InComp Edu

Innovative Competence in On-Line Education

InCompEdu IO1 deliverable 1.

Report on identified challenges and problems that occurred during the transition to online teaching mode in the COVID-19 pandemic period

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Contents

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1. Introduction

At the beginning of COVID-19 pandemic, in spring of 2020, almost all the universities in Europe moved to distance learning. The aim of the survey was to collect experiences on online teaching in this sudden transition. In particular, we aimed to identify which challenges the sudden change created, which solutions were found and how online teaching methods developed during Covid-19 pandemic. The plans of the teachers in the future were also examined.

First, a questionnaire was carried out in InCompEdu partner countries: Croatia, Finland, Italy, Poland, Romania and Slovenia. Further on, interviews were done in each country. This report includes the results of the questionnaire, whereas the interviews will be reported in another report, Teacher stories. The results of the questionnaire in each country are reported in annexes I-VI.

The themes and main topics were discussed within the InCompEdu project consortium. The questionnaire was organised jointly for the purposes of two IOs (Intellectual Outputs) of InCompEdu:

- IO1, Identification of problems and good practices in transferring academic teaching to online mode, and
- IO2, Building the digital competences in the academic community of tomorrow. The themes and questions of IO2 focused on online collaboration platforms, digital infrastructures and tools which are used in teaching, sharing teaching materials and for discussion. The results are reported as part of part of IO2 outcomes.

The start of the lockdown and following sudden shift to online teaching took place at different times in different countries, depending on the time when the virus reached the borders of each country. Online teaching started from different situations and earlier experiences of teachers were quite different in the countries examined. A multitude of experiences, challenges and best practices related to online teaching were reported by the academic teachers.

In designing the questionnaire, online teaching was understood widely, including a variety of possible options and levels of online teaching. The different experiences and traditions of the respondents related to online teaching is reflected in the answers of the teachers, and sometimes the concepts may have been understood differently.

For example, hybrid learning is understood either as

1) Synchronous studies, where simultaneously part of the students is in the classroom and part of the students participate with Zoom, Teams etc., or
2) Studies include both asynchronous self-study and synchronous collaborative studies.

Blended learning refers to the combination of face-to-face interaction and online learning elements[1]. Digital is included in all teaching; thus, one possibility is to consider online teaching without clear difference between the concepts but the share of e-learning differs in different options[2] Figure 1

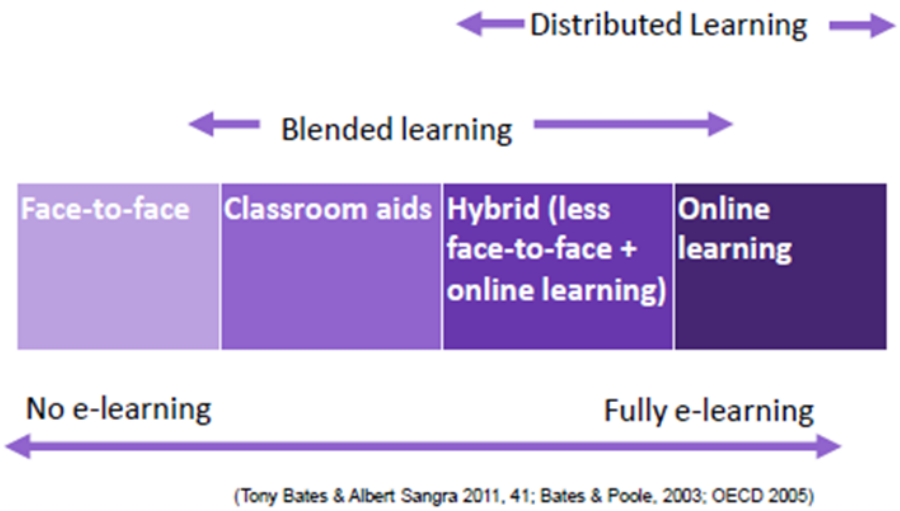

Figure 1. Different modes of e-learning. Source: Presentation of Hakanurmi, InCompEdu Multiplier Event (see Annex VII)

Related to online courses, usually the materials are shared via a platform (such as Moodle), which can be used for discussion. Discussion may be synchronous (chats) or asynchronous discussion (forums). Students may participate at certain times (synchronous) or on their own schedule (asynchronous)[3]. Synchronous discussion may also take place during teaching in presence.

In the questionnaire, first the situation before the COVID-19 pandemic and the experience of teachers in online teaching and teaching methods used were mapped. Regarding the sudden shift to online teaching, the main challenges and how they were solved were asked from the respondents. The respondents were also asked about the current challenges, teaching methods and best practices. Finally, future perspectives such as the planned share of online teaching and activities were examined, including which would be the preferred share of online teaching in the future and reasons behind the choices. Preliminary results of the questionnaire were presented in a Multiplier Event, Challenges and best practices in remote and hybrid academic teaching. The report of the event is included in Annex VII. The results give a holistic view of the views of academic teachers in the partner countries of the project to the current aspects of online teaching and possible future developments.

[1] Huhtanen, A. (2019)
[2] Presentation of Hakanurmi, InCompEdu Multiplier Event, Bates A.W et al (2011).
[3] Huhtanen, A. (2019)

2. Methodology

The themes of the questionnaire focused on the identification of problems and good practices

- Preparedness to online teaching (situation before the pandemic)
- Challenges in sudden shift to online teaching (spring-summer 2020)
- Current challenges (spring semester 2021)
- Future plans and perspectives

The questionnaire was compiled in English using a Webropol survey and reporting tool[4]. The respondents could answer the open questions either in English or in their own language. The survey was opened 25 May 2021 and closed 25 October 2021. The questionnaire link was sent to academic teachers in the partner universities and for other universities in the project partner countries by the project personnel. Several channels were used to distribute the questionnaire, including the intranet and websites of the universities, direct e-mails to teachers and the contact persons in faculties, departments and open universities. Social media channels were used and the survey was circulated also for other universities in the participating countries. Partners sent several reminders to gather the responses.

The number of filled in questionnaires received was 525, all of them from the partner countries of the project (see Table 1). Each partner analysed the results from the country concerned, summarised the replies to the open questions and translated the replies given in the local language into English. The reports by country are available as Annexes I-VI. The IO1 leader compiled this summary report. The results are presented in the following chapters, supported by tables and figures when based on the options chosen by the respondents. The replies of the respondents in open questions are presented qualitatively. The data is structured in themes, according to the main topics featured in the replies.

[4] https://webropol.com/

3. Background of the respondents

All the responses to the questionnaire were received from the partner countries of InCompEdu project. In total, 525 replies were received (Table 1). In addition to teaching in the partner countries, the respondents mentioned teaching in Sweden, Russia, Greece and Georgia, as well as in most of the EIT Digital[5] participative countries were mentioned, too.

Table 1. Number of replies per country

Country	N	in %
Croatia	102	19 %
Finland	75	14 %
Italy	57	11 %
Poland	144	27 %
Romania	67	13 %
Slovenia	80	15 %
	525	**100 %**

The majority of the respondents were in the age group of 40-49, only a minority were under 30 years or above 70 years old (see Table 2).

Table 2. Age of respondents. N=504. Croatia, N=99, Finland, N=73, Italy, N=54, Poland, N=137, Romania, N=65, Slovenia, N=76.

Age	Croatia	Finland	Italy	Poland	Romania	Slovenia	Total
20-29 years	6 %	0 %	0 %	2 %	0 %	4 %	2 %
30-39 years	35 %	10 %	5 %	16 %	37 %	21 %	21 %
40-49 years	32 %	37 %	28 %	45 %	45 %	33 %	38 %
50-59 years	25 %	30 %	33 %	24 %	17 %	33 %	27 %
60-69 years	2 %	23 %	30 %	12 %	1 %	9 %	12 %
70 years or more	0 %	0 %	4 %	1 %	0 %	0 %	1 %

In all the countries, most of the respondents were female (see Table 3), except in Italy the majority of the respondents were male. In Croatia and Romania, the amount of female respondents was the highest, 65%.

Table 3. Gender (N=507). Croatia, N=99, Finland, N=73, Italy, N=54, Poland, N=138, Romania, N=65, Slovenia, N=78.

	Croatia	Finland	Italy	Poland	Romania	Slovenia	Total
Female	65 %	56 %	37 %	57 %	65 %	55 %	57 %
Male	34 %	40 %	54 %	40 %	34 %	36 %	39 %
Other	0 %	0 %	9 %	0 %	1 %	6 %	2 %
I do not want to tell	1 %	4 %	0 %	3 %	0 %	3 %	2 %

[5] https://www.eitdigital.eu/

The majority of the respondents, 72%, hold an established or permanent position at the university (See Table 4). In Croatia, amount of respondents with an early career position was the highest, 28%.

Table 4. Position at the university. N=525. Croatia, N=102, Finland, N=75, Italy, N=57, Poland, N=144, Romania, N=67, Slovenia, N=80.

	Croatia	**Finland**	**Italy**	**Poland**	**Romania**	**Slovenia**	**Total**
Early career	28 %	4 %	0 %	14 %	6 %	15 %	13 %
Intermediate/temporary position	20 %	19 %	2 %	12 %	16 %	21 %	15 %
Established/permanent position	52 %	77 %	98 %	74 %	78 %	64 %	72 %
	100 %	100 %	100 %	100 %	100 %	100 %	100 %

The faculty of economics or commerce was most often selected, by 21% of the respondents, followed by engineering and humanities (both 14%) See Table 5. In addition to the options on the questionnaire, architecture, landscape architecture, geography, mathematics, economics and finance, healthcare sciences, psychology, organizational psychology, national philology and language learning, philology, computer science, logistics, arts, dentistry, chemistry and chemical technology, veterinary, open university and in-service training were mentioned.

Table 5. Faculties in which you teach. N=501, 655 options chosen. Croatia, N=102, Finland, N=75, Italy, N=57, Poland, N=144, Romania, N=67, Slovenia, N=80.

	Croatia	**Finland**	**Italy**	**Poland**	**Romania**	**Slovenia**	**Total**
Arts	2 %	5 %	0 %	3 %	0 %	10 %	3 %
Economics / commerce	18 %	11 %	13 %	27 %	40 %	11 %	21 %
Education	20 %	11 %	2 %	4 %	5 %	7 %	8 %
Engineering	14 %	4 %	29 %	14 %	17 %	11 %	14 %
Humanities	15 %	16 %	4 %	17 %	9 %	16 %	14 %
Information technology	7 %	12 %	2 %	7 %	6 %	7 %	7 %
Law	1 %	0 %	13 %	4 %	8 %	1 %	4 %
Management studies	6 %	3 %	5 %	15 %	8 %	8 %	9 %
Medicine	12 %	15 %	16 %	0 %	0 %	22 %	9 %
Music	3 %	0 %	0 %	0 %	0 %	1 %	1 %
Natural sciences	9 %	14 %	4 %	9 %	0 %	18 %	9 %
Philosophy	1 %	0 %	0 %	1 %	0 %	1 %	1 %
Science	4 %	5 %	27 %	7 %	6 %	10 %	9 %
Social sciences	6 %	11 %	2 %	10 %	9 %	8 %	8 %
Sports	5 %	1 %	0 %	0 %	6 %	1 %	2 %
Political science	0 %	3 %	2 %	1 %	0 %	1 %	1 %
Technology	6 %	7 %	0 %	5 %	3 %	10 %	5 %
Theology	1 %	0 %	0 %	0 %	2 %	1 %	1 %
Other	1 %	3 %	2 %	7 %	2 %	12 %	5 %

The field of study/studies most often mentioned was business, administration and law (22%) (see Table 6*). Several other fields were mentioned by the respondents.*

Table 6. Field of study/studies, which you teach. N=501, 666 options chosen. Croatia, N=102, Finland, N=75, Italy, N=57, Poland, N=144, Romania, N=67, Slovenia, N=80.

	Croatia	**Finland**	**Italy**	**Poland**	**Romania**	**Slovenia**	**Total**
Agriculture, forestry, fisheries and veterinary	2 %	1 %	2 %	1 %	0 %	5 %	2 %
Arts	4 %	3 %	2 %	3 %	1 %	1 %	3 %
Business, administration and law	18 %	13 %	14 %	30 %	45 %	10 %	22 %
Education	15 %	13 %	4 %	9 %	9 %	8 %	10 %
Engineering, manufacturing and construction	13 %	7 %	19 %	9 %	21 %	10 %	12 %
Health and welfare	8 %	5 %	4 %	0 %	1 %	8 %	4 %
Humanities	20 %	19 %	11 %	19 %	10 %	18 %	17 %
Information and Communication Technologies (ICTS)	9 %	13 %	9 %	8 %	6 %	5 %	8 %
Medicine	11 %	11 %	12 %	0 %	0 %	15 %	7 %
Natural sciences, mathematics, statistics	15 %	20 %	28 %	19 %	1 %	29 %	18 %
Services (military science, sport science)	3 %	0 %	0 %	1 %	0 %	3 %	1 %
Social sciences, journalism and information	7 %	9 %	4 %	16 %	12 %	8 %	10 %
Other	6 %	13 %	14 %	15 %	6 %	14 %	12 %

Several other options and specifications to the field of study were given by the respondents, such as architecture, biology/immunology, cell biology, biomedicine, chemistry, communication, computer science, cultural studies, dental materials, dentistry, environmental engineering, philology, foreign languages, finance, food, nutrition, geography, environmental science, land surveying, material science, music, nautical science, nursing, organizing and managing, the philosophy of science, thermodynamics, psychology, spatial management, statistics, business analytics, quantitative methods, sustainability, sustainable tourism, transport and logistics, maritime sciences and transport and veterinary medicine.

4. Online teaching before Covid-19 pandemic

Before the Covid-19 pandemic, the share of online teaching was relatively low in most of the countries examined (see Figure 2). The share of academic teachers who had not practiced online teaching at all or slightly was the highest in Italy (79%), followed by Slovenia (74%) and Poland (69%). The highest share of online teaching, at least on a moderate level, was reported by the Finnish respondents (55%), followed by Romania (41%) and Croatia (37%). In Finland, some respondents were teaching at open universities which organised online teaching even before the pandemic.

In Italy, the Universities need to be accredited as a distance learning university. Only a minority of the general universities' teaching staff practiced online teaching. In Romania, the public education system did not provide the use of online examination. Online teaching was predominantly used in educational institutions that had taught without attendance.

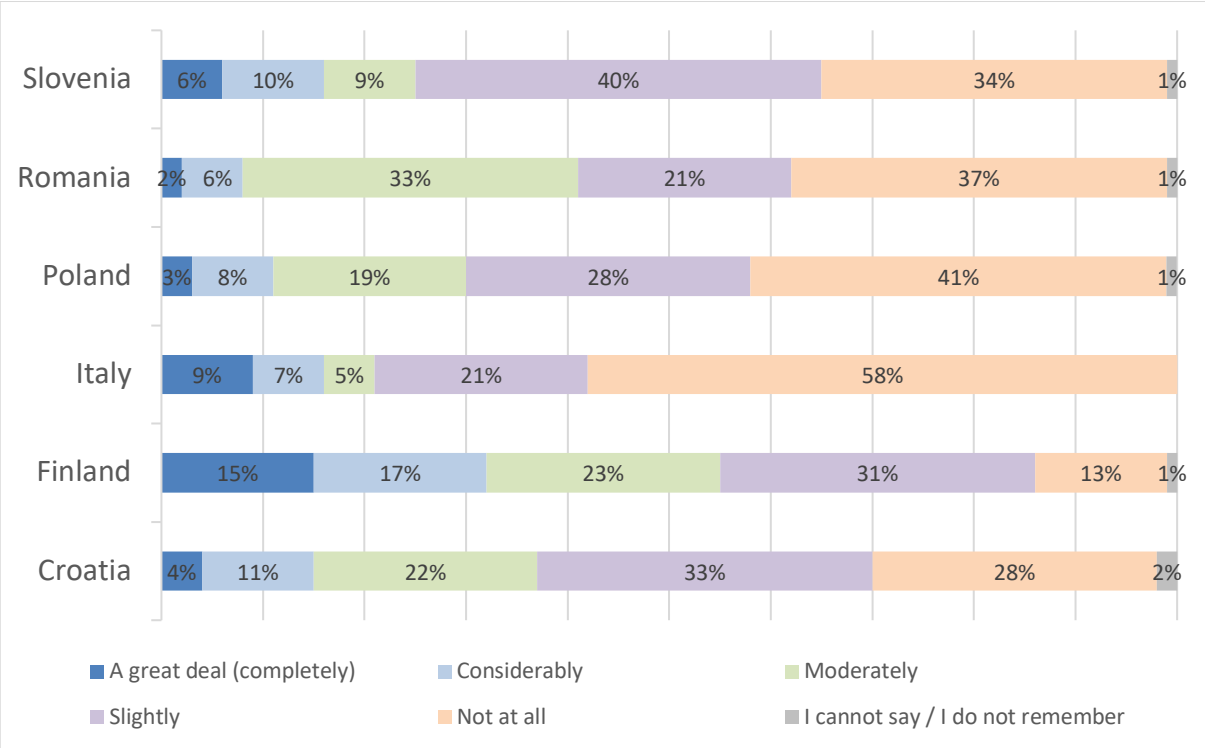

Figure 2. Online teaching before the COVID-19 pandemic (n=525). Croatia, N=102, Finland, N=75, Italy, N=57, Poland, N=144, Romania, N=67, Slovenia, N=80.

4.1. Types of online teaching before the Covid-19 pandemic

The respondents were asked whether they had experience of “any form of online teaching”, which includes a variety of options and levels of online teaching. Those respondents who had practiced online even slightly were directed to the question on the type of online teaching. Providing teaching materials online was chosen by the respondents in all countries as the most common way of online teaching before the pandemic. Altogether 87% of all the respondents who replied to this question chose this option (for results in each country, see Figure 3). However, the number of the respondents to this question varied much in the countries involved, from 24 replies in Italy to 85 in Poland, and only those who had answered having practiced online teaching before the pandemic were able to answer this question.

The Moodle platform was used mostly for sharing various teaching materials online. Students also had access to the videos or recordings of registered lectures, for example in Finland live streaming to lessons was offered for students according to 34% of the respondents. In Finland, students could do written exams online, in the premises of the university, according to 58% of the respondents. In other countries, this was not that common. In Italy, online exams were allowed only after the breakdown of the pandemic. Romania had the highest percentage (29%) related to BSc/MSc based on distance learning, where most courses were designed to be attended from remote. Students could attend a certain amount of lessons from remote for some courses, most often in Finland (33%) and in Poland (27%).

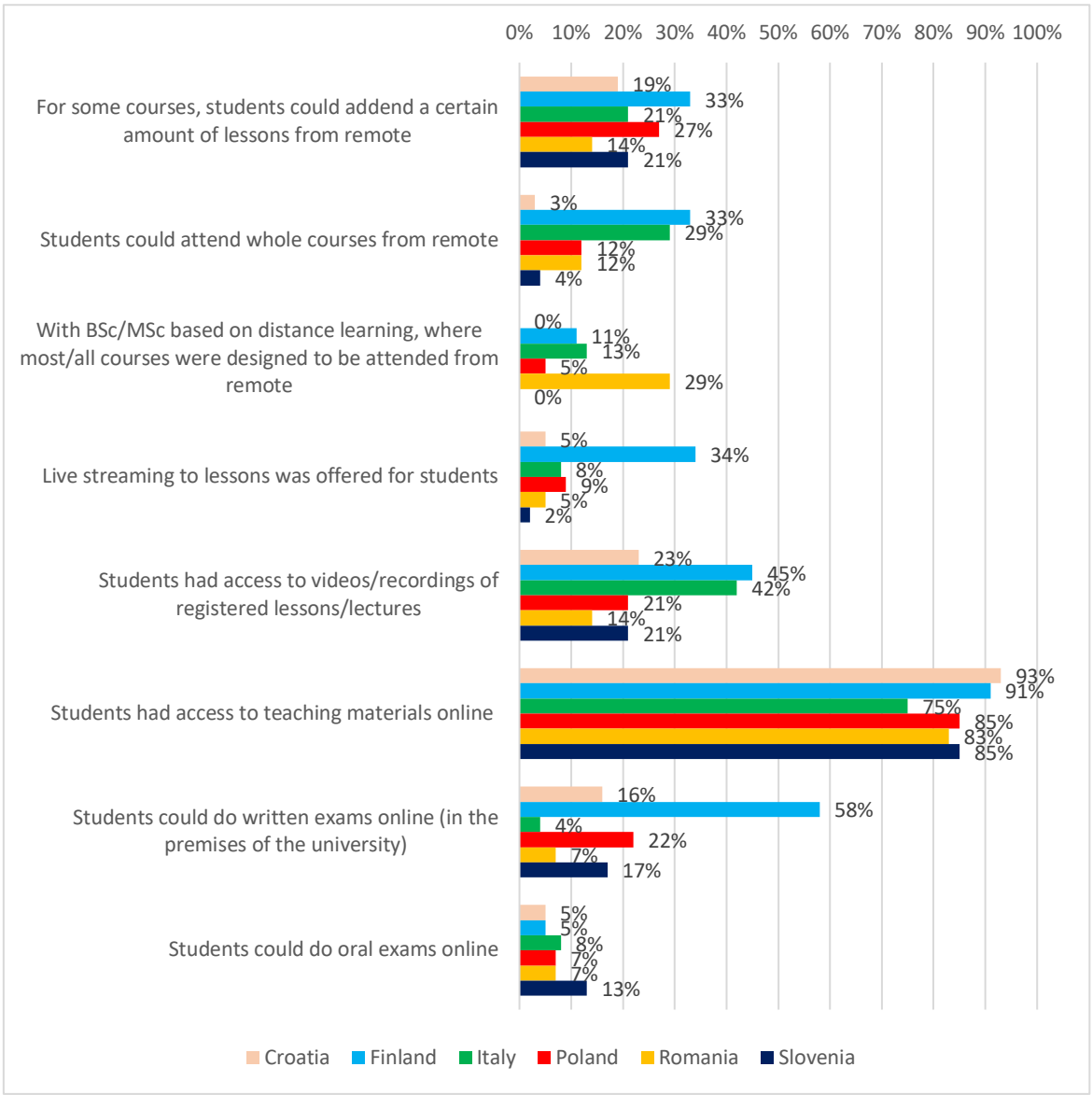

Figure 3. Which kind of online teaching you were involved with before the COVID-19 pandemic? N=341. Croatia, N=73, Finland, N=64, Italy, N=24, Poland, N=85, Romania, N=42, Slovenia, N=53.

4.2. Frequency of online teaching before Covid-19

Sharing didactic materials was the most common online teaching tool in all countries. Altogether 47% of the respondents did this on a weekly or monthly basis (Figure 4). For regular teaching, online methods were used second most, however on a quite low level, by 20% of all the respondents. The share of online teaching on daily or weekly basis was the highest in Finland (29%), followed by Croatia (23%) and Slovenia (20%) (See Figure 5.) However, 50% of all respondents in the countries examined had never practiced regular teaching online before the pandemic, nor activated the students during a lecture, and 52% had never activated the students outside the lectures.

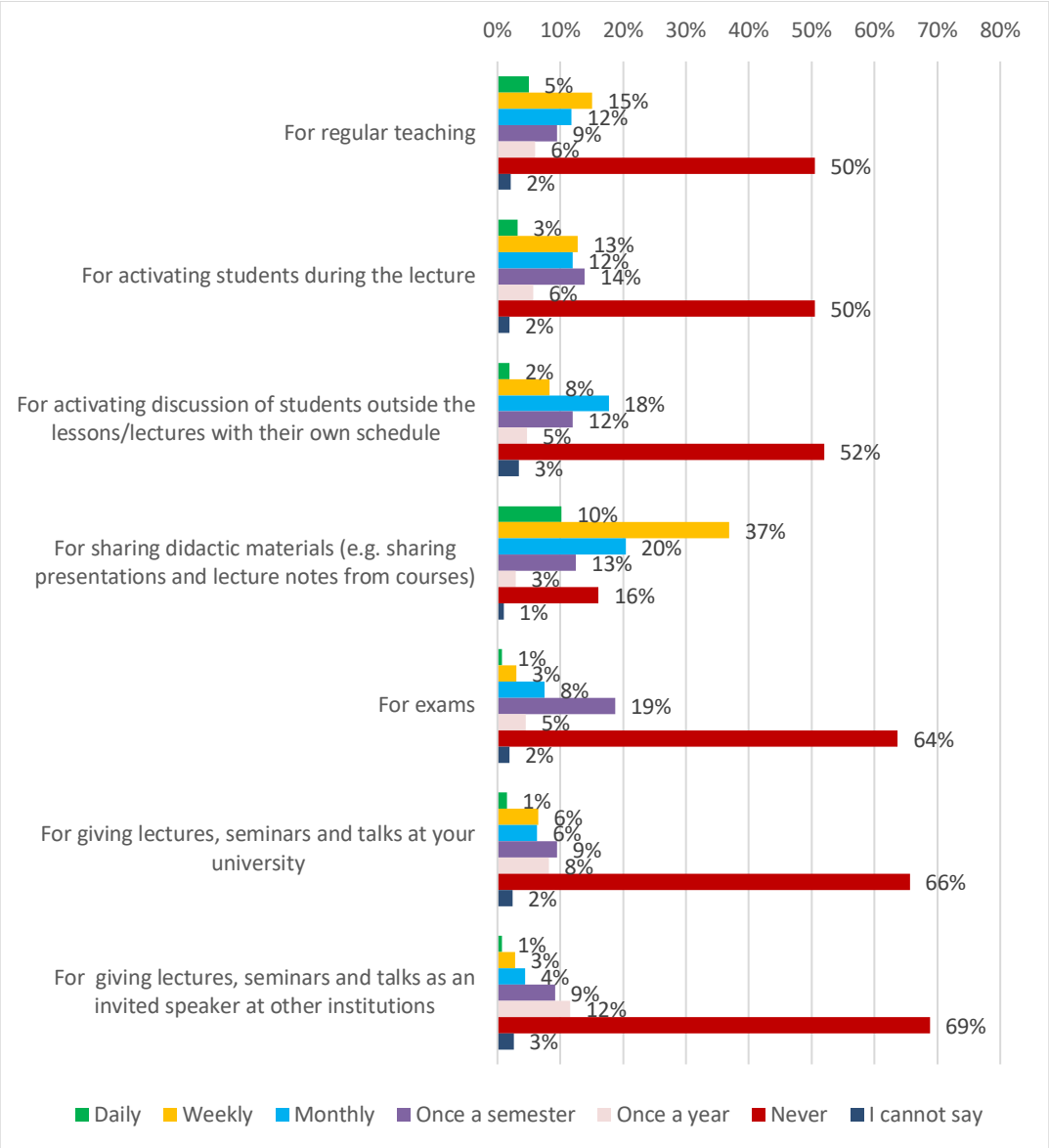

Figure 4. How often did you adopt online teaching tools and/or collaboration platforms before COVID-19? N=520. Croatia, N=101, Finland, N=75, Italy, N=54, Poland, N=144, Romania, N=67, Slovenia, N=79.

A comparison on the frequency of regular online teaching before the pandemic is presented in Figure 5. Regular teaching online on a daily or weekly basis was on a moderate level: in Finland (26%), in Croatia (23%) and in Slovenia (20%). In Finland, it was practiced monthly by 21% of the respondents. The same amount of monthly online teaching in Romania concerned mainly classes in part-time education.

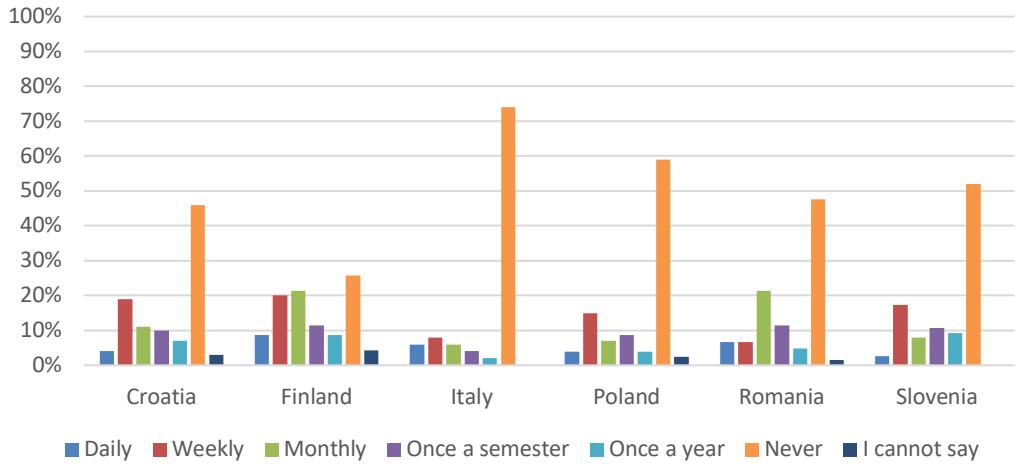

Figure 5. How often did you adopt online teaching for regular teaching before COVID-19? N=520. Croatia, N=101, Finland, N=75, Italy, N=54, Poland, N=144, Romania, N=67, Slovenia, N=79.

4.3. Online teaching methods before the pandemic

Before the pandemic, the most common online teaching method used by the respondents in all countries were clearly presentations, followed by videos or animations, in particular in Finland and Croatia (62%/60%) (Figure 6).

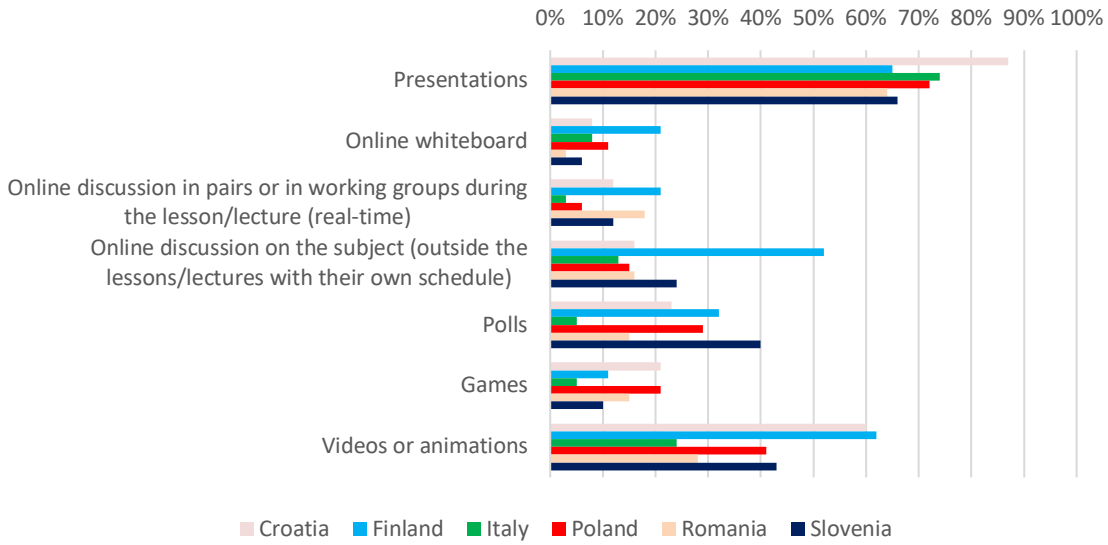

Figure 6. Which online teaching methods did you use before the pandemic? N=439, Croatia, N=95, Finland, N=66, Italy, N=38, Poland, N=112, Romania, N=61, Slovenia, N=67

Activating discussion of students outside the lessons/lectures with their own schedule (asynchronous) took place most often in Finland (51% of the respondents), followed by Slovenia (24%). In addition to the presented options, other online teaching methods used before pandemic were the following:

- A flipped classroom method, sharing material online before learning in small groups
- Case-learning in Moodle platform, pre-produced e-learning content
- Online homework and interactive tasks for students
- Tutoring in online classes, working with doctoral students online
- Discussions and questions in forums, other online activities including analyses, infographics creation
- Quizzes, games
- Use of Google Sheets, Google Forms, Google Docs; use of electronic tools to create e-learning content or to organize online ad-hoc tutorials navigated by peers
- Use of mobile applications for student's fieldwork, collaborative mapping or co-creation of written/multimedia documents.
- E-mail consultations
- Online tests, exams, tests for self-assessment
- Using applications like Kahoot to take short exams online

5. Online teaching in the sudden shift

The shift to online teaching happened with different timing in the countries examined, following the Covid-19 epidemiological situation. The rules and regulations of the government and responsible authorities were followed at the universities and HEIs (for more information per country, see the Annexes 1-6). The university administration made the decisions concerning the shift to online teaching.

When teaching was transferred to the online mode and the university premises were closed, teaching was usually organised from home (see Table 7). Exceptions were allowed for subjects or tasks which required physical attendance. Some respondents were teaching both from university and home, or from another venue. In this phase, teaching online was often considered as ”emergency remote teaching”, with quick and cheap tools.

Table 7. From where did you carry out your online teaching activities in spring 2020? N=523, Croatia, N=102, Finland, N=74, Italy, N=57, Poland, N=144, Romania, N=66, Slovenia, N=80

	Croatia	**Finland**	**Italy**	**Poland**	**Romania**	**Slovenia**
I taught remotely from home or cottage	84 %	89 %	88 %	86 %	76 %	87 %
I taught online from the premises of the university	10 %	8 %	12 %	11 %	23 %	10 %
Another location	6 %	3 %	0 %	3 %	1 %	3 %

In Romania, the share of those who taught online from the premises of the university was the highest, 23%. A rescheduled programming was done for the teaching activities that were considered impossible to hold online, such as sports, computer engineering, electronics and kinesiotherapy.

Out of the Croatian respondents, 10% taught from the premises of the university and 6% from another location. Activities that could not be conveyed in an online environment, such as clinical teaching, laboratory and artistic work could also be conducted in presence, in compliance with the prescribed epidemiological measures. Each university was to collect and submit, to the Ministry of Science and Education, Declarations from their employees stating that they possess the premises, equipment and tools required for distance teaching. In the case of employees who could not meet the requirements, each faculty should secure space for them to work at the faculty.

At the University of Gdansk in Poland, in the beginning, the teachers could themselves choose the applications used in distant teaching. During two remaining semesters, University Authorities obliged the academic community to use MS Teams. Intensive training cycles were provided for that.

At the University of Turku, a Teachers' Support Unit was organized already before the pandemic with technological and pedagogical expertise. An intranet website was established for teachers, aimed to support becoming a good teacher and including recommendations of tools for online teaching.

5.1. Challenges regarding online teaching during the shift to online teaching

The challenges in online teaching were examined regarding the spring 2020, when the shift to online teaching took place. The challenges which were most often considered as significantly or moderately challenging were the following (see Figure 7 for more details):

1. Engagement of students during lessons (76%)
2. Increased workload due to organisation of online teaching (72%)
3. Fatigue from prolonged activities on screen (71%)
4. Ergonomics in remote working (64%)

The order of the most important challenges was nearly the same in all the countries, with some exceptions. In Romania, 75% of the respondents considered online teaching methods and techniques significantly or moderately challenging, and 72% communication with students. In Finland, ergonomics was third most important challenge, and in Italy ergonomics and increased workload had the same importance in %.

In Romania, even 88% and in Poland 80% considered the engagement of students during lessons significantly or moderately challenging. In these countries, also the increased workload due to organisation of online teaching was considered more challenging than on average (Poland 84% and Romania 82%).

Altogether 50 respondents explained the challenges or described their situation in more detail. The workload was increased in the beginning of the online teaching period because of a very short notice; content and delivery development had to be changed when the course was already ongoing and planned to be of traditional classroom type. Also, it took some time that the students found their way to remote teaching. Some students requested personal answers even when guidance was clearly given. Especially non-regularly attending students caused more efforts for the teachers related to evaluation rules and examination requirements.

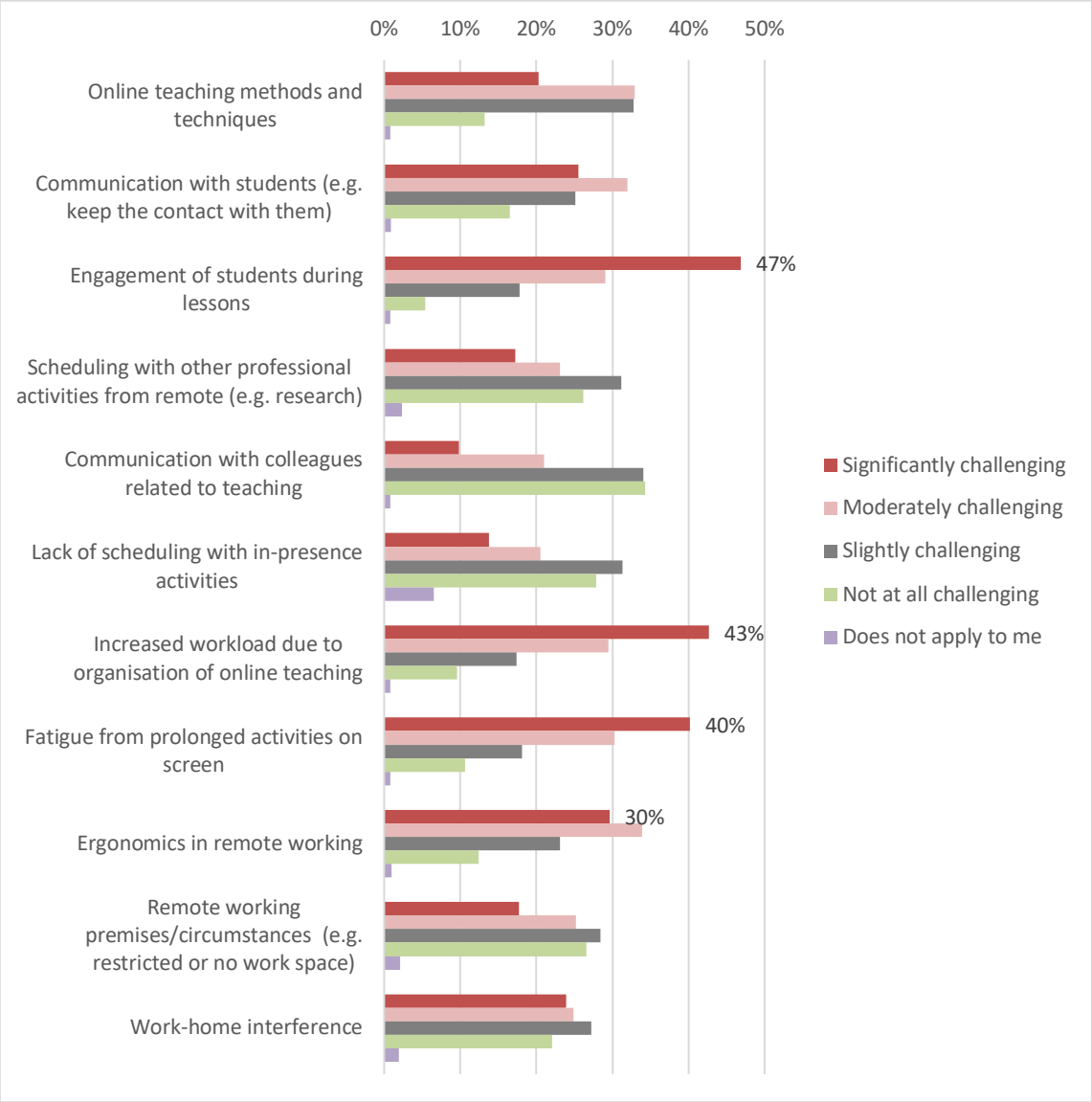

*Figure 7. Challenges with online teaching during the sudden shift to online teaching (2020**).** Total N=524. Croatia, N=101, Finland, N=75, Italy, N=57, Poland, N=144, Romania, N=67, Slovenia, N=80.*

Challenges related to ICT

Challenges related to ICT accessibility or internet connection were not considered particularly difficult while the sudden shift to online teaching took place. In general, the access to internet is good in all the countries examined. Issues which were most often reported causing significant or some challenges were the conduction of examinations (52%), software and applications (40%) and verifying student identity (36%) (Figure 8). The conduction of examinations was considered significantly challenging by over 20% of the respondents and 13% considered verifying student identity significantly challenging. In general, lack of licenses was not a problem for the respondents.

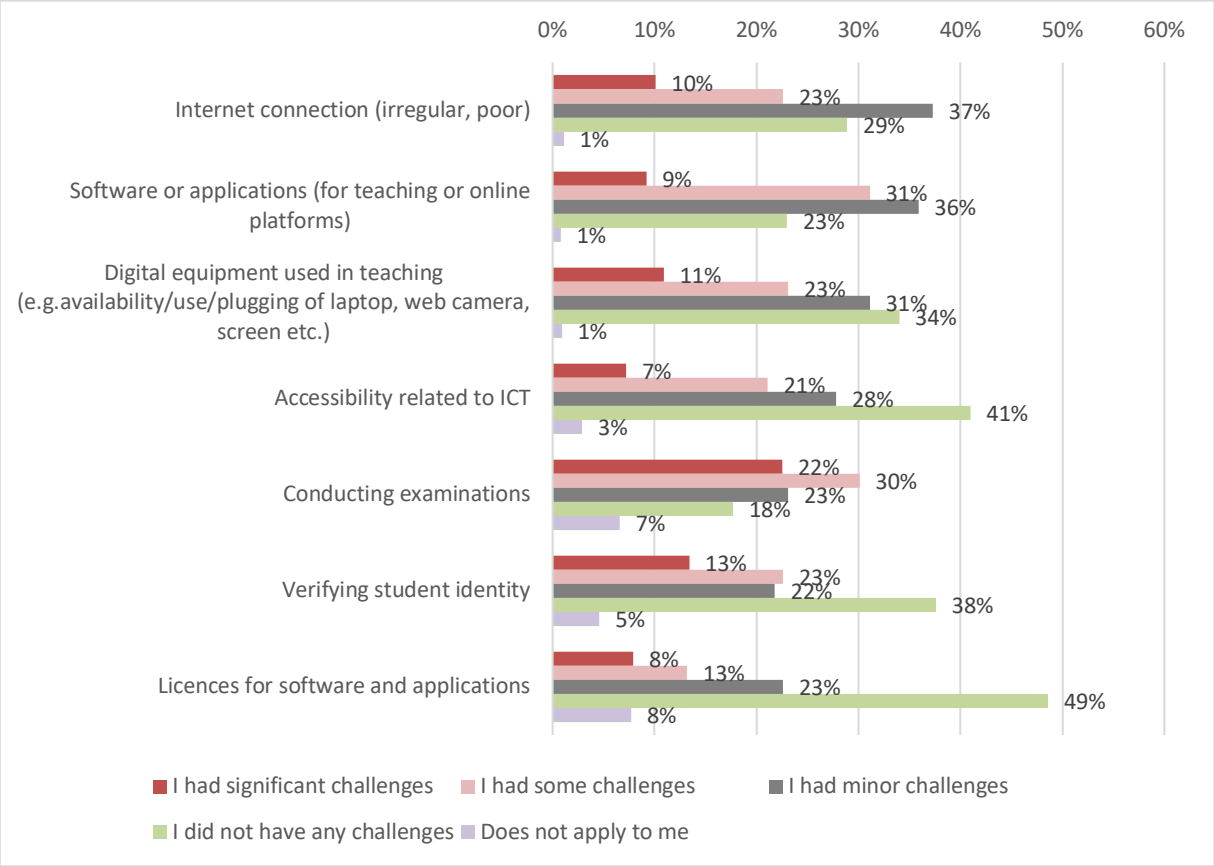

Figure 8. Challenges related to ICT. N=525, Croatia, N=102, Finland, N=75, Italy, N=57, Poland, N=144, Romania, N=67, Slovenia, N=80

The highest percentage on significant or some challenges concerning **conducting examinations** was reported by Romanian respondents (67%), followed by Croatian respondents (59%). In Italy and Slovenia, the responding figure was 57% and in Poland 52%. Teachers commented that conducting exams was the most critical, "*students came well-prepared for cheating during online exams*". Some lecturers decided to change the form of exams and tests from written to oral, others introduced a series of micro-projects instead of the former big projects. Alternative ways to comply with this challenge were designed.

Concerning **verifying student identity**, the highest amount of those who had significant or some challenges was in Romania (53%), followed by Croatia (45%) and Poland (40%). One way to solve the challenge was identity checking, for example with a solution provided by Moodle or students showing their students' cards before an exam. Also, students were monitored during exams with one or more cameras.

5.2. Solving the challenges in the sudden shift to online teaching

Minority of the respondents (3%) reported that they could not solve the most critical challenges at all (Table 8). In addition to choosing the options, as many as 249 examples were presented on overcoming the most critical challenges, including those related to ICT. The most common option was finding information online, selected by 64% of the respondents. Online information may have included also advice by the university. Almost the same amount, 63% of all the respondents, in Finland even 84% had received help from their colleagues. For example, in Poland, teachers organized support groups which also brought together people from other departments and practiced before classes how to conduct them, focusing mainly on technical issues.

Teachers also had advice and assistance from the university (49%), their faculty or department (46%) and from ICT department (40%). The share of those who received advice from their ICT department was the lowest in Italy (16%) and in Poland (32%), and highest in Romania (60%) and Finland (54%). Although support was available, due to the sudden shift, with a little time for preparation and planning, the ICT departments were often overloaded. Respondents from Poland mentioned that there had been considerable delays or even misunderstanding of the teachers' plight. Support for teachers by both university and ICT departments was also described as inconsistent and chaotic by part of the respondents. Many respondents spent much time to make oneself familiar with the tools. Support was received from family members and friends, too.

Advice was available in the intranet; for example, videos, written guidelines, instructions and ideas for teaching online, as well as advice on how to use online applications. The challenges were discussed at departmental meetings and via e-mail lists. More resources and personnel for ICT was organized. At the University of Turku, a "Teachers support event" (Opetuki) was started. While the use of electronic examination rooms was common in Finland, during the pandemic there were restrictions in using them. This was solved e.g. by changing the traditional examination to a broader final assignment which defined the grading of the course. Also, possibility to use the Language Center was given.

Equipment and devices were purchased for the teachers by the universities, but teachers themselves invested in new and better-quality internet connections, devices (webcam, laptop, graphic table to draw equations) and software, also to avoid waiting to get devices from the university. Even though the internet works sufficiently well, there are locations or regions where the connections are poor or do not work properly. *"I had to dig a 35 m long canal 0.5 m deep in order to get the fiber optics cable to my premises. Once done, my internet provider*

laid the cable and I moved from ADLS to FO". Another problem mentioned was several new applications which are operated on different platforms.

Table 8. How did you manage to overcome the most critical challenge(s)? N=524. Croatia N=102, Finland N=74, Italy N=57, Poland N=144, Romania N=67, Slovenia N=80

	Croatia	**Finland**	**Italy**	**Poland**	**Romania**	**Slovenia**	**All respondents**
I received advice and assistance from the university	41 %	54 %	44 %	54 %	66 %	33 %	49%
I received advice and assistance from my faculty or department	44 %	54 %	35 %	40 %	60 %	49 %	46%
I received advice and assistance from ICT department	45 %	54 %	16 %	32 %	60 %	39 %	40%
I had help from my colleagues	64 %	84 %	61 %	59 %	55 %	60 %	63%
I received advice and assistance from an association or similar	5 %	3 %	4 %	4 %	0 %	6 %	4%
I had help from other person, e.g. family member, friend	25 %	24 %	19 %	33 %	16 %	31 %	24%
I found myself information online etc.	63 %	61 %	61 %	74 %	49 %	65 %	64%
I could not solve the challenges	2 %	5 %	4 %	4 %	1 %	4 %	3%

Some of the academic staff who did not have access to tools necessary for teaching, such as a whiteboard, overcame that problem by transmitting the view from a smartphone camera with paper. Setting appropriate resolution and installing necessary drivers allowed them to e.g. teach mathematics during the courses as in the classroom. An iPad was used as whiteboard when conducting tutorials, as the traditional whiteboard camera could not capture a sharp picture of what the teacher was writing/drawing. In another case, mirroring of the whiteboard in the room through a camera worked. Some teachers, who for various reasons had difficulties in speaking online, recorded their classes and made them available to students via educational portals and platforms. In Romania, the universities provided rooms or halls with specific equipment. Finding a quiet space for conducting online teachings was a problem, and sometimes teachers needed to improvise.

The results and replies of teachers indicate that the support for teachers in online teaching may be on a different level in the universities, between the faculties and departments and in between different countries. In addition, the division of work related to the support seems to differ between universities. The responsibility may be centralized or on different faculties and departments. These issues were not studied nor compared in more detail in this survey.

Some respondents had themselves a positive opinion on online teaching, but they thought that everyone else (including students) were supposed to have enormous problems. Colleagues were complaining about everything. While they were content about applications such as Zoom, the colleagues were missing the students. Teachers mentioned advantages, such as possibility to enjoy being at the cottage and enjoy all the four seasons. The long sessions with screen were compensated with physical activities and staying more in the nature in the free time.

Some respondents were against online teaching. One respondent from Finland noted that distance learning is not at all part of science and university teaching, instead it is well suitable for secondary schools. Even though activation methods were used, one respondent says *"I was not able to get the same quality discussions with students".*

6. Online teaching during the pandemic

Concerning the current situation (when the survey was carried out), the respondents could indicate various options related to their venue of teaching. The share of teaching online, but conducted from the premises of the university increased remarkably in all the countries except in Finland. The option of both online and in-presence lessons became also common, in particular in Italy (50%); during May-July 2021 classes were held both in presence and online (See Table 9).

Table 9. Where do you teach online currently? N=521. Croatia N=101, Finland N=75, Italy N=54, Poland N=143, Romania N=67, Slovenia N=80

	Croatia	**Finland**	**Italy**	**Poland**	**Romania**	**Slovenia**
I teach remotely from home or cottage	67 %	89 %	39 %	80 %	78 %	55 %
I teach online from the premises of the university	34 %	7 %	31 %	27 %	34 %	33 %
I have both online and in-presence lessons	19 %	13 %	50 %	11 %	10 %	23 %
I have mostly in-presence lessons	7 %	3 %	6 %	1 %	0 %	5 %
Another location	1 %	4 %	4 %	0 %	0 %	5 %

Universities adopted different kinds of hybrid systems. Teaching in presence with live streaming took place: having both students in a class and at home. Restrictions and guidance were applied for teaching in-presence. For example, in Italy, in order to prevent the risk of contagion the capacity of the classrooms was reduced, and students who wanted to attend classes in presence had to reserve their seats. Only students with a green pass where able to attend classes in presence.

Sometimes decisions on in-presence or online teaching were taken with a short notice. In Romania, University "1 Decembrie 1918" of Alba Iulia began the academic year 2021/2022 on October 4 in a hybrid system, however, due to a worsened epidemiological situation, all courses had to be moved online from 25 October 2021.

In Poland, the University of Gdansk made a decision on teaching in a hybrid mode: stationary and remote, with the predominance of the stationary form. The lectures in large groups would be conducted remotely and the decision was up to the deans of the faculties. The aim is to ensure 25% of the courses conducted in-person for students with a general academic profile of ECTS credits allocated to the study programme and 50% of the number of ECTS credits allocated to the curriculum for degree programs with a practical profile.

Concerning the autumn semester in 2021, the aim of the University of Turku was to offer more contact teaching for students, beginning from the first period of the academic year. However, it was advised that mass lectures do not have to be changed into contact teaching for the rest of the first period. The aim was to restore students' social contacts and safe physical communality. At the University of Turku, practical arrangements are according to the so-called traffic light model. During a green light stage, contact teaching is organised as much as possible by all faculties. The University's instructions concern hygiene, safe distance and face masks, as well as facilities, such as the number of people in lessons or public events. The instructions are updated regularly.

6.1. Challenges with online teaching during the pandemic

While online teaching had been ongoing for one year, the teachers were asked for the challenges during the spring term 2021. Due to the extended time for answering the questionnaire, the replies reflect the situation in the autumn term of 2021, too. The main challenges were the same compared with the time of the sudden shift to online teaching, but in slightly different order. The engagement of students was still considered the most challenging, but the second most difficult challenge was fatigue from working on the screen and increased workload the third. In a year, the situation improved and the challenges were considered less severe (see Figure 9 and Table 10).

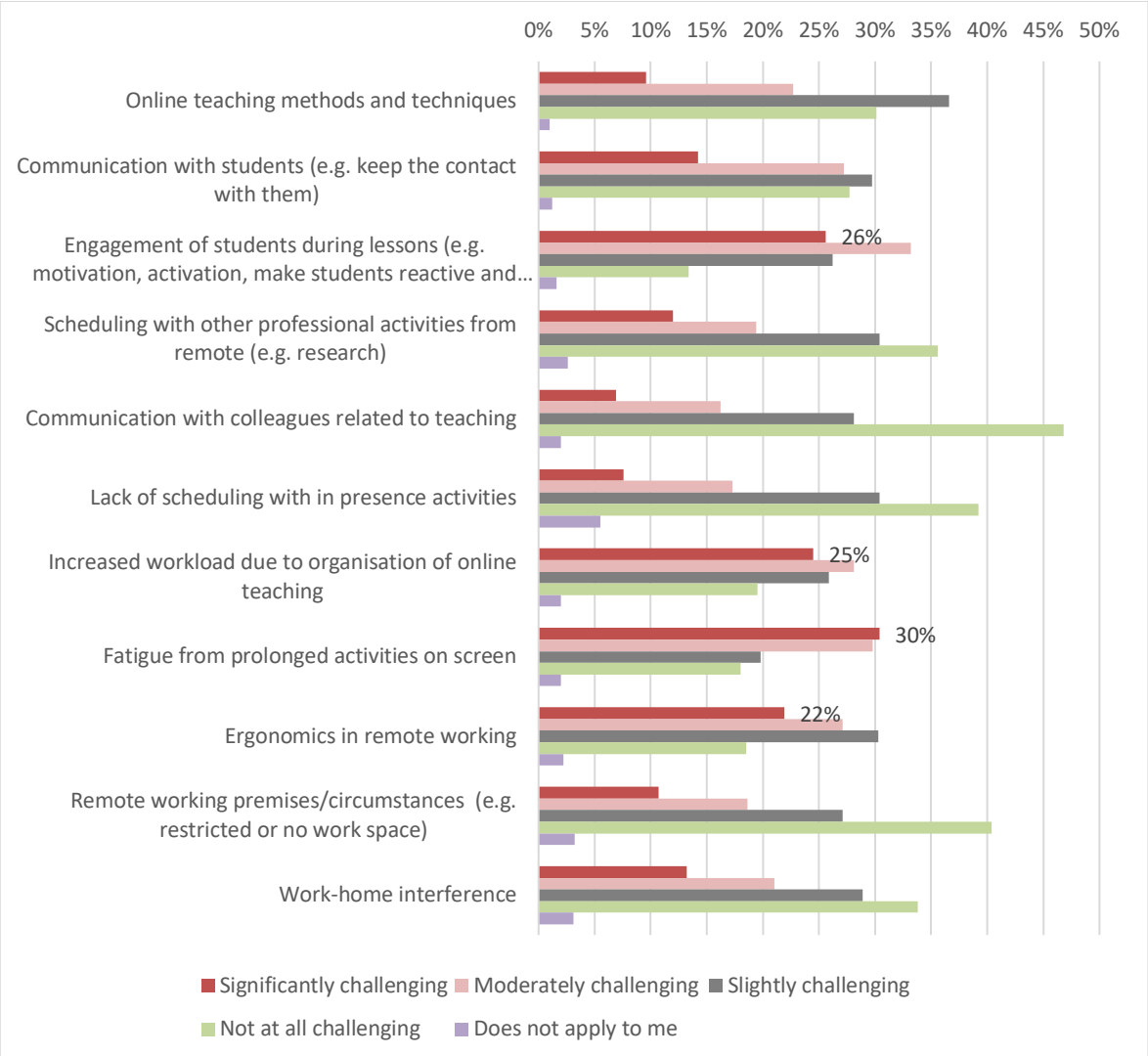

Figure 9. Challenges with online teaching during the pandemic. Total N=515. Croatia, N=102, Finland, N=74, Italy, N=55, Poland, N=140, Romania, N=67, Slovenia, N=77.

Only a couple of new challenges were added by the respondents. One respondent worried about students´ attitudes and well-being during the prolonged remote teaching. *"For those who have self-efficacy and good (independent) learning skills, working remotely suits well. Still,*

they miss group discussions and social activities." This is also described by another respondent: "*social interaction is never the same online, especially if the class is big".* One respondent's opinion is that online method is not suitable for university teaching.

Table 10. Comparison - challenges with online teaching in spring 2020 (N=524) and in 2021 (N=515).

Significant/moderately challenging	**Spring 2020**	**Spring 2021**
Engagement of students during lessons (e.g. motivation, activation, make students reactive and mentally focused)	76%	59%
Increased workload due to organisation of online teaching	72 %	53%
Fatigue from prolonged activities on screen	71 %	60%
Ergonomics in remote working	64 %	49%

Challenges related to ICT

During the pandemic, the challenges related to ICT became even scarcer (Figure 10). Challenges remained in conducting examinations: out of the respondents 38% faced significant or some challenges in conducting examinations compared with 52% in the spring of 2020 (Table 11).

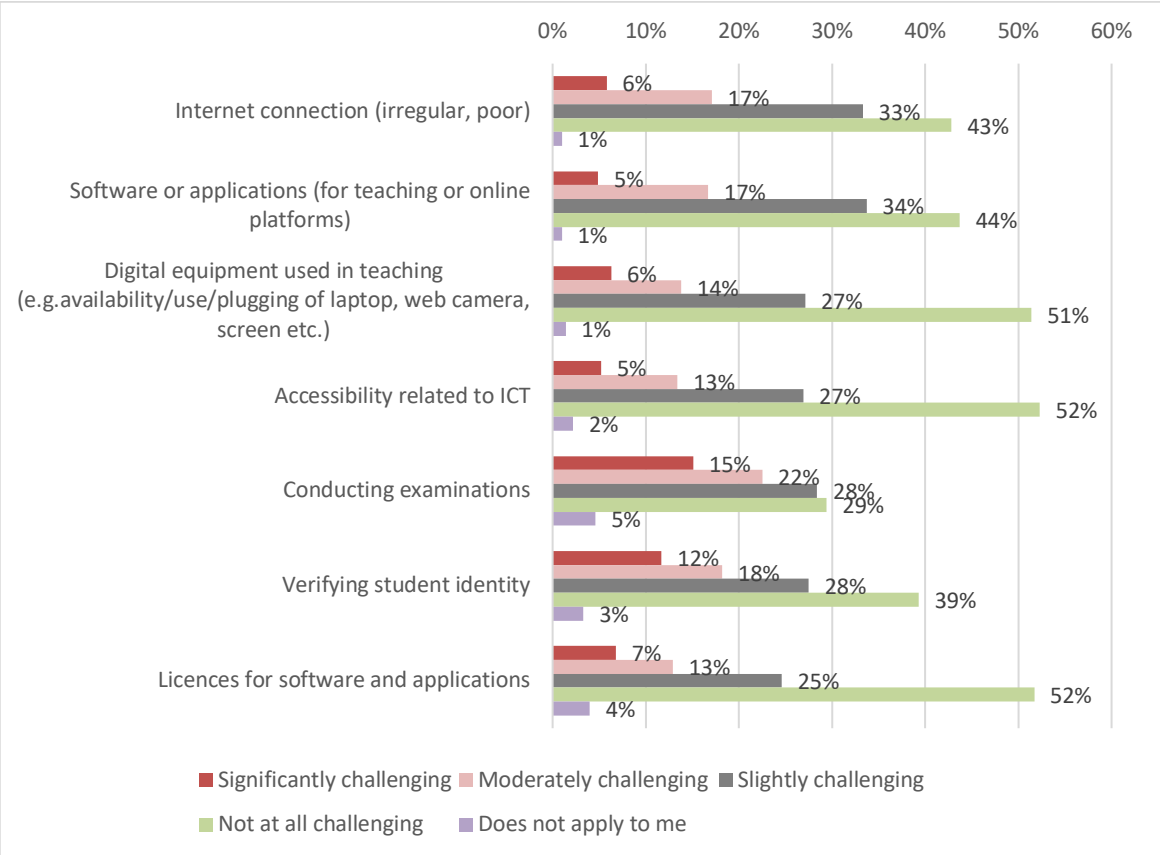

Figure 10. Challenges related to ICT during pandemic. Total N=517. Croatia, N=102, Finland, N=74, Italy, N=56, Poland, N=141, Romania, N=6, Slovenia, N=78.

Other recognized challenges posed to teachers and students by the use of new technologies include securing intellectual property rights to the courses created and made available to students, and increased workload for both students and teachers. Maintaining student attention is also an important issue, due to the possibility of other online distractions. It is necessary to develop official strategies for the use of these tools and acquisition of commercial digital tools which have more features than the free versions.

Table 11. Conducting examinations

Conducting examinations	**I had significant challenges**		**I had some challenges**		**I had minor challenges**		**I did not have any challenges**		**Does not apply to me**	
	2020	**2021**	**2020**	**2021**	**2020**	**2021**	**2020**	**2021**	**2020**	**2021**
Croatia	29 %	22 %	31 %	23 %	22 %	25 %	13 %	25 %	6 %	4 %
Finland	5 %	6 %	19 %	16 %	20 %	17 %	31 %	44 %	25 %	17 %
Italy	32 %	20 %	25 %	14 %	29 %	30 %	14 %	34 %	0 %	2 %
Poland	20 %	16 %	32 %	21 %	26 %	36 %	17 %	24 %	5 %	3 %
Romania	29 %	14 %	38 %	37 %	14 %	25 %	20 %	25 %	0 %	0 %
Slovenia	23 %	11 %	34 %	24 %	27 %	31 %	13 %	32 %	3 %	3 %
All respondents	22%	15%	30%	22%	23%	28%	18%	29%	7%	5%

Verifying student identity was reported moderately challenging for 18% of all the respondents in 2021 referred to 23% in the spring of 2020 (*Table 12*).

Table 12. Verifying student identity

Verifying student identity	**I had significant challenges**		**I had some challenges**		**I had minor challenges**		**I did not have any challenges**		**Does not apply to me**	
	2020	**2021**	**2020**	**2021**	**2020**	**2021**	**2020**	**2021**	**2020**	**2021**
Croatia	15 %	13 %	30 %	19 %	15 %	26 %	38 %	41 %	3 %	0 %
Finland	3 %	4 %	12 %	6 %	13 %	26 %	56 %	46 %	16 %	19 %
Italy	12 %	9 %	16 %	11 %	32 %	21 %	40 %	57 %	0 %	2 %
Poland	18 %	17 %	22 %	19 %	27 %	32 %	31 %	31 %	2 %	1 %
Romania	21 %	14 %	32 %	34 %	18 %	28 %	27 %	25 %	1 %	0 %
Slovenia	8 %	6 %	23 %	19 %	25 %	26 %	38 %	45 %	6 %	3 %
All respondents	**13%**	**12%**	**23%**	**18%**	**22%**	**28%**	**38%**	**39%**	**5%**	**3%**

6.2. The challenges related to teaching online certain skills and contents

The main challenges were identified in teaching online general skills (ability to work independently, problem solving skills, data acquisition and data production skills) and learning and study skills (how to prepare for lectures, how to read and write academic texts), which were both considered significantly or moderately challenging by 55 % of all the respondents

(Figure 11). Content related with laboratory (33%) or field work (34%) was most often considered as significantly challenging.

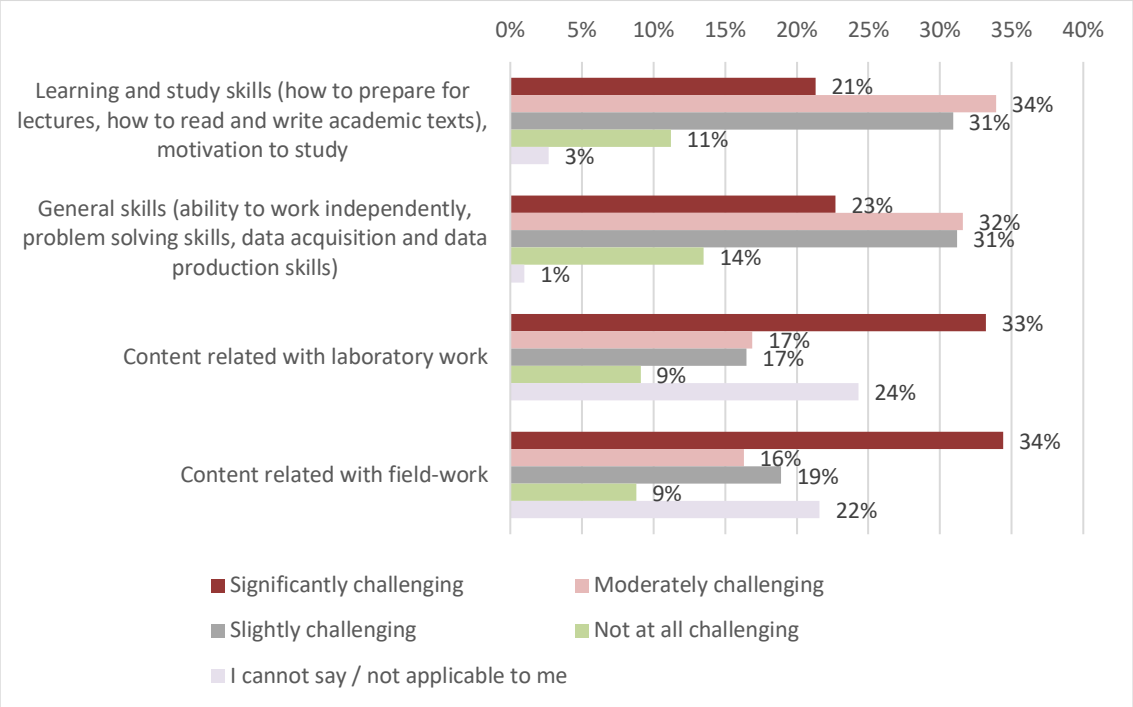

Figure 11. How challenging is it to teach online the following skills and contents for the students? N=516, Croatia, N=101, Finland, N=74, Italy, N=55, Poland, N=141, Romania, N=67, Slovenia, N=78.

Challenges were faced in teaching of several subjects:

- Accounting, economics, international business, geography, history, programming, mathematics and medicine
- Engineering, technical drawing, laboratory activities, linguistics, improving foreign language speaking skills, sports
- Quantitative methods, the philosophy of science, psychology of learning

6.3. Online teaching methods during the pandemic

There were significantly more responses -to the question on online teaching methods during the pandemic than concerning the pre-pandemic time. Almost all the respondents, 516 replied to this question. Nearly all of them used presentations in their teaching (see the Figure 12). Use of online discussion in pairs or in working groups during the lesson/lecture (synchronously) increased most, by 41%, and of all the respondents 53% used this method during the pandemic. Asynchronous online discussion was organized by 41% of the respondents, which indicates a 19% increase. There was also a clear increase, 29% in the use of online whiteboard. Use of polls, games, and videos or animations remained nearly on the same level as before the pandemic.

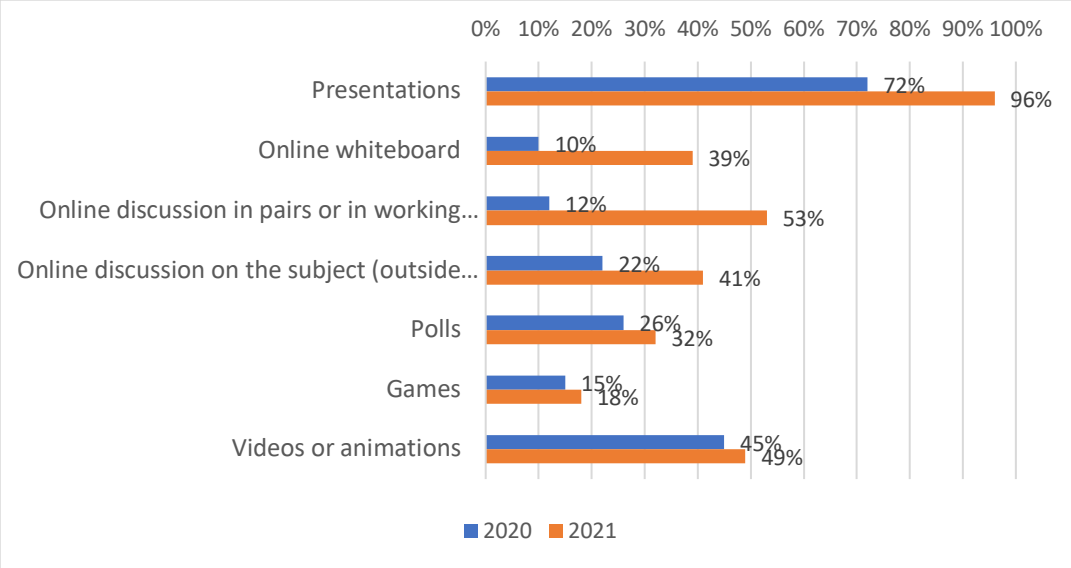

Figure 12. Comparison: online teaching methods before and during the pandemic. Before the pandemic: Total N=439, Croatia, N=95, Finland, N=66, Italy, N=38, Poland, N=112, Romania, N=61, Slovenia, N=67. During pandemic: Total N=516, Croatia, N=100, Finland, N=73, Italy, N=56, Poland, N=141, Romania, N=67, Slovenia, N=79

Examples on online teaching methods

The respondents gave additional examples (N=31) on their online teaching methods. New methods were:

- Personal guidance, e.g. answering students´ questions by email.
- Text and schemes with comments in real time.
- Jamboard, interactive whiteboard developed by Google.
- Online view of math written on physical paper.
- Blackboard in classroom with video camera.
- Simulations.
- 3D software for modelling, texturing, rendering etc. always live.
- Virtual laboratory activity in Matlab/Simscape.
- Strict timetables also with online assignments.
- Practical activities with software packages.
- Q & A sessions with a coffee online.

7. Best practices related to online teaching

The best practices collected with the questionnaire are thematically grouped together and summarized below. Also, discussions at the Multiplier event workshops are referred to (see Annex 7). A project deliverable "Teacher stories" will include more elaboration in these practices and methods, with the results of the interviews of teachers. Altogether, 213 out of 525 respondents described successful practices or useful methods they had adopted to improve teaching online (regarding communication with students, student engagement, activating tools, course materials, assessment methods, online exams etc.). Around half of the respondents from Finland, Poland and Romania mentioned methods and practices that they consider successful and effective. From Croatia and Slovenia, nearly third of the respondents and from Italy, from 37% provided examples.

The examples are grouped in the following themes: 1) Good preparation in advance and explicit instructions for students 2) Preparing and sharing materials for lessons/lectures in advance 3) Collaboration with colleagues 4) Methods in order to activate and engage students with platform-related solutions, polls 5) Scheduling of lessons and lectures 6) More interactive sessions, practice orientation 7) Working in groups and in pairs 8) Communication with students 9) Students' communication with each other 10) Verification of knowledge and evaluation.

Various IT tools were mentioned for activating students. An extensive review is available in Technical Platform Booklet of InCompEdu IO2. There is enormous potential in using IT programs, such as pools and games, to engage and activate students. Benefits include learning flexibility and adding interactivity to lessons.

1. Good preparation in advance and explicit instructions for students

- Information is communicated for all with multiple channels and tools; it is visualized, clear and comprehensive. Answers to a question will be passed on the whole course to avoid many similar questions.
- All digital tools are first learned together so that everyone has an equal opportunity to learn.
- Teachers should ensure that their students have proper internet connections. Students should not need to download and use programs, or to acquire equipment that are not readily available. Online courses should be supported by different browsers and operating systems, and they should be accessible using available mobile phones, computers and other equipment needed for them.

2. Preparing and sharing materials for lessons/lectures in advance

- Use of Flipped learning approach. Clear instructions are needed, as well as extra time to create collaborative workspaces and activities.
- Sharing the course material via Moodle, different formats (PowerPoints, pdf, videos, course literature, audio-video recordings).

- Preparation of course contents in the form of printable lectures, sometimes enriched by added presentations. Providing course materials in different formats (ppt, pdf, audio-video recordings).
- Online forum for discussion and collaboration, several Moodle integrated tools and other tools for formative knowledge verification, creating collaborative workspace and activities.
- Providing extra material for interactions, such as reading and debate on current topics, videos.
- Sending discussion questions/topics in advance for the students. Waiting longer when expecting responses from students.
- Pre-recorded lectures with a script if time allows or with notes. Lectures can be edited into smaller pieces.

3. Collaboration with colleagues

- Sharing tips with colleagues and testing the solutions together.
- Teaching or lecturing with a colleague, e.g. one can check the chat while the other one is talking and there are more possibilities for a dialogue.

4. Methods to activate and engage students with platform-related solutions, polls

- Building up a lecture so that there are different moments to activate students with different tools (Breakout rooms, polls, Flinga, etc.).
- Implementation of even short assignments to be completed individually or in groups, but using new tools such as Mentimeter, Worldwall.
- Zoom breakout rooms, Teams for group discussions or for small group discussions. Guidance and tasks need to be clear, pre-set topics. Discussion first in small groups and then each group brings their joint ideas and conclusions to the main room. Alternatively, students discuss and present in the breakout rooms between themselves.
- Breakout rooms can be used also for working in pairs, finding solutions to specific problems, teamwork, feedback, self-evaluation.
- The use of a shared online whiteboard (Miro, Jamboard) on which students can work in real time in groups - at the same time seeing the work of their peers; and on which it is possible to post different types of materials, including videos, photos, links to websites.
- Use of different videos on Youtube or other websites to maintain the attention of students and make sure they will get the information in a funny or animated way.
- Combining written and video information on Moodle with clear Moodle pages, encouraging students to be in contact.
- Discord is a very popular and useful tool amongst local students.
- Improvement of the visuality of presentations: e.g. more intense use of audio-video resources in order to stimulate the formulation of opinions; PowerPoint presentations, teaching videos inside presentation, Kahoot game in the end.
- Webropol for quizzes, Moodle is used online exams and quizzes.
- Polls used with larger groups. All participants can attend and it is fruitful to go through the answers with the group. Using polls to find out the status of the course work and the

challenges students are facing in it. It is then easier to focus on the most helpful topics for the group.
- Polls followed by explanations, useful remarks, personal attitude.
- Polls done with Kahoot and awarding points given in seminars for the winners, or in Moodle to get some feedback or to make decisions where students' voice counts.

5. Scheduling of lessons and lectures
- *"I have given up the 90-minute gold standard for lectures and instead I produce shorter pieces of video material".*
- NanoLearning – dividing lectures into small portions.
- More breaks during the lessons than in on-site teaching.

6. More interactive sessions, practice orientation
- Starting lectures with a news review, showing news items and online video relevant to the topic of the day.
- Shifting from teaching knowledge to teaching skills. Developing a warm-up method project work in groups.
- Lectures should be as concise as possible, conveying only the most important facts. Students should then be allowed time to critically think about the topic of the lecture, and to research and present key conclusions – active involvement of the students in the teaching process.
- Less theory and more applied activities (during the lessons).
- Videos on the theory and practical execution of lab work which students need to see and understand to be able to execute lab work. Less introduction and instruction thus needed in the lab before actual work, thus more time left for real lab work.
- Virtual laboratories.
- The freedom and variation of learning environments, in art education and visual environmental education.
- Gamification, visual thinking. Gamification of some practical activities.
- Substituting some activities with asynchronous ones, which students can watch multiple times if needed.
- Small exercises during lectures, some small lectures during exercises.
- Chat is good for students who have great ideas but are usually quiet during discussions or debates.
- Random selection of a student to continue an idea during the course.
- Asking students more questions during the lecture, just to see if they are following etc.
- Frequently-asked questions, discussions.
- The Q&A kept the attention of the students alive, by involving them constantly even with plenary sessions and asking them to keep the camera on, without hiding behind it.
- A variety of methods in assignments that students do on their own. Letting them search for information online, that way they know how and where to find it themselves.
- Learning new things and angles from student presentations, learning immediate feedback-giving skills.

7) Working in groups, small groups and in pairs

- Working in groups using a Metaplan technique. Each group has its own channel where it collects materials, partial works and prepares a presentation of a solution to the problem set at the beginning of the class.
- Working groups organized on different channels/classrooms.
- Discussions in pairs, groups, developing new assessment methods - reports on real-life problems, etc.
- Moderators and roles for the students in the working groups, extra points for active participation.

8) Communication with students

Best practices in communicating with students also point to social aspects, possibilities to give the students possibilities to ask questions or speak about everyday things and challenges during the pandemic: various means to allow discussion of extracurricular matters.

- Each group has their own private channel in their course in Teams, where they can tag the teacher when they have questions and send Teams messages, which is a huge improvement in communication over Moodle messages and emails.
- Personal meetings with one or two students; good discussions with the students about their situation, hobbies, family, health etc.
- Remaining available (on Zoom etc.) after each online lecture or exam.
- Offering a weekly one-on-one 'office hour' on Zoom for anyone who needs information or just someone to talk to; a coffee break with teachers in Zoom.
- Keeping permanent contact with the students and engaging them in different activities.
- Providing assistance to students when needed and longer availability via e-mail.
- Some (not many) students prefer help on the phone or off camera.
- Asking students once a week, using an anonymous query, how many hours each student has given for the course. Numbers speak for themselves, when presented with the optimal number of hours each should spend with the coursework.

9) Students' communication with each other

- Students helped much their fellow students. They created online groups outside of the lectures and studied together.
- In group works, the students shared the groups so that each group included students with different age and courses, to improve learning experience and students could learn to know each other.

10) Verification of knowledge, evaluation

- Change of emphasis from final, summative, theoretical evaluation to continuous, formative, applied evaluation.
- Giving greater importance to ongoing evaluation, assessment during the whole course.
- Learning diary.
- Case study templates and review forms for individual self-assessment of the results of the case study, displaying the revised individual examples of the concept of the thesis, chapters of the thesis, research tools, etc. and discussing them in the group forum.

- Competitions to check whether students have read the texts for the classes.
- Changes in students' evaluation: resignation from the end-of-course colloquium (identical solutions to tasks, identical mistakes) and introduction of partial marks instead: students performed various tasks/work in a group on the basis of the knowledge acquired or organized during the classes, then presented them and received points.
- Personalized written feedback on the activities, homework or exams, with additional verbal communication session.
- Completing the evaluation with forms of self-evaluation and inter-evaluation.
- Asking students to present their works online, to the other students. Assessment of their works and their involvement with additional points which contributed to the final mark.
- Self-assessment tests after each lecture, self-auditory (pre)tests.
- Quick answers quiz, consisting of many very short questions and encompassing the whole content of the lecture.
- Deciding on only oral online exams - as this diminishes the problem of students' identity and cheating, but it takes a lot of time (e.g. one week).
- Adopting a secure browser for exams that does not allow student to change windows during the exam.
- Designing online tests so that students were not able to return to a question.

8. Future plans

8.1. Teachers' plans on using online teaching

Most of the respondents planned to use online teaching as an additional method to traditional classes (blended learning). The share of those who would like to practice online teaching in the future either from home or from the university premises, or both, was the highest in Finland (80%), followed by Romania (70%) and Poland (66%) (Figure 13).

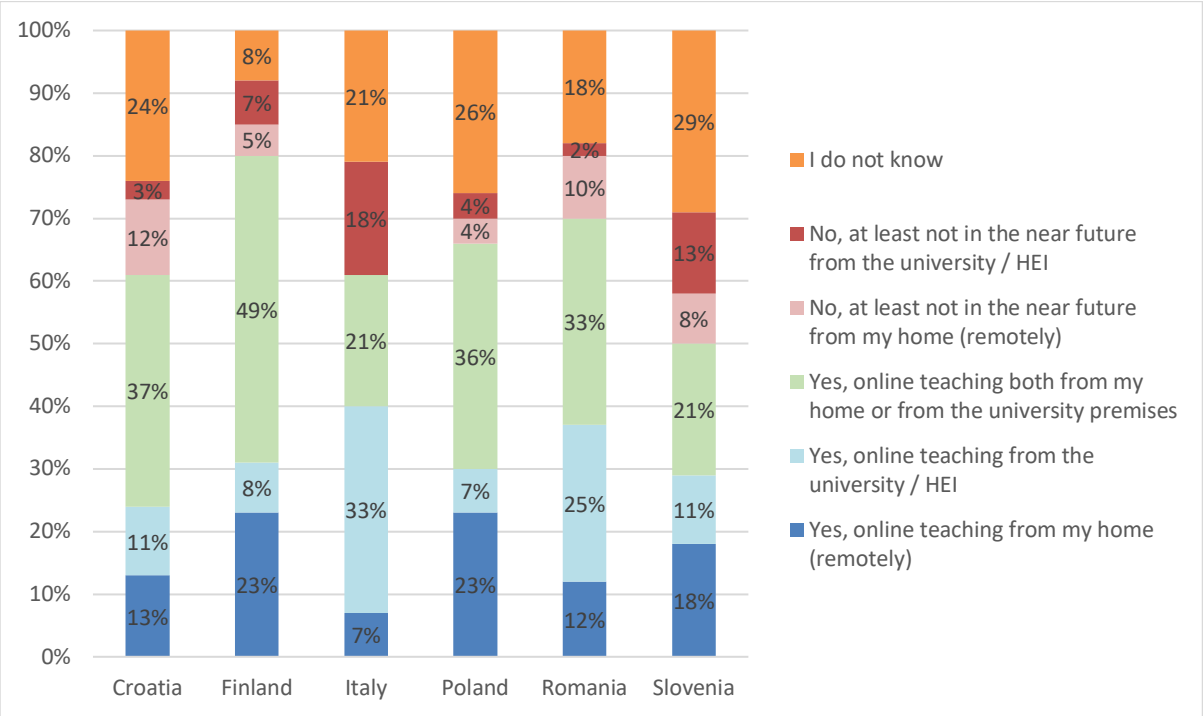

Figure 13. Are you planning to use online teaching as additional method to your traditional classes (blended learning)? N=521, Croatia N=102, Finland, N=75, Italy, N=57, Poland, N=141, Romania, N=67, Slovenia, N=79

The highest share of teachers who would not like to teach online is in Slovenia (21%). Of the Slovenian respondents, 25% reported that their university has no plans for online teaching (Figure 14). Flexibility provided by the hybrid implementation was mentioned, however, in most comments in person activities was preferred. Quite many of the respondents did not know or have plans ready.

The respondents were also asked to estimate how much of their working time they would like to teach online/from remote in the future. Before the Covid-19 pandemic, the estimated share of online teaching was 19% of all respondents, and 34% in the future (Table 13.) In the future, the Romanian teachers would like to teach 41% online, followed by Finland (40%).

Table 13. Estimated share of online teaching before the pandemic and future plans

	Before the COVID-19 pandemic		Future plans	
	n	Average (%)	n	Average (%)
Croatia	69	18 %	74	30 %
Finland	62	24 %	56	40 %
Italy	29	17 %	41	28 %
Poland	102	17 %	111	33 %
Romania	42	22 %	52	41 %
Slovenia	57	15 %	57	31 %
Total	**361**	19 %	**391**	34 %

The reasons for the different opinions on online teaching were examined in more detail, with questions on personal preferences and on the university related issues. Because of their personal preferences, 56% of the Finnish respondents would like to increase the share of online teaching, followed by Romania (54%) and Poland (50%) (Figure 14).

In Croatia, the situation related to personal preferences was quite even: 40% of the respondents would not and 39% would like to increase the share of online teaching.

In Italy, the share of those who would not like to increase the share of online teaching was the highest, 43%, whereas 27% would like to increase that for personal reasons. 14% of the respondents there would like to teach remotely from home, but expected that might not be allowed by the university.

The respondents also pondered that remote teaching from home might not be allowed. In Slovenia, this option was chosen by 20%, in Poland by 18% and in Romania by 17% of the respondents. In Finland, only 4% chose this option. The Polish respondents emphasized that the continuance of remote classes will depend on the University's standpoint on this matter, and students' attitude is reluctant.

Otherwise, there was a moderate share of respondents who reported that there would not be support provided by the university, in general or methodologically. The share of those who chose these options remained under 12%. The lack of classrooms with video conferencing equipment in their university was reported by minor part of the respondents.

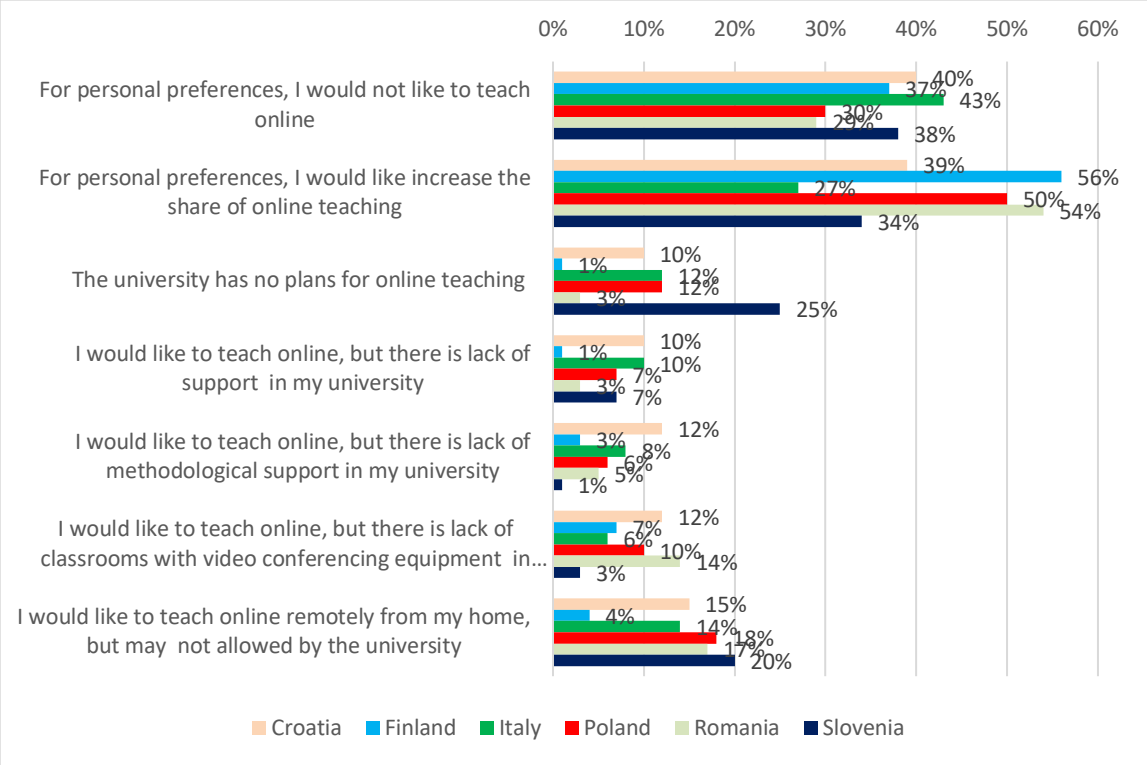

Figure 14. Please give us reasons for your choise. N=483, Croatia, N=93, Finland, N=71, Italy, N=49, Poland, N=136, Romania, N=63, Slovenia, N=71

Teachers gave some explanations to their situation and on their plans in the future.

The respondents from Croatia stated that in the future they would use online teaching tools mostly to share the teaching materials and videos of lectures, to communicate with students, and to conduct brief self-assessment tests, but not to conduct exams or practical exercises, which they feel should be carried out exclusively in person.

The Finnish respondents pointed out that although one would prefer to teach in person, from the students' point of view remote teaching is more accessible and flexible. It is that situation-wise, as well as for different types of learners. From the point of view of teachers, remote teaching makes working time much more pleasant. The reasons behind for negative view for online teaching mentioned were that it was considered not suitable for university teaching; scholarly and scientifically unprofessional. Another respondent mentioned that it is merely a tool for cutbacks and savings. Some subjects require physical face-to-face communication; e.g. medicine. Physical presence allows for the creativity and situational response better than a virtual situation.

The respondents from Italy have planned to go on using digital tools (EIDUCO, Teams etc), record lectures and make them available for those who cannot be in presence for different reasons. The idea is to put on a blended system, even if a part of the respondents totally disagrees with it, at the moment this is the most affordable option.

The respondents in Poland pointed out to continue with online seminars, tutorials, consultations and lectures, especially for large groups of students. Lectures could be also given partially online or have the form of students 'own work based on materials and tests provided via electronic platforms such as Moodle. The benefits for extramural students were also mentioned. Laboratory classes and exercises could be enriched with the elements of remote working. Blended techniques could be used in laboratory or field classes. Respondents also planned to use materials prepared for online classes during the pandemic, including practical tasks, to conduct **hybrid classes**. In addition, they emphasized further plan to share materials with students online, assign tasks using IT applications and conducting final exams in a hybrid mode (in-presence but using IT applications like Moodle quizzes).

The Romanian teachers intend to continue to use the online platform to manage student homework, provide written feedback and achieve faster communication with students. They want to stimulate the team activity (projects) of the students by using the facilities of the online platforms. In addition, they will use online learning resources to ensure a faster transmission of the additional resources and alternative ways of providing specific learning materials. They want to encourage participation in webinars given by people outside the university. It is better for students that work or at the master courses. The presence is higher online.

The Slovenian respondents mentioned plans on flipped classes and hybrid lectures, in which online teaching could be used for providing the examples of specific cases, with animation and videos. Lectures could be on line, and practicals in presence. Online tools and workspaces/platforms (Moodle) can be used for flipped learning and collaborative assignments, as well as pre-recorded video lectures to replace real-time in presence teaching. Online was also mentioned for use in case of absence due to the fieldwork, illness or attendance of scientific conferences. Online would bring more flexibility, also related to afternoon or evening classes.

Teachers were also asked to assess their proficiency in using online tools and platforms during pandemic (Figure 15.)

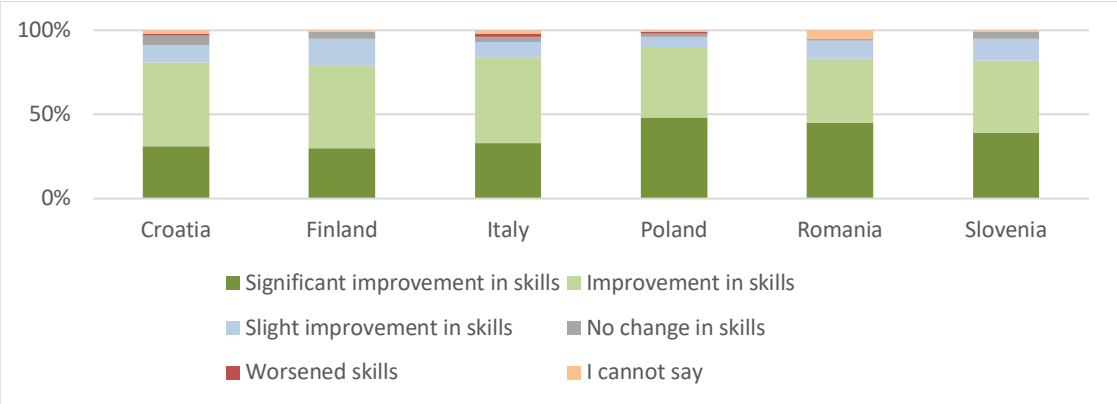

Figure 15. Proficiency in using online tools and platforms. N=512, Croatia, N=97, Finland, N=74, Italy, N=57, Poland, N=139, Romania, N=66, Slovenia, N=79.

The majority of the respondents, out of all respondents 84%, consider that there is improvement in their skills. Significant improvement is reported most by respondents in Poland (48%) and Romania (45%).

8.2. International online courses for students outside of the university

Most of the respondents did not know about offers or plans for students outside of their university (Figure 16). However, there were examples of online courses which are offered to Erasmus students. Also, virtual mobility is provided.

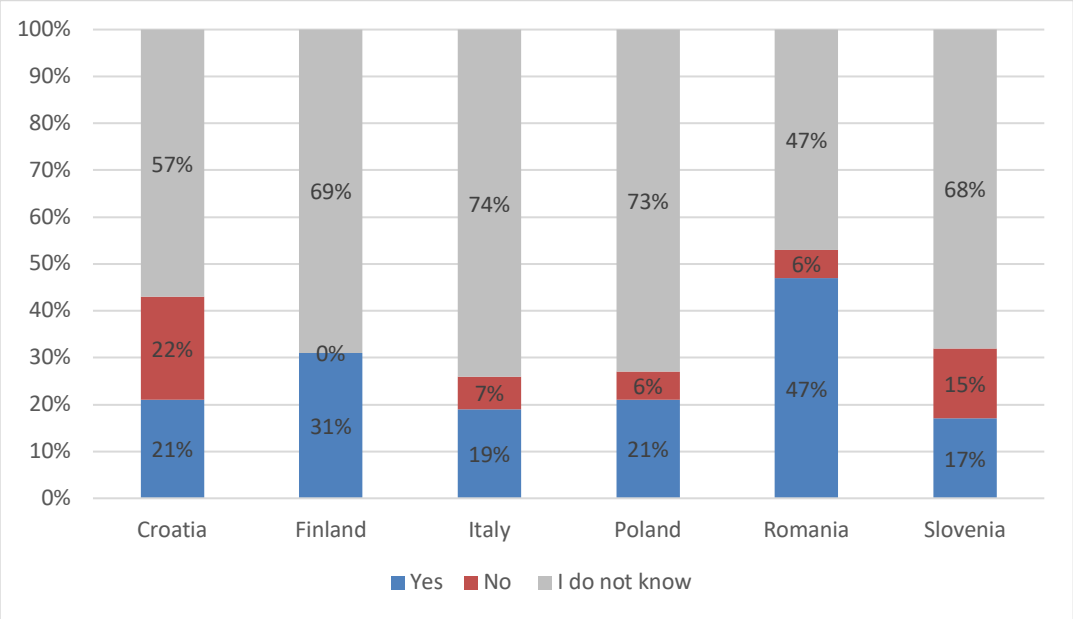

Figure 16. Is your university offering or planning to offer international online courses for students outside of your own university? N=520, Croatia, N=100, Finland, N=75, Italy, N=57, Poland, N=142, Romania, N=66, Slovenia, N=80.

For students in Slovenia and Italy there is a double degree program in Language Sciences online (University of Nova Gorica and Ca'Foscari University in Venice). University of Gdansk is a member of Universities of the Sea (SeaEU) consortium, an alliance of six European and coastal universities from Gdansk, Cadiz, Brest, Kiel, Split and Malta. Tor Vergata University of Rome has a distance learning school with a wide number of courses and opportunities (www.scuolaiad.it). International online courses are offered to YUFE universities and YERUN circuit. The University of Turku offers several international Bachelor's and Master's Degree Programmes. For example, in 2022 two new international Master's degree programmes as a part of the European EC2U Alliance will start: Master's Degree Programme in European Languages, Cultures and Societies in Contact and the Master's Degree Programme in Sustainable Cities and Communities.

9. Conclusions

The sudden and unexpected introduction of online teaching in spring of 2020 brought many challenges to the academic teachers. Preparedness to online teaching was at different level in the countries surveyed. Altogether the share of online teaching was low. Online platforms were used to share teaching materials, but regular teaching online was rare. Even 50% of all respondents in the countries examined had never practiced regular teaching online before the pandemic.

In the survey, various solutions were identified to tackle the main challenges. However, we can notice that some challenges remained, in particular the engagement and activation of students in online teaching. On the other hand, while the online teaching continued, there was a move from transferring of teaching towards more learner-centered solutions. There has been much technology driven pedagogy. In online mode, it was not possible to lecture only and the learner's view needed to be considered more. Teachers had several good experiences about using online options. For example, group work and students' presentations worked well online. Students' activity was high in research seminars and they were effective.

Subjects with laboratory and field work were considered most challenging to teach online. Another main challenge was conducting the exams and verification of knowledge. Methods to evaluate changed and more importance was given to ongoing evaluation and assessment during the whole course. Also, IT solutions were found. As soon as the epidemiologic situation allowed, the exams were done in presence again.

Different kind of activation methods and tools were considered necessary for the well-being of students during the very long period of teaching online. Various means were developed to allow about extracurricular matters with the students, such as coffee breaks online. Students learned to know each other better in online group works and discussions, which was even more important for new students who had no possibilities to meet with each other during the lockdown. For students, there were also benefits and more equal rights, especially for the working and non-resident students, who could benefit from a full didactic with the other students.

However, personal preferences vary on online teaching, and traditions and practices of the universities are different. There are also country-specific differences. Some respondents do not want to teach online and others challenge online teaching and its suitability especially in academic teaching. Both teachers and students note that online discussion platforms do not compensate in-presence peer working.

In the future, the combination of methods and tools, both synchronous and asynchronous activities, creating a blend of traditional online learning styles with newer, more collaborative audio and visual tools may be one solution. Working with a mix of activities makes the content more interesting and exciting, increasing the student engagement with both the teacher and other learners. This is something that may remain in the future.

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Annex I. Report on identified challenges and problems in Croatia

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1. Introduction

With the deterioration of the epidemiological situation caused by the COVID-19 pandemic, the Government of the Republic of Croatia and the National Civil Protection Headquarters of the Republic of Croatia adopted on 16 April 2020 the Decision on the suspension of classes at higher education institutions for the duration of two weeks, which ultimately was extended to the end of the summer semester. All teaching, research, artistic, administrative and other activities were to be continued indirectly, from home, online, via electronic communication and/or telephone, wherever possible. In the case of activities, which a University or its constituents deemed necessary to be conducted in some acceptable form of direct contact due to the institution's strategic interests, all prescribed preventive measures were to be taken. Clinical teaching, laboratory work, and artistic work, that is, activities that cannot be conveyed in an online environment, could also be conducted in direct contact, in compliance with the prescribed epidemiological measures. Each University was to collect and submit, to the Ministry of Science and Education, Declarations from their employees stating that they possess the premises, equipment and tools required for distance teaching. In the case of employees who could not meet the requirements, each Faculty was to secure space for them to work at the Faculty. The constituents of each University could propose platforms and tools for distance learning. The Faculty of Tourism and Hospitality Management of the University of Rijeka proposed teaching via Loomen (Moodle), Adobe Connect or Merlin (Moodle), but left it to the teachers to choose which platform they wanted to use for distance teaching. Accordingly, some teachers chose to use Zoom, Skype, Meet.jit.si or other platforms.

From the very onset of distance learning, teachers were provided with numerous opportunities, through a variety of webinars, to improve their knowledge of online teaching. For example, from March to May 2020, the University Computing Centre (*Sveučilišni računski centar – Srce*), the central infrastructure institution of Croatia's entire research and higher education system, conducted a number of webinars on the followings topics: The Basics of Merlin, Preparing Virtual Lectures, Creating Questions and Tests in Merlin, Grading in Merlin, Education in the Time of Pandemic, Office 365 – OneDrive, Forms, Planner, Sway, and many others.

In the academic year 2020/2021, classes were also primarily conducted based on the online model, but the Merlin (Moodel) system became mandatory for posting teaching materials and for conducting written examinations in all higher education institutions, while the MS Teams system was largely used for carrying out the teaching process. Regarding the academic year 2021/2022, the Croatian Institute of Public Health, at the request of the Croatian Ministry, issued a recommendation for conducting classes at higher education institutions.

According to the recommendation, accredited study programme classes can be conducted in the conventional, direct contact way, through live teaching, in the presence of teachers and students at a higher education institution. By exception, higher education classes can also be carried out in the form of distance learning, if prescribed by the study programme and when required by epidemiological circumstances and the measures of the National Civil Protection Headquarters and/or Local Civil Protection Headquarters.

The University of Rijeka has decided to conduct classes in the academic year 2021/2022 according to a hybrid model, which allows for a total of 40% of the entire study programme to be conducted online and also provides the opportunity of conducting up to 100% of elective course classes online. It is recommended to use online classes primarily for lectures, and on-site classes for all other forms of teaching. All teaching materials and exam literature must be made available via the e-learning system.

2. Methodology

An online survey was conducted from June to September 2021, by sending links to a questionnaire. In the first phase, an email with a survey invitation was sent to the Rector's Office of each of the eight universities in Croatia, asking for the invitation to be forwarded to their constituents. Then, 10 days later, the invitation to participate in the study was sent to the email address of the Dean's Office of every faculty in Croatia, with a request to forward the invitations to all the institution's teachers and associates. In late July, a reminder to respond to the survey was emailed to each Dean's Office. Apart from email, no other distribution channels were used. By 3 September 2021, a total of 102 correctly completed questionnaires were collected. A total of 102 teachers and associates at Universities in Croatia participated in the survey. Regarding age, most of the respondents (73%) belong to the 40-60 age group, and 42%, to the 20-39 age group, while only 2% of the respondents are over the age of 60. Regarding gender, 65% of the respondents are female, and 35%, male. According to their position in the university, 52% of the respondents hold an Established/permanent position; 28%, an Early career position; and 20%, an Intermediate/temporary position.

3. Online teaching before the COVID-19 pandemic

The results of the study indicate that online teaching in Croatia was not present in any significant extent prior to the onset of the COVID-19 epidemic. Prior to the pandemic, most of the respondents (61%) either had never used any of the forms of online teaching or had used them "slightly", while 22% of the respondents reported using online teaching "moderately". Only 4% of the respondents had used online teaching "completely" and 11%, "considerably". Prior to the onset of the epidemic, online teaching tools were primarily used to enable students to access online materials (93%) or recorded videos and lectures (23%), and, to a lesser extent, for oral examinations (5%), live streaming (5%), and other activities such as homework, short self-assessment tests, and discussion forums.

To the question of how often and for what purposes were online teaching tools and platforms used prior to the pandemic, responses indicate that teachers used them first and foremost to share teaching materials, that is, presentations, and other content from lectures. Namely, 51% of the teachers reported using online teaching platforms on a weekly basis to disseminate teaching materials; 11%, on a daily basis; and 17%, on a monthly basis. Fully 46% of teachers never used online teaching tools and platforms for regular teaching, for activating discussion of students outside the lectures with their own schedule or for activating students during the lecture. Online teaching tools were used the least for examinations, for giving lectures, seminars and talks at a university, or giving lectures as invited speakers at other institutions. The majority of teachers (approximately 70%) stated that they had never used online teaching tools for the above-mentioned purposes.

Regarding the teaching methods most often used in an online environment prior to the pandemic, 87% of teachers reported using presentations or videos and animations (60%). Games were used to a somewhat smaller extent (21%), while only 8% of the teachers used online whiteboards.

4. Challenges regarding the sudden shift to online teaching

After all universities in Croatia shifted to online teaching in March 2020, 87% of the surveyed teachers reported conducting remote teaching from their homes; 10%, from the premises of the faculty; and 6%, using a combination of remote teaching from their homes and from the faculty premises. Unlike in 2020, in the summer semester of 2021, the share of online teaching from home dropped significantly, with the home and the university premises being the venues of online teaching of 67% and 34% of teachers, respectively, while 19% of teachers combined online and onsite teaching, and 7% returned to mostly in-person teaching.

The reasons behind the large share of remote teaching from home in spring 2020 can be found in the fact that all higher education institutions were required to immediately shift to online teaching in compliance with the Decision brought by the Government and the National Civil Protection Headquarters, and in the fact that a complete lockdown was imposed in early April, making it impossible to leave one's place of residence without a special pass and making it even more difficult for teachers to get to work. The situation had improved considerably by

the summer semester of 2021, as the complete lockdown had been lifted, and each University and each Faculty could independently decide upon the date of the beginning of remote teaching. Generally speaking, online teaching began in the period from mid-March to early April. Some Universities allowed in-person teaching for those study programmes in which a small number of students were enrolled and which could not be taught online, such as laboratory and clinical exercises, and art studies.

With the move to online teaching, teachers encountered numerous challenges with regard to teaching in an online environment as well as to using online teaching information technology. Some of these aspects of online teaching were particularly challenging for teachers, while others posed no challenge at all. The respondents were asked to state the extent to which each aspect was challenging to them after the shift to online teaching in the spring of 2020 (significantly challenging, moderately challenging, slightly challenging or not at all challenging).

When observed together, the categories "significantly challenging" and "moderately challenging" indicate that "Engagement of students during lessons" was the most challenging aspect for 73% of the teachers, followed by "Fatigue from prolonged activities on screen" (71%), while 68% of teachers reported "Increased workload due to organisation of online teaching" as a challenge.

The following aspects were the least challenging for teachers upon the move to remote teaching: "Communication with colleagues" – 69% reported this mostly posed little or no challenge; "Lack of scheduling with in-presence activities" (60%); and "Scheduling with other professional activities from remote" (53%).

Concerning challenges regarding the use of information technology in online teaching, the greatest challenge was conducting exams. Namely, 59% of the surveyed teachers reported they encountered some or significant challenges in conducting exams, as well as challenges in verifying the identity of students (45%). The availability of online teaching equipment, such as laptops and web cameras posed very little or almost no challenge to 64% of the teachers. The availability of information technology also did not represent a challenge to 62% of the teachers, nor did Internet connectivity, to 61% of the teachers.

To overcome the challenges, they faced, teachers mostly asked for help from their colleagues (64%) or looked for information via the Internet by themselves (63%). Only 5% of the teachers received advice and assistance from an association or similar, and 2% of the teachers were unable to overcome the challenged they encountered.

The respondents were also asked to state which other challenges, if any, they encountered after moving to online teaching and how they overcame them. Among the greatest challenges to the teachers was the use of the MS Teams platform, which they previously never had the opportunity to use. Workshops on the use of the MS Teams platform, however, made its application much easier for the teachers. Another significant challenge was the Zoom platform, which would often freeze due to overloading. In addition, the Universities did not

have a sufficient number of paid virtual Zoom Rooms with unlimited time and, as a result, some teachers used their own money to buy a licence. Another great challenge encountered by the teachers was how to engage students during online teaching. The teachers sought to overcome this challenge, with more or less success, by more frequently posing questions to students, asking them to comment on an issue, etc.

5. Situation during online teaching

One year after the introduction of remote teaching, the challenges regarding online learning and the use of information technology have changed somewhat. Concerning the challenges of online teaching in the summer semester 2021, "Engagement of students during lessons" was again at the top of the list, with 61.6% of the teachers considering that to be a moderate or significant challenge, relative to 73% of teachers in the previous year. In second place was "Fatigue from prolonged activities on screen", which 61% of the teachers found challenging (compared with 71% in the year before), followed by "Increased workload due to organisation of online teaching", which was a challenge to 51% of the teachers (compared with 68% of teachers in the previous year).

Similar to the previous year, "Communication with colleagues related to teaching" represented a small challenge or no challenge to 75% of the teachers (71% in the year before), followed by "Lack of scheduling with in-presence activities", which generally did not present a challenge to 69% of the teachers (60% in the previous year), and "Remote working premises/circumstances (e.g. restricted or no work space)", which 63% of the teachers did not find challenging, unlike 55% of teachers in the previous year who did find it significantly challenging.

There are also noticeable differences, relative to the previous year, concerning challenges in using information technology in online teaching. Although conducting exams continues to be the major challenge to teachers, it is considerably less so than it was in the previous year. Namely, in 2020, 59% of the teachers reported that conducting online exams was significantly or moderately challenging, in comparison with 45% in 2021. Student identity verification, ranked second also in 2021, is challenging to 32% of the teachers (45% in 2020). The availability of information technology is a very small or almost negligible challenge to 83% of the teachers (62% in the previous year). The availability of devices, such as laptops and web cameras, for online teaching was slightly challenging or not at all challenging to 79% of teachers (64% in the previous year), while internet connection was no challenge to 73% of the teachers (61% in the previous year).

The above indicates that the elements of online teaching and information technology usage that represented the greatest challenges to teachers in 2020 (engagement of students during lessons, fatigue from prolonged activities, increased workload due to organisation of online teaching, conducting online exams, student status verification) continued to be the most challenging elements in 2021 as well. The difference, however, is that in 2021 these elements pose a significant challenge to a smaller number of teachers than in 2020. Furthