8
Other gender identity	1	0.2
Refrain from answer	12	1.9
<b><i>Age</i></b>		
20-29 years	20	3.1
30-39 years	119	18.7
40-49 years	173	27.2
50-59 years	204	32.1
60 and more years	119	18.7

Table 3.2 below, sets out the professional background of the survey sample. Around half of respondents who participated in the survey were lecturers and senior lecturers (47.4%). A total of 16.2 % of respondents were researchers, doctoral students or post-doctoral researchers. The majority of survey respondents (40.5%) had 17 years or more experience of teaching. A total of around 30% of respondents had 5-12 years of experience. Only 2.2% of respondents were just at the beginning of their career (fewer than 0 years of teaching experience).

A large majority of survey respondents (71.7%) reported that they had taken higher education teaching courses equivalent to 7,5-14 ECTS or 15 ECTS and more credits. 17.7% of respondents indicated that they had taken teaching courses equivalent to 1-2 ECTS or no

courses at all.

Table 3.2 Professional background of the survey sample

<b>Variable</b>	<b>N</b>	<b>Percentage</b>
<b><i>Role</i></b>		
Part-time teacher	29	4.6
Post-doc	14	2.2
Researcher	29	4.6
PhD student	60	9.4
Adjunct	70	11.1
Lecturer/senior lecturer	302	47.4
Professor	118	18.5
Other position	11	1.7
<b><i>Experience</i></b>		
0 years	14	2.2
1-4 years	87	13.7
5-8 years	98	15.4
9-12 years	97	15.2
13-16 years	77	12.1
17 years and more	258	40.5
<b><i>Amount of credit taken in HE teaching</i></b>		
Equivalent to 15 ECTS or more	223	35.1
Equivalent to 7,5-14 ECTS	233	36.6
Equivalent to 3-7 ECTS	67	10.5
Equivalent to 1-2 ECTS	23	3.6
None	89	14.1

The survey attracted teachers working at all four Faculties of Stockholm University: Sciences, Social Sciences, Humanities, and Law. Table 3.3 below, displays a list of department, frequencies and percentages of survey respondents and total number of teachers and PhDs working in these departments.

Table 3.3 List of departments, frequency and percentage of survey respondents

<b>Department</b>	<b>Total no of teachers &amp; PhDs</b>	<b>Frequency &amp; percentage of total no of teachers at department</b>	<b>Percentage of survey respondents</b>
Archaeology & Classical Studies	74	5 (6.8 %)	0.8%
Asian, Middle Eastern & Turkish Studies	36	13 (36%)	2.1%
English	48	14 (29%)	2.2%
Ethnology, History of Religions & Gender Studies	73	25 (34%)	3.9%
History	92	13 (14%)	2.1%
Culture & Aesthetics	154	22 (14%)	3.5%
Humanities & Social Sciences Education	81	23 (28%)	3.6%
Language Education	76	16 (21%)	2.5%
Linguistics	51	17 (33%)	2.7%
Media Studies	86	10 (11%)	1.6%
Philosophy	70	5 (7.1%)	0.8%
Romance Studies & Classics (In Swedish)	113	24 (21%)	3.8%
Slavic & Baltic Studies, Finnish, Dutch & German	77	23 (30%)	3.6%
Swedish Language & Multilingualism	129	25 (19%)	3.9%
Law	182	37 (20%)	5.8%
Computer & Systems Sciences	127	23 (18%)	3.6%
Child & Youth Studies	115	49 (43%)	7.7%
Criminology	28	5 (18%)	0.8%
Economics	95	7 (7.3%)	1.1%
Education	148	41 (28%)	6.4%
Human Geography	51	10 (20%)	1.6%
Political Science	107	18 (17%)	2.8%
Public Health Sciences	75	5 (6.7%)	0.8%
Social Anthropology	47	5 (11%)	0.8%
Sociology	115	14 (12%)	2.2%
Special Education	66	24 (36%)	3.8%
Statistics	30	6 (20%)	0.9%
Institute for International Economic Studies (IIES)	46	3 (6.5%)	0.5%
Stockholm Business School	160	17 (11%)	2.7%
Swedish Institute for Social Research (SOFI)	94	5 (5.3%)	0.8%
Astronomy	72	2 (2.8%)	0.3%
Mathematics & Science Education (MND)	106	11 (10%)	1.7%
Mathematics	100	16 (16%)	2.5%
Physics	235	18 (6.3%)	2.8%
Biochemistry & Biophysics (DBB)	140	8 (5.7%)	1.3%
Organic Chemistry	96	2 (2.1%)	0.3%
Molecular Biosciences, The Wenner-Gren Institute	148	11 (7.4%)	1.7%
Ecology, Environment & Plant Sciences (DEEP)	140	5 (3.6%)	0.8%
Zoology	142	9 (6.3%)	1.4%
Environmental Science	57	9 (16%)	1.4%
Physical Geography	108	15 (14%)	2.4%

## Course information and student enrolment

The respondents reported that the majority of courses that they taught run on full-time (71.6%) basis and the students who participated in their courses were primarily undergraduate level students (69.4%). Only 26.7% of students were advanced and 2.2% PhD level students.

The majority of respondents (76.3%) reported that they taught the period of 23 March-30 April 2020, which was the first period after all teaching had been transferred online. 72.5% of respondents reported that they taught for the period of 3 May-7 June, 2020. Those who taught 15hp (40.2%) credits taught both periods. As shown in figure 3.1, the courses mainly provided 7,5hp credit (43%) and 15hp or more credits (40.2%).

Figure 3.1 Number of credits

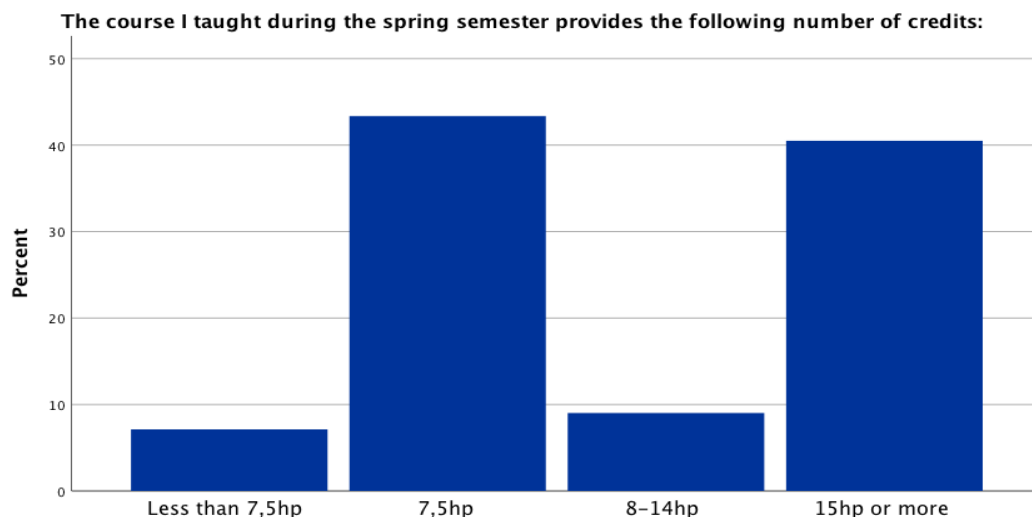


Table 3.4 presents the number of students who registered and participated in a course as reported by the respondent teachers. The most common size of class was between 20-49 students.

Table 3.4 Number of students for course registration and participation

Number of students	Registration %	Participation %
Fewer than 10 students	13.2	13.1
10-19 students	18.8	18.1
20-49 students	28.1	27.6
50-79 students	17.1	13.8
80-119 students	10.5	8.3
120-200 students	10.7	8.1
300 or more students	1.6	0.9

## Findings

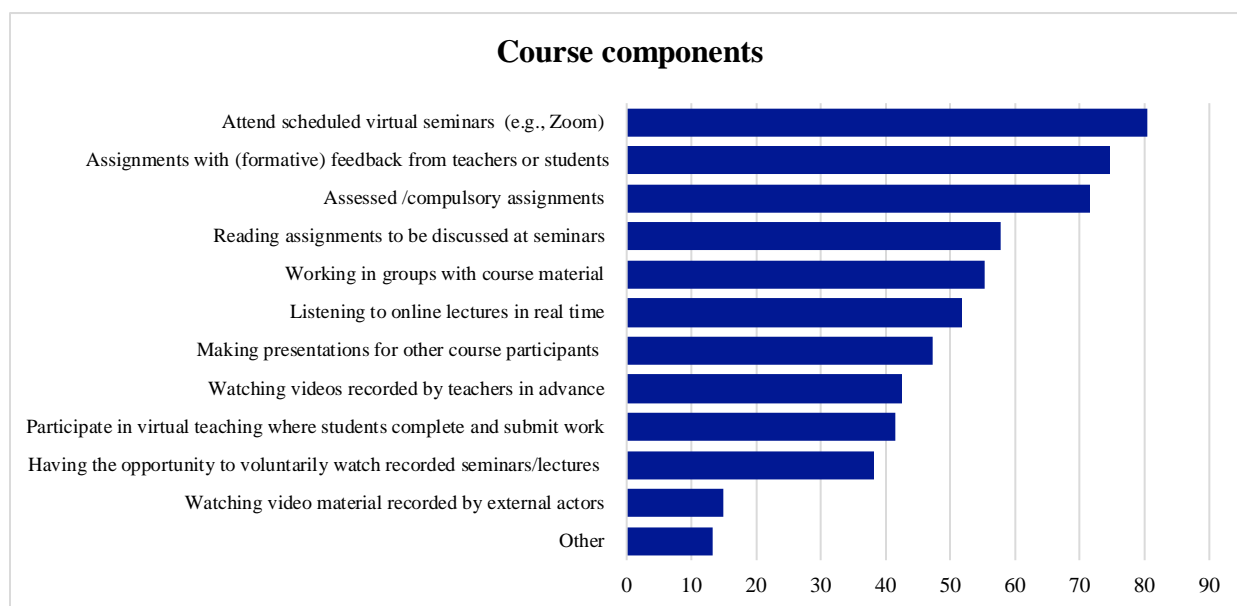
### Course activities and assessment

In this section, teachers were asked to report teaching components they included in their courses, the characteristics of courses they taught and course assessment they used during remote education.

### Teaching components

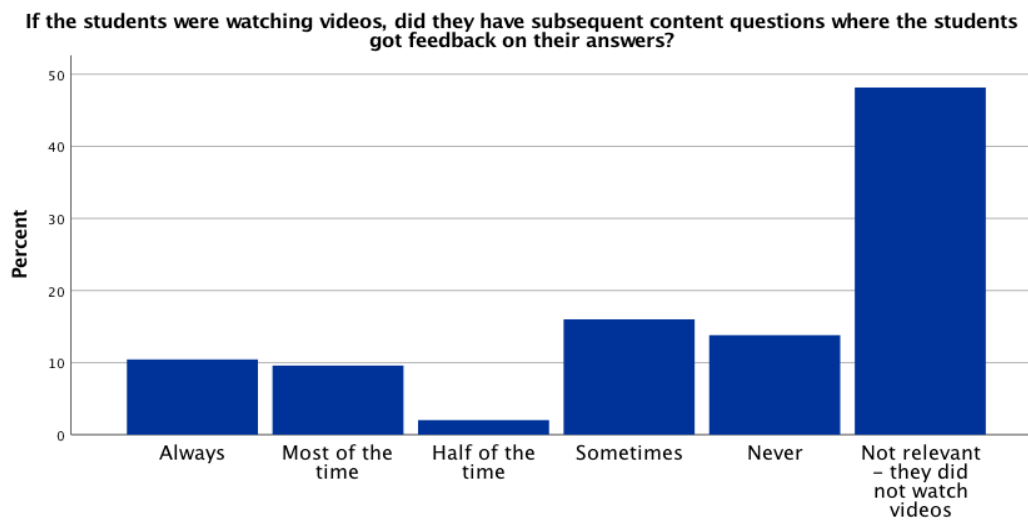
As shown in figure 4.1, the following course activities were used as teaching components during remote education. Attendance of scheduled virtual seminars with the teacher and other students in Zoom (80.4%), assignments with formative feedback from teachers and students (74.6%), assessed/compulsory assignments that count towards the final grade (71.6%) were among the most cited common course components.

Figure 4.1 List of course components



Additionally, more than half of respondents (57.8%) further reported that students never watched videos or that it was not a relevant activity for their course. A total of 18.6% of respondents reported that students always or most of the time and a total of 16.8% of respondents reported that half of the time or only sometimes got feedback on their answers if they were watching videos as a part of a course activity.

Figure 4.2 Teachers' feedback on students' pre-watched videos



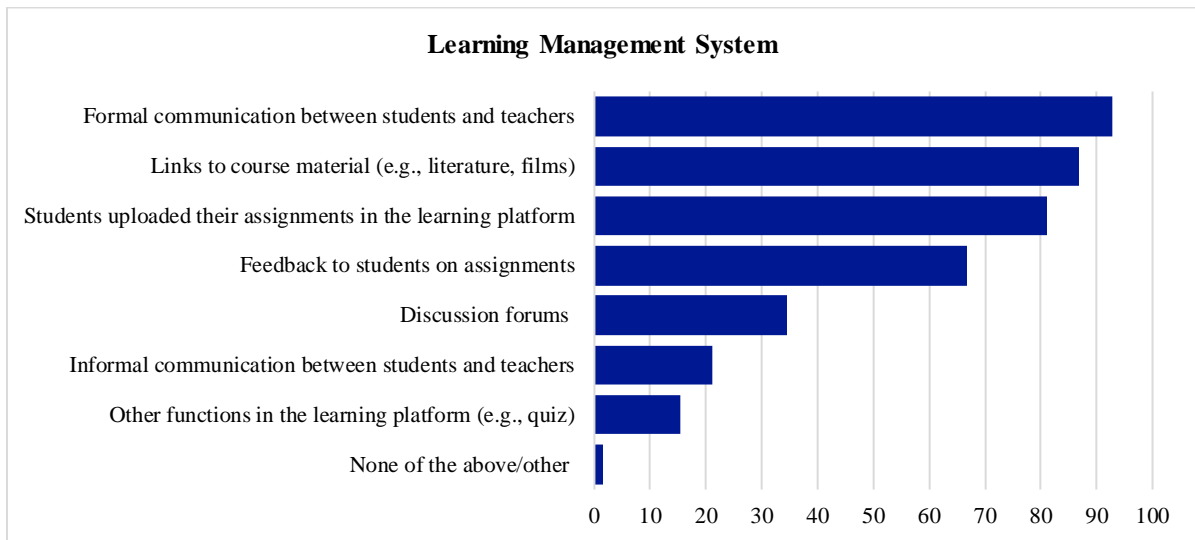
### Characteristics of online courses

Teachers were, first, asked to indicate whether Athena was used as a main learning management system in their courses during remote teaching. A large majority of respondents (84%) reported that they used Athena in their courses during online teaching. Only a small number of respondents (9%) reported that they used other learning management system.

Teachers were, then, asked to list how the learning management systems (LMS) were used in their courses during remote teaching. Most commonly, the LMS was used for formal communication between students and teachers (e.g., instructions or clarifications regarding content etc.) (92%), for sharing links to course materials (e.g., literature, films etc.) (86%) and for students uploading their assignments in the learning platform (81.2%).

Tools for activating students, such as discussion forums (34.4%), informal communication between students and teachers (21.2%) and other functions such as quizzes (15.4%) were used to a lower degree in Athena (see figure 4.3)

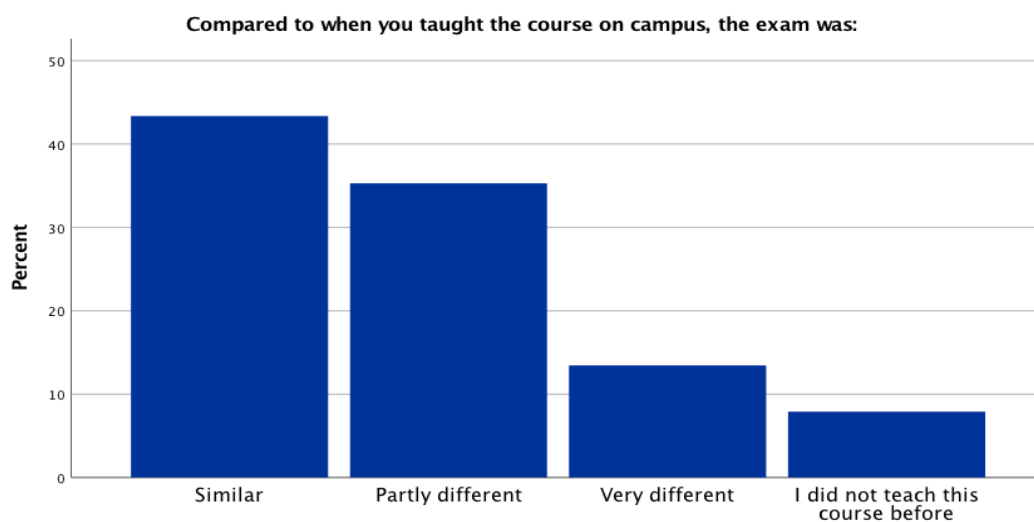
Figure 4.3 List of learning management systems



### Course assessment

As teachers had to transition from in-person to online as a result of the pandemic, they were also asked to respond to an item on how they weighted various types of assessments differently across those teaching modes. 43% of respondents reported that that they did not change and used similar assessment format for their course after transitioning to online teaching.

Figure 4.4 Change of assessment methods



35% of respondents reported that compared to when taught the course on-campus, the assessment was partly different and only 13.3% of respondents reported that it was very different after transitioning to online teaching (see figure 4.4). Thus, these results suggest that

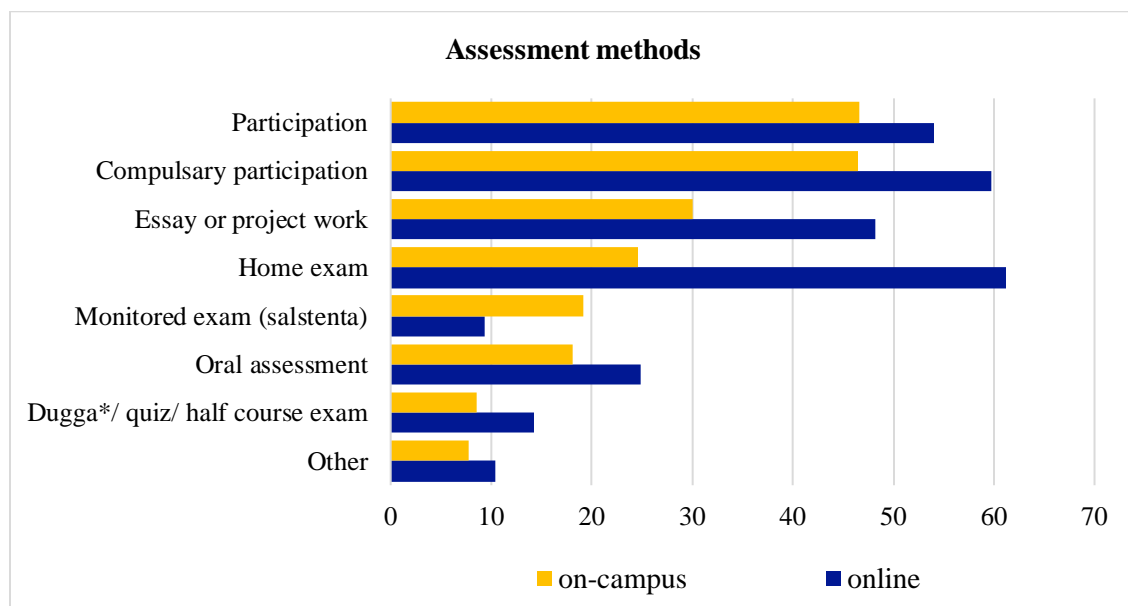


despite the fact that the medium of the course offering changed, most teachers did not change the assessment weighting of their course after transitioning to online.

Moreover, teachers were asked to report the activities they planned and used both on-campus and online in order to assess students' learning. Nearly half of respondents (46%) reported that they used participation and compulsory participation as part of the assessment methods on-campus. 30% of respondents reported that they used essay or project work and 24.6% of respondents reported that they used home exam as the methods of assessment when they taught on-campus.

As shown in figure 4.5, when it comes to assessment methods used during online teaching, more than half of respondents reported that they used home exam (61.2%), compulsory participation (59%) and participation (54%) as the methods of assessment for student learning. Only 9.3% of respondents reported that they used monitored exam (salstenta in swedish) as an assessment method in online course during remote education. Hence, this result suggests that home exam grew to be the most common method of assessment alongside compulsory participation in the online courses. Oral assessments also increased, while quiz/ half time exams became less frequent.

Figure 4.5 Assessment methods used on-campus and online

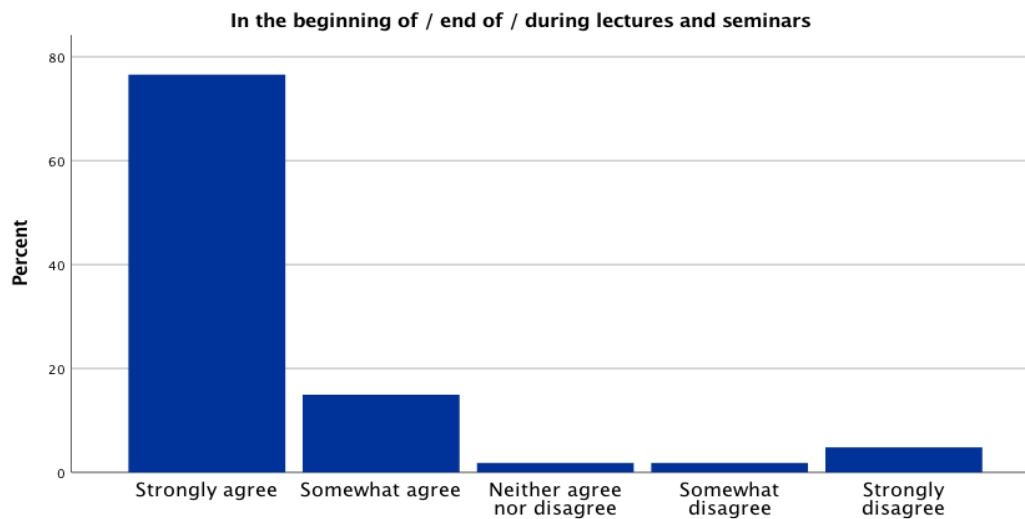


\*Dugga is a half time formative exam.

## Opportunities for student-teacher interaction

In this section, teachers were asked to respond to items on available time and opportunities for student-teacher interaction where students could ask questions and get answers during remote teaching in a 5-point Likert-scale (5-strongly agree; 4-somewhat agree; 3-neither agree nor disagree; 2-somewhat disagree; 1-strongly disagree). A large majority of respondents (86.5%) strongly or somewhat agreed that they interacted with students in the beginning, at the end of or during lectures and seminars. Only the minority of respondents (6.3%) strongly or somewhat disagreed (see figure 4.6).

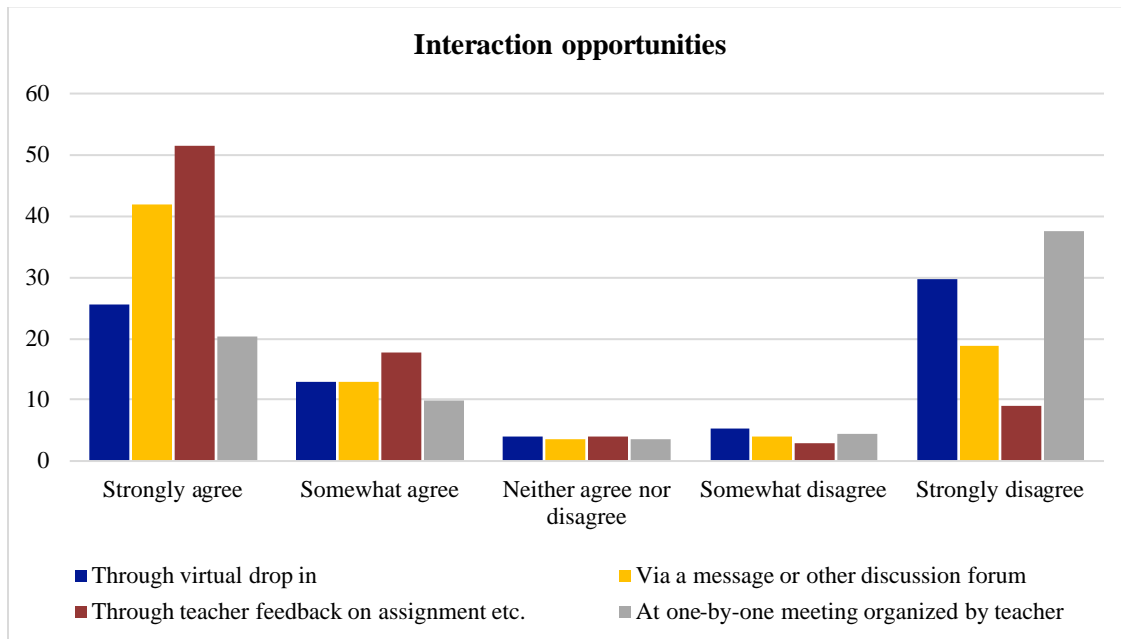
Figure 4.6 Time for student-teacher interaction



Regarding student-teacher interaction, the majority of respondents (69.2%) strongly or somewhat agreed that during online courses, the interaction opportunity was through teacher feedback on students' assignments or exams. 12.1% of respondents strongly or somewhat disagreed. More than half of respondents (54.8%) reported that student-teacher interaction was via a message or other discussion forum where teachers read and regularly responded to students. 22.6% of respondents reported the opposite.

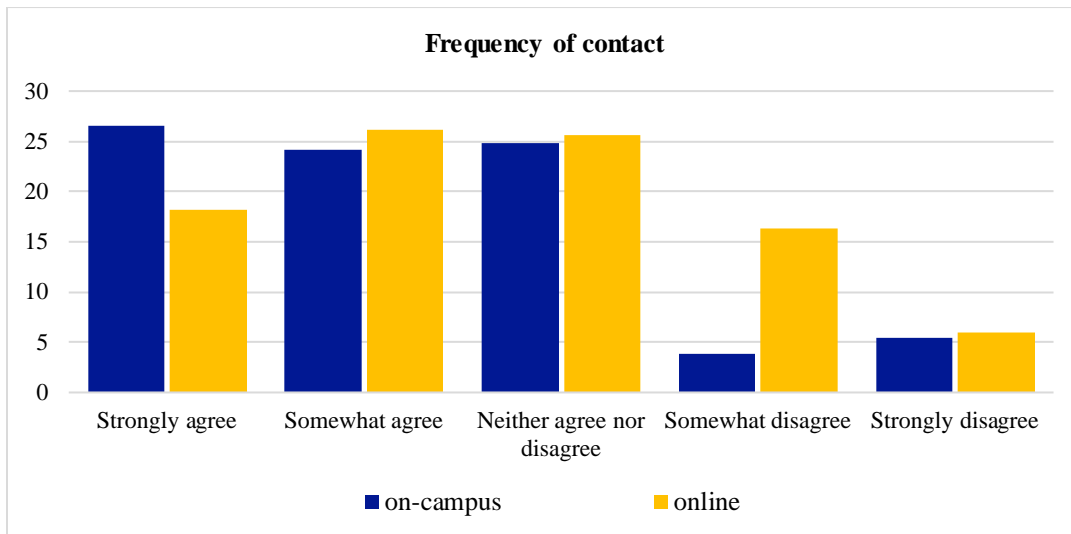
Although, 38.6% of respondents strongly or somewhat agreed that a virtual drop-in (via Zoom or similar) was a common way of student-teacher interaction during online teaching, 35% of respondents strongly or somewhat disagreed. Finally, 42% of respondents reported that one-by-one meeting organized by a teacher was a less common way of student-teacher interaction during online courses (see figure 4.7).

Figure 4.7 Student-teacher interaction opportunities



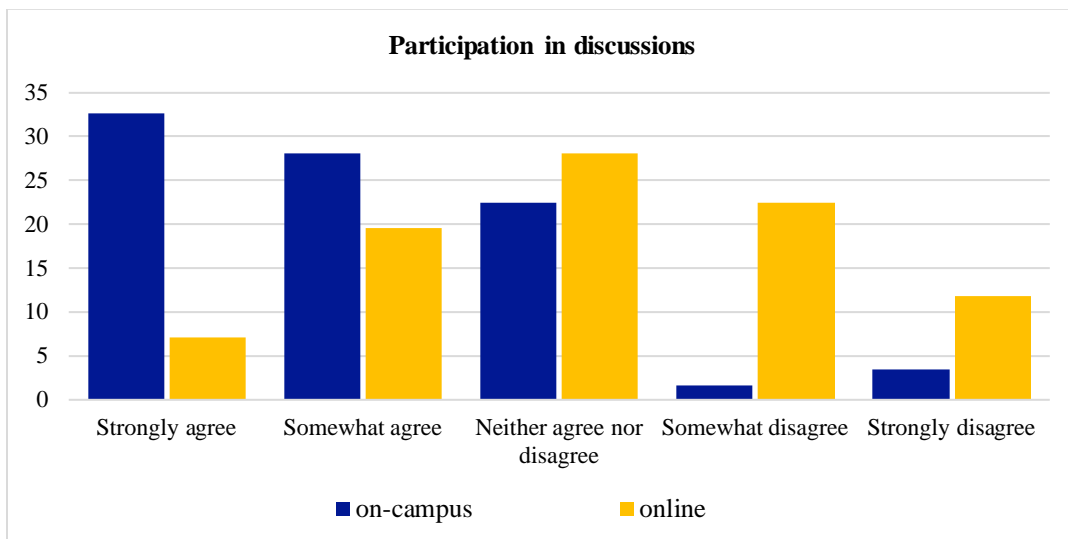
At the end of this section, teachers were asked to report their beliefs with regards to the frequency of students' use of contact opportunities with teachers and students' participation in discussions when the courses were taught on-campus compared to online in a 5-point Likert-scale (5-strongly agree; 4-somewhat agree; 3-neither agree nor disagree; 2-somewhat disagree; 1-strongly disagree). Half of respondents strongly or somewhat agreed that (50.7%) students used the opportunities for teacher contact regularly when the courses were on-campus. Only 9.3% of respondents strongly or somewhat disagreed. When compared to on-campus teaching, in online courses, slightly a smaller number of respondents (44.4%) strongly or somewhat agreed that students used the opportunities for teacher contact regularly. On the other hand, not surprisingly, compared to on-campus teaching, more respondents strongly or somewhat disagreed (22.3%) that students used contact opportunities frequently when the courses were online (see figure 4.8).

Figure 4.8 Students' contact frequency with teachers on-campus compared to online



As for student participation, more than half of the respondents (60.8) strongly or somewhat agreed that students more actively participated in discussions when the courses were on-campus. Only 5.1% of respondents strongly or somewhat disagreed.

Figure 4.9 Student participation in course discussions on-campus and online



Again, when compared to on-campus teaching, in online courses, only 26.7 % of respondents strongly or somewhat agreed that students more actively participated in discussions. More respondents (34.3%) strongly or somewhat disagreed (see figure 4.9). Thus, these results demonstrate that remote teaching affected both student use of frequent contact opportunities with teachers and students' active participation in course discussions negatively.

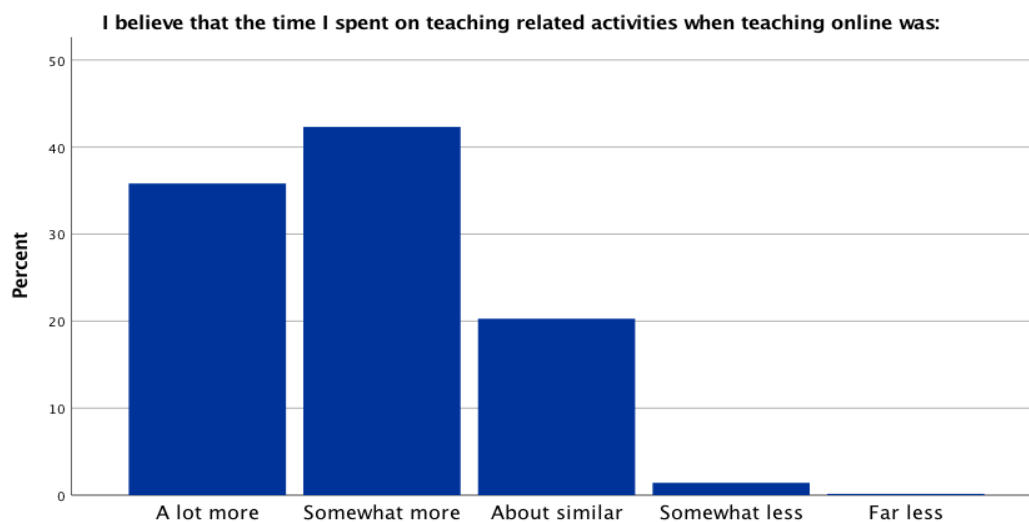
## Teachers' online teaching experiences

In this section, respondents were asked to report various aspects of their online teaching experiences before and during remote education.

### Time spent on teaching activities

Teachers were asked to respond to an item on time spent on teaching related activities during remote education in a 5-point Likert-scale (5-a lot more; 4-somewhat more; 3-about similar; 2-somewhat less; 1-far less). 35.5% of respondents reported that they spent a lot more, and 42% of respondents reported that they spent somewhat more time on teaching related activities when teaching was online. 20% of respondents reported that teaching related activities took similar amount of time for them when teaching was on-campus. Only a very small portion of respondents (1.6%) reported that they spent less time on online teaching related activities during remote education (see figure 4.10).

Figure 4.10 Time spent on teaching related activities during remote education



### *Group differences: gender, years of experience, academic position, courses taken in higher education (HE) teaching*

First, an independent samples *t*-test was used to compare female and male teachers' beliefs with regards to time they spent on online teaching activities during remote education compared to on-campus teaching. The result demonstrated that there was no significant difference between the ratings of female ( $M = 1.84$ ,  $SD = .77$ ), and male ( $M = 1.95$ ,  $SD = .79$ ) teachers' beliefs regarding time spent on online teaching activities,  $t(614) = -1.67$ ,  $p = .868$  during remote

education.

Three one-way ANOVAs were used to examine differences in teachers' beliefs about the time they spent on online teaching activities during remote education according to their teaching experience, academic position and courses taken in higher education (HE) teaching. Teachers were divided into three groups based on their teaching experience: early career (0-4 years), mid-level (5-16 years) and senior-level (17 years and more experience) and a one-way ANOVA was, first, used to test for differences in teachers' beliefs about the time they spent on online teaching activities during remote education. The ANOVA result revealed a significant main effect of experience,  $F(2, 628) = 5.72, p = .003$ , indicating the existence of at least one significant difference between the three groups (see Table 4.1). Post-hoc Hochberg GT2 tests showed that, compared to senior-level teachers, early-career teachers believed that they spent significantly more time on online teaching during remote education ( $p = .004$ ). There were no significant differences for the other comparisons.

Table 4.1 Descriptive statistics for groups differing in teaching experience

Variable	Teaching experience					
	early career ( <i>n</i> = 98)		mid-level ( <i>n</i> = 271)		senior-level ( <i>n</i> = 262)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Time spent on online teaching	2.07	0.88	1.91	0.76	1.77	0.75

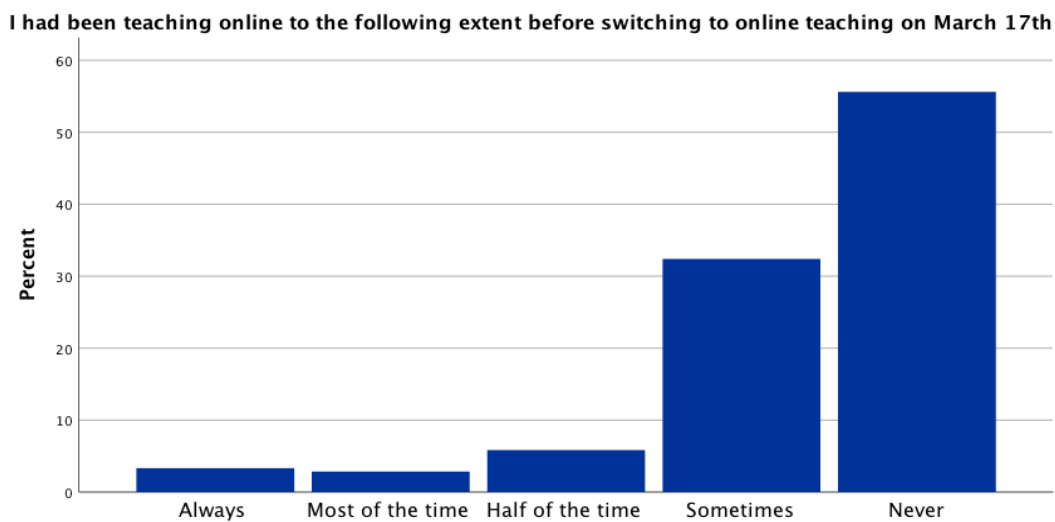
Teachers were divided into four different groups based on their academic position: a) lecturers b) professors c) researchers d) adjunct and others. A further one-way ANOVA was used to examine differences in teachers' beliefs regarding time spent on online teaching during remote education based on their academic position. The lack of a main effect in this ANOVA showed that no significant differences existed between the groups,  $F(3, 627) = 1.59, p = .189$ .

Teachers were divided into three different groups based on courses they had taken in higher education (HE) teaching: a) fewer than 7 ECTS or none b) 7,5 - 14 ECTS c) 15 ECTS or more. Finally, a one-way ANOVA was conducted to examine differences between groups in courses taken in higher education (HE) teaching. Again, the lack of a main effect in this ANOVA showed that no significant differences existed between the groups,  $F(2, 626) = 2.07, p = .126$ .

## Extent of online teaching before remote education

In this section, teachers were asked to respond to an item on online teaching related activities before switching to remote education in a 5-point Likert-scale (5-always; 4-most of the time; 3-half of the time; 2-sometimes; 1-never). Not surprisingly, more than half of the respondents (55%) reported that they had never taught online before switch to remote education (March 17, 2021). 32.2% of respondents reported that they only sometimes taught online before pandemic.

Figure 4.11 Extent of online teaching before switch to remote education

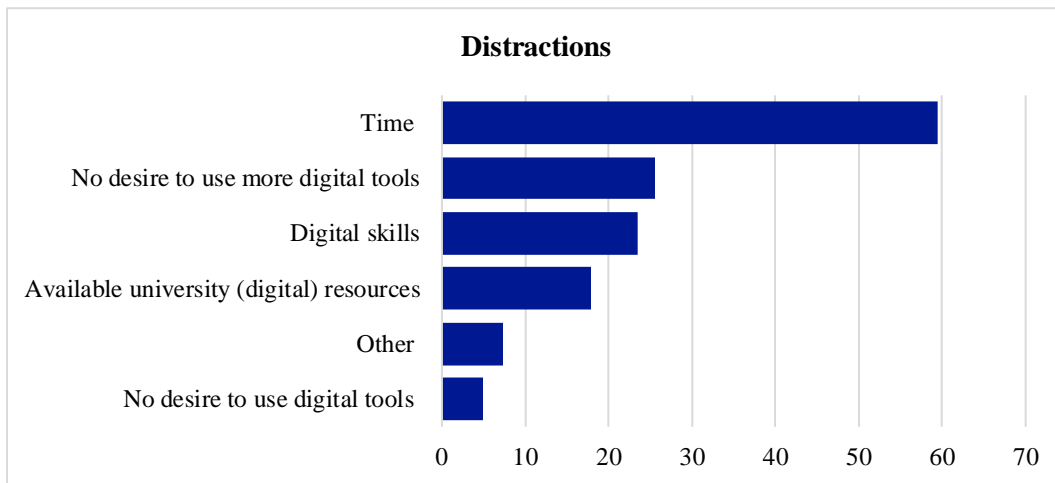


A total of 8.6% of respondents reported that they taught most of the time or half of the time online before pandemic. Only 3% of respondents reported that they always taught online before remote switch to remote teaching (see figure 4.11).

## Distractions of online teaching

In this section, factors that hindered teachers using more digital tools in their teaching were explored. Not surprisingly, time was reported as the main factor hindering online teaching and 59.5% of respondents reported that it took time to develop and integrate the tools into teaching. 25.6% of respondents reported that they had no desire to use more digital tools than they already used. Again, not surprisingly, digital skills were among the largest obstacles to online teaching as 23.5% of respondents reported that they wanted to use more digital tools but their digital skills hindered them (see figure 4.12).

Figure 4.12 Distractions of online teaching



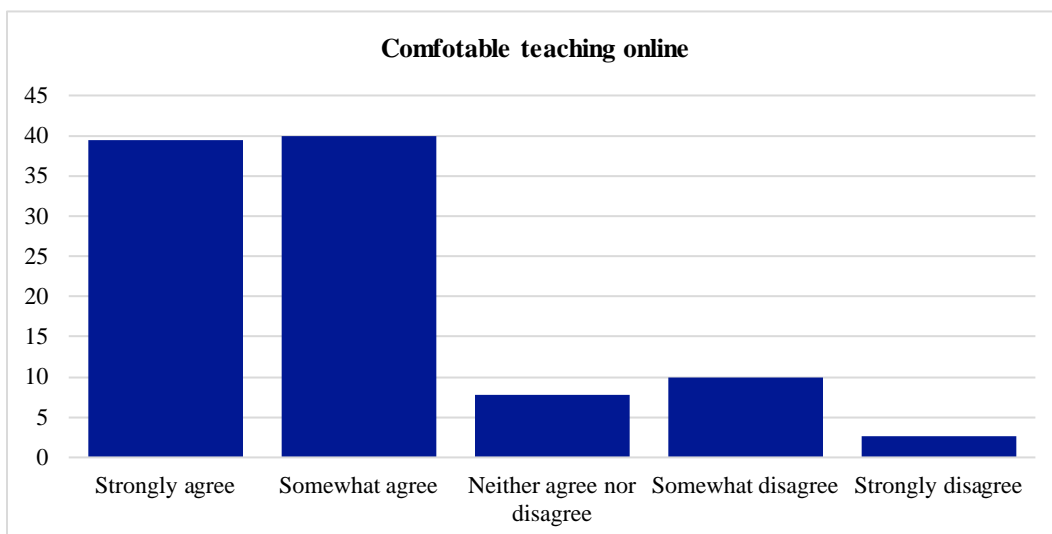
### Overall experience of online teaching

In this section, teachers were asked to respond to three items on overall experience of remote online teaching in a 5-point Likert-scale (5-strongly agree; 4-somewhat agree; 3-neither agree nor disagree; 2-somewhat disagree; 1-strongly disagree).

### Comfortable teaching online

The majority of respondents (79%) strongly or somewhat agreed that they felt comfortable with teaching online. Only a small number of respondents (12.5 %) somewhat or strongly disagreed (see figure 4.13).

Figure 4.13 Being comfortable with online teaching





### ***Associations between membership of different groups and being comfortable with online teaching***

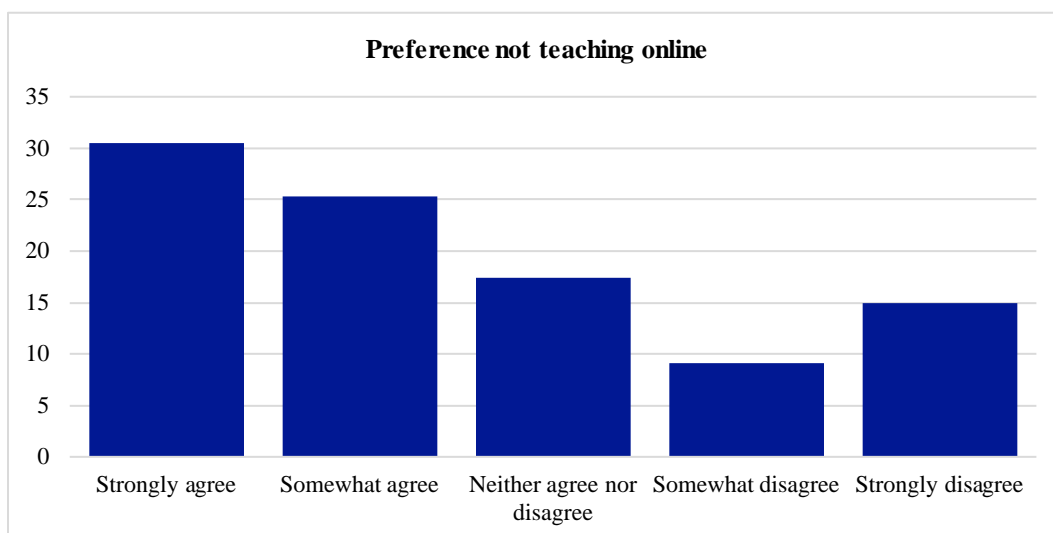
Teachers were divided into three different groups based on their teaching experience: a) early career (0-4 years), b) mid-level (5-16 years), c) senior-level (17 years and more), and a chi-square test of association was performed to assess whether any association existed between membership of these groups and their being of comfortable with online teaching. The chi-square test result was not significant,  $\chi^2(4) = 5.102, p = .277$ .

Teachers were divided into three different groups based on courses they had taken in higher education (HE) teaching: a) fewer than 7 ECTS or none, b) 7,5 - 14 ECTS, c) 15 ECTS and more, and a chi-square test of association was then performed to assess whether any association existed between membership of these groups and their being comfortable with online teaching. The chi-square test result was not significant,  $\chi^2(4) = 1.097, p = .895$ .

### **Preference for online teaching**

Notwithstanding teachers reported that they felt comfortable with teaching online, more than half of respondents (56%) still strongly or somewhat agreed that they would prefer not to teach online in the future. Only 24% of respondents disagreed with this statement (see figure 4.14).

Figure 4.14 Preference for online teaching



### ***Associations between membership of different groups and online teaching preferences***

Teachers were divided into three different groups based on their teaching experience: a) early

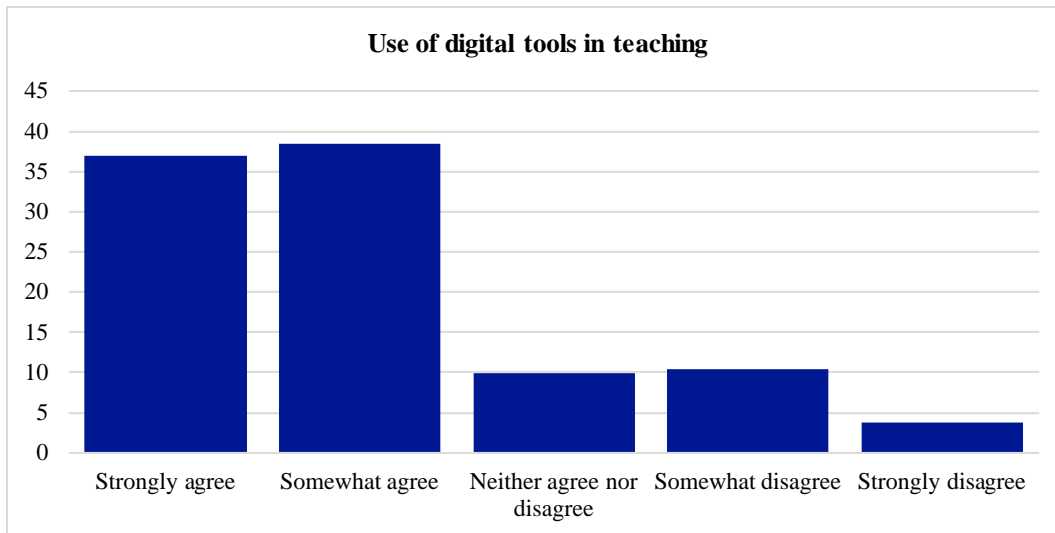
career (0-4 years), b) mid-level (5-16 years), c) senior-level (17 years and more), and a chi-square test of association was performed to assess whether any association existed between membership of these groups and preferences with respect to not teaching online courses in the future. The chi-square test result was significant,  $\chi^2(4) = 9.79$ ,  $p = .044$ , and  $z$ -tests of differences in column proportions showing that senior level teachers were significantly less likely than the other two groups to neither agree nor disagree with the statement ‘I would prefer not to have to teach this course online in the future’. Thus, the data showed that, relative to the other two groups, there was a tendency for senior level teachers to be indifferent with respect to their online teaching of the course at issue in the future.

Teachers were divided into three different groups based on courses they had taken in higher education (HE) teaching: a) fewer than 7 ECTS or none; b) 7,5 - 14 ECTS c) 15 ECTS and more, and a chi-square test of association was performed to assess whether any association existed between membership of these groups and preferences with respect to not teaching online courses in the future. The chi-square test result was significant,  $\chi^2(4) = 13.26$ ,  $p = .010$ , and  $z$ -tests of differences in column proportions showed that teachers in the 7,5-14 ECTS group were significantly less likely than the other two groups to agree that they would prefer not to have to teach the course online in the future, and significantly more likely to disagree that they would prefer not to have to teach the course online in the future than the 15 ECTS and more group. To summarize, where differences existed, the data showed that teachers who had taken 7,5-14 ECTS of HE teaching courses tended to have the most favorable opinions about online teaching in their responses to the item asking about whether they would not prefer to engage in online teaching of the course at issue in the future.

### **Usage of digital tools in teaching post-pandemic**

Interestingly, a large majority of respondents (75%) strongly or somewhat agreed that when returning to campus teaching, they would continue to use digital tools in their teaching. Only 14% of respondents strongly or somewhat disagreed (see figure 4.15).

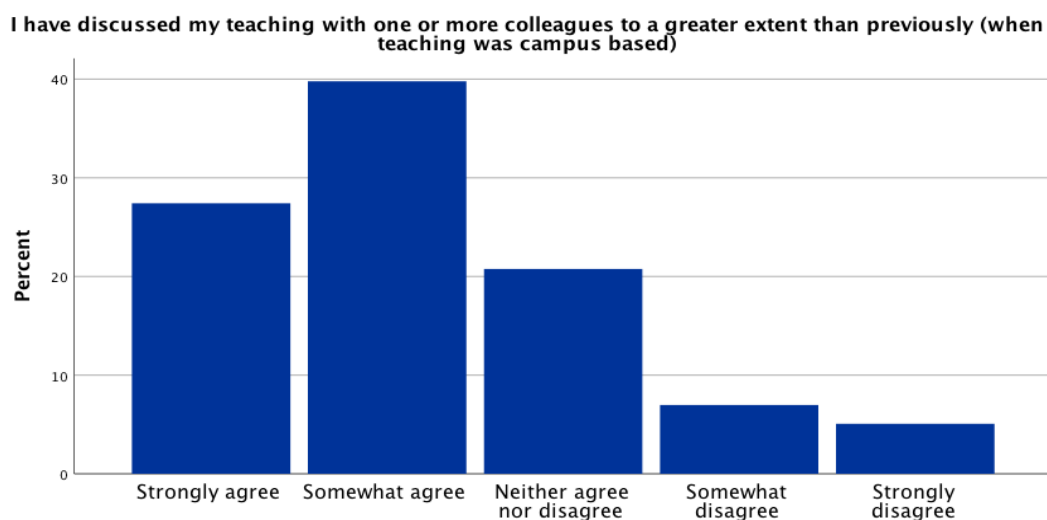
Figure 4.15 Use of digital tools in teaching after pandemic



### Discussion of online teaching

In this section, teachers were asked to respond to an item on the extent of discussion they had with colleagues about teaching during remote education in a 5-point Likert-scale (5-strongly agree; 4-somewhat agree; 3-neither agree nor disagree; 2-somewhat disagree; 1-strongly disagree). The majority of respondents (66.6%) strongly or somewhat agreed that they discussed their teaching with one or more colleagues to a greater extent than previously (when teaching was on campus-based). Only 12% of respondents disagreed with this statement (see figure 4.16)

Figure 4.16 Discussion of online teaching with colleagues



### ***Group differences: gender, years of experience, academic position, courses taken in HE teaching***

An independent samples *t*-test was used to compare female and male teachers' discussions of their online teaching with one or more colleagues compared to when they taught on-campus. The result showed that there was no significant difference between the ratings of females ( $M = 2.22$ ,  $SD = 1.07$ ) and males ( $M = 2.20$ ,  $SD = 1.07$ );  $t(614) = .207$ ,  $p = .589$ .

Three one-way ANOVAs were used to examine differences in teachers' discussions of online teaching with colleagues during remote education according to their teaching experience, academic position and courses taken in higher education (HE) teaching. The ANOVA results revealed that there were no significant main effects of teaching experience,  $F(2, 628) = 1.68$ ,  $p = .186$ , academic position,  $F(3, 627) = .690$ ,  $p = .558$ . nor courses taken in HE teaching,  $F(2, 626) = 1.73$ ,  $p = .178$  (see Table 4.2).

Table 4.2 Descriptive statistics for groups differing in teaching experience, academic position and courses taken in HE teaching

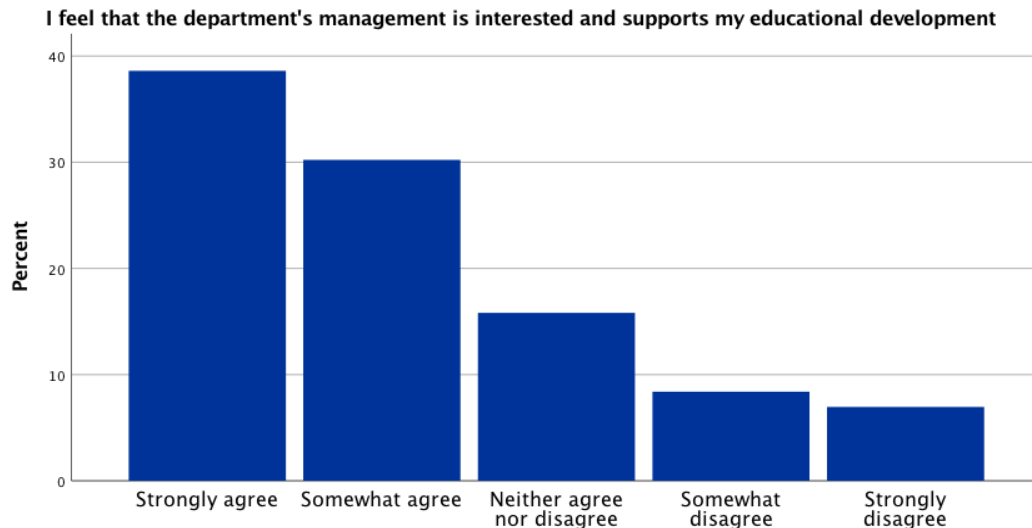
<b>Groups</b>		
<b><i>Teaching experience</i></b>	<b><i>M</i></b>	<b><i>SD</i></b>
early career ( $n = 100$ )	2.26	1.01
mid-level ( $n = 271$ )	2.29	1.07
senior-level ( $n = 260$ )	2.22	1.09
<b><i>Academic position</i></b>	<b><i>M</i></b>	<b><i>SD</i></b>
lecturers ( $n = 300$ )	2.21	1.05
professors ( $n = 117$ )	2.22	1.09
researchers ( $n = 102$ )	2.15	1.12
adjunct & others ( $n = 112$ )	2.35	1.08
<b><i>Courses taken in HE teaching</i></b>	<b><i>M</i></b>	<b><i>SD</i></b>
fewer than 7 ECTS or none ( $n = 176$ )	2.35	1.11
7,5 - 14 ECTS ( $n = 231$ )	2.15	1.06
15 ECTS and more ( $n = 222$ )	2.21	1.07

### **Support for educational development**

In this section, teachers were asked to respond to an item about the support they received from their department for educational development in a 5-point Likert-scale (5-strongly agree; 4-somewhat agree; 3-neither agree nor disagree; 2-somewhat disagree; 1-strongly disagree).

More than half of respondents (68.3%) reported that they feel that the department's management was interested and supported their educational development during remote teaching. Only a small number of respondents (15.2%) strongly or somewhat disagreed (see figure 4.17).

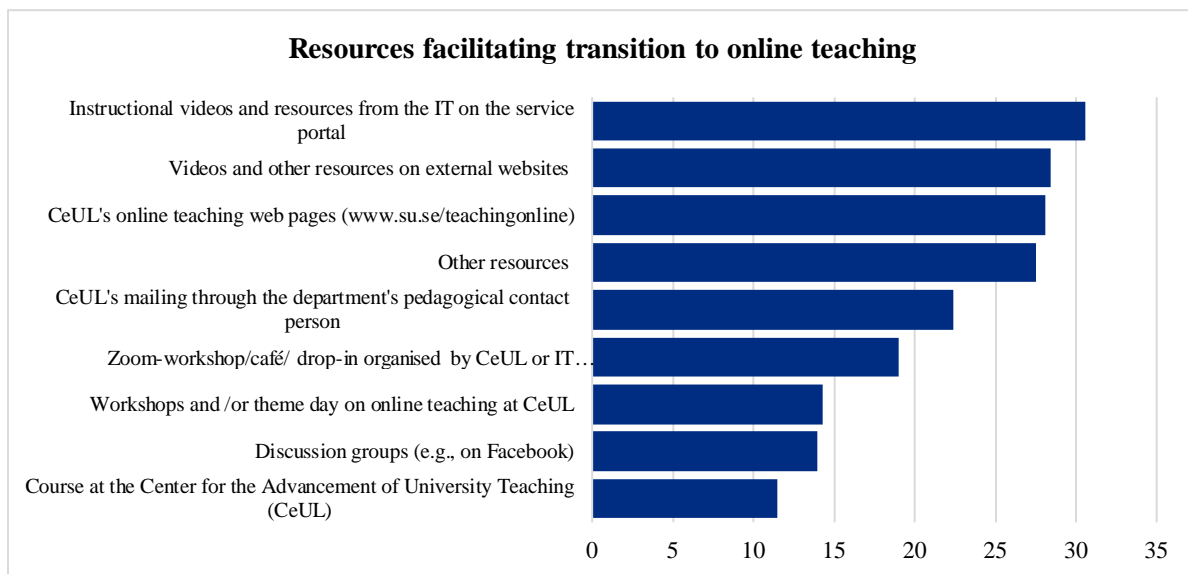
Figure 4.17 Departmental support for educational development



Additionally, the majority of respondents (74.7%) reported that they know their pedagogical contact person at their departments.

In this section, respondents were also asked to indicate the resources facilitating transition to online teaching in spring term. Instructional videos and resources from the IT department on the service portal (30.6%), videos and other resources on external websites (e.g., other universities) (28.4%), CeUL's online teaching web pages (28.1%) and other resources (27.5%) were most cited resources facilitating transition to online teaching during remote education (see figure 4.18).

Figure 4.18 List of resources facilitating transition to online teaching



***Group differences: gender, years of experience, academic position, courses taken in HE teaching***

An independent samples *t*-test was conducted to compare female and male teachers' perceptions of receiving support from their department during remote education. The result demonstrated that there was a significant difference between the ratings of female ( $M = 2.19$ ,  $SD = 1.27$ ), and male ( $M = 2.07$ ,  $SD = 1.13$ ) teachers' perceptions regarding support they received from their departments  $t(615) = 1.999$ ,  $p = .003$ . Compared to male teachers, female teachers felt that they received more support from their departments during remote teaching.

Three one-way ANOVAs were used to determine differences in teachers' perception of receiving support from their departments for educational development during remote education based on their teaching experience, academic position and courses taken in higher education (HE) teaching. The ANOVA results revealed that no significant main effects of teaching experiences,  $F(2, 629) = .930$ ,  $p = .395$ , academic position,  $F(3, 628) = 1.42$ ,  $p = .236$ ., and courses taken in HE teaching,  $F(2, 627) = 2.39$ ,  $p = .092$  (see Table 4.3).

Table 4.3 Descriptive statistics for groups differing in teaching experience, academic position and courses taken in HE teaching

<b>Groups</b>		
<b><i>Teaching experience</i></b>	<b><i>M</i></b>	<b><i>SD</i></b>
early career ( <i>n</i> = 100)	2.29	1.35
mid-level ( <i>n</i> = 270)	2.13	1.22
senior-level ( <i>n</i> = 262)	2.11	1.26
<b><i>Academic position</i></b>	<b><i>M</i></b>	<b><i>SD</i></b>
lecturers ( <i>n</i> = 300)	2.09	1.21
professors ( <i>n</i> = 116)	2.06	1.15
researchers ( <i>n</i> = 103)	2.35	1.22
adjunct & others ( <i>n</i> = 113)	2.21	1.29
<b><i>Courses taken in HE teaching</i></b>	<b><i>M</i></b>	<b><i>SD</i></b>
fewer than 7 ECTS or none ( <i>n</i> = 177)	2.28	1.25
7,5 -14 ECTS ( <i>n</i> = 232)	2.02	1.13
15 ECTS and more ( <i>n</i> = 221)	2.18	1.27

## **Challenges of online teaching**

At the end of survey, teachers were asked to respond to two open-ended questions. These questions were about the biggest technical and pedagogical challenges that teachers faced in their online teaching during remote education.

### **Technical challenges**

Regarding technical challenges, the comments from teachers are similar to those reported in the student survey (Bolander Laksov et al., 2021) and show that poor access to the Internet, with frozen pictures among participants during zoom sessions, and bad sound quality were not uncommon. The problems were perhaps particularly difficult for students as well as teachers with special needs, for instance teachers found it challenging to determine how to support students in an emergency situation by providing resources such as subtitled videos, when the time frame was only a few weeks. Another obstacle mentioned frequently was the lack of good assessment tools when the course was planned to be assessed with a sit-in exam in a large exam hall.

Many also experienced that the software used had its limitations. Initially there were many problems with the capacity of Zoom and the learning platform Athena. Regarding Athena,

which was still a rather new learning platform at the university, many teachers complained that they did not find it suitable for their needs, that it was not pedagogical in its design, or that it lacked tools for teaching such as a white board to draw and write on or the ability to embed video. Regarding Zoom there were several problems. Many teachers could not share teaching by having a co-host, create several rooms where students could enter on their own, and also there were difficulties in showing film or video clips. This created a lot of frustration and also took a lot of time.

Teachers also struggled to obtain the hardware necessary to teach effectively online. Many pointed to difficulties with only having a tablet or a laptop with a small screen, no web camera or no headphones. Several teachers therefore bought their own equipment, where some went so far as to create a mini studio with green screen and everything to be able to be more professional in their communication with students. The lack of hardware for students was also pointed to as an obstacle, as some students seemed to only have their smart phone as tool for communication and attending the course.

When it came to digital literacy some teachers acknowledged their own lack of digital skills, such as use of software or making video recordings, but also the lack of student digital literacy, which hindered or slowed down the teaching process. Teachers commented they would like to learn more about how to use the available tools, but that it is difficult to find time for learning how to do produce good online teaching. This requires support, and at the time not all departments had an IT-person who could help them out with the technical aspects.

### **Pedagogical challenges**

The most frequently mentioned pedagogical challenge concerned their contact with students. The social distance was experienced as making teaching more static, less vivid, and that the dynamics become 'stiff'. The 'invisible student', was referred to in comments indicating that not only is it difficult to see the student when half of the students do not want to switch on the web camera, but also teachers miss the eye contact as students as well as teachers look at a screen rather than into the camera. Teachers also comment on the difficulty to engage students in seminars, to establish a safe environment where students dare to participate and where everybody has a voice. Another challenge pointed to was the difficulty in adapting to student needs, since it is more difficult to 'read' the classroom.



Teachers also raised the issue of the relationship with and support from the university and the department. Comments concerned a wish for the university management to provide more support regarding what tools to use, how to use them, solutions or ways for how to handle the situation. Some teachers felt isolated and lonely in their efforts to improve the situation. Some teachers also felt that the support offered by the Centre for the Advancement of University Teaching (CeUL) did not focus on the challenges, or on the challenges that were relevant for that particular teacher.

Time stands out as an important challenge for both the technical and pedagogical issues. Lack of time to learn new things, that working digitally takes more time, that it is more tiring and requires more breaks, and that it is more difficult to manage time. Regarding assessment, there was also a lack of time to change assessments and to attempt to prevent plagiarism. This was particularly challenging in short answer exams; there were reports of teachers just ‘giving up’ and hoping students would not cheat in spite of clear opportunities to do so.

Those teachers who usually engage students in practical learning, such as lab-teaching or field work, commented on the difficulties to both offer students equivalent learning situations, and how to map progression and know if students learned as well in digitalized practicals. The need for more knowledge regarding how to use digital tools in a meaningful and pedagogical way was mentioned, as well as learning to do flipped classroom teaching. As teachers had noted low motivation on the part of students, some commented that they would need to learn how to keep students motivated, but also to identify ways of keeping themselves motivated as teachers.

Some general issues mentioned as challenges had to do with the context of work and time. Teachers who were working from home with non-optimal conditions for teaching, such as equipment, ergonomic conditions and perhaps family with small children which can make it difficult. Comments regarding how it all was more tiring and difficult to work online for both teachers and students were also made. Finally, some teachers reflected that distance-based teaching requires a lot of more structured information and preparation.

## **Conclusion**

The teacher survey shows that for the vast majority of teachers, the move from physical education to online teaching meant an increased workload. In a very short time, the teachers

had to change their courses both in terms of teaching format and examination. The majority of the teachers say they have spent more time on teaching than they usually do. In addition, a large proportion of teachers answered that they had never taught online before.

Most of the teachers who responded to the survey use Athena mainly for formal communication between teachers and students as instructions and explanations about assignments. In other respects, teachers used Athena to share links and materials, and for students to submit assignments. 70% of the teachers also used the learning platform for providing formal feedback to students, for various discussion forums and for informal communication between teachers and students and between students. Given that many students in the student survey (Bolander Laksov et al., 2021) pointed out that they lacked the student social contact, it is perhaps not surprising that only 20% of teachers say they use the learning platform to help foster informal communication amongst students and between students and the teachers themselves. The findings are in line with other research regarding diminished opportunities for students to interact (Jeffery & Bauer, 2020; Shim & Lee, 2020), and implies teachers need to consider how to create spaces for peer interaction.

### **The examination changed drastically**

Since the examination could not take place on campus, many courses needed to be examined differently, in most cases through home exams. Half of the teachers stated that the examination was slightly or very different from what had been planned for the campus teaching. The changes were into home exams, essay or project work. Many teachers also used combinations of different forms of examination such as compulsory elements, requirements for participation and oral exams. For natural reasons, sit-in exams decreased from 15 percent to 8 percent and were carried out in the home via Zoom. Relatively few used continuous exams such as "quizzes" to let students know how they were doing in terms of knowledge. Through an expansion of "quizzes" or other feedback activities where teachers can follow how well the students have understood the content, perhaps more students would feel that the teachers know if they have understood or not and then be able to support their learning even better.

### **The student-teacher interaction is lower online**

Opportunities for interaction between students and teachers was found to mainly occur at the beginning and end of lectures and seminars, through virtual drop-in times, via bulletin boards

and discussion forums, through feedback on tasks and to some extent through individual meetings. The teachers who responded to the survey, however, found that the students used opportunities for student-teacher interaction less when the teaching was conducted online than when it takes place on campus. The teachers also observed that the students actively participated to a lesser extent in discussions during the course in the online format than they do in the physical meeting on campus. Since student-teacher interaction has proven to be a central factor that contributes to students' motivation and learning in higher education pedagogical research (Bekele, 2010; Deshpande & Chukhlomin, 2017; Yin et al., 2008), we asked questions about it in the questionnaire. It is important to make sure to offer, but also encourage students to use, opportunities for interaction to clarify student confusion or questions. The lack of interaction is, however, one of the factors that both teachers and students lack when teaching at a distance. Therefore, it is important to use simultaneous meetings in Zoom to a lower degree for one-way communication and a higher degree for interaction.

### **More digital elements in teaching for the future**

When the semester of 2020 was over, four out of five teachers in the survey felt fully or partially comfortable teaching online. Nevertheless, three out of five teachers would more or less prefer not to have to teach the course they taught in the spring online in the future. However, a large majority of teachers believe that they will use digital tools in their teaching in future teaching. In other words, although most teachers prefer meeting face to face with their students on campus, the experience of emergency remote teaching has opened teachers' eyes to the possibilities of digital tools. These findings are also in line with what others have found (Albó et al., 2020; Xie & Rice, 2021). Many, however, point to the lack of time needed to develop teaching, deficiencies in their own digital skills and deficiencies in available resources such as various digital software as well as hardware such as computers, microphones and video equipment. An important take home message for higher education managers and institutions is thus to, in a sustainable way, create space for educational development, not only in times of crisis.

A positive consequence of the transition to online teaching is that as large a proportion as two thirds of teachers' state that they have discussed issues related to teaching with their colleagues more than they had done before. Considering the increasing amount of pedagogical research which clearly points to the fact that collegial discussions about teaching are a quality-enhancing

factor in education, this is a positive development (Bailey et al., 2021; Thomson, 2015). It remains an important question as to whether such collegial conversations and collaboration can be sustained.

Research on online learning emphasize the importance of engaging students in the processing of learning material through activating strategies (Deshpande & Chukhlomin, 2017). This survey showed that most teachers did not yet use the learning platform in this way, but rather, for administrative purposes. Teachers also experienced a lower engagement from students in discussions online than when the course was on campus. Remote teaching hence affected both student use and frequency of contact opportunities with teachers as well as students' active participation in course discussions negatively.

## Recommendations

The following recommendations can be made based on the survey to teachers:

- Consider how you can to create digital spaces for peer interaction within the framework of the course.
- Provide opportunities for interactive study contexts, both at course meetings, on the learning platform and in other forums.
- Design opportunities for formative feedback, so that you as teacher can get information on student progress, as well as let students identify gaps in their understanding.
- Make sure to meet students online in Zoom, or on the learning platform regularly to create presence, and the opportunity for students to ask or discuss course questions.
- Continue learning from colleagues through formal and informal conversations about teaching, about the use of digital tools and about the design of assessment. This will save time in the long run.
- Clarify when you give feedback, and that valuable feedback can also take place in other ways than through the teacher (for example from classmates in discussion forums in Athena or with the help of quizzes, etc.).

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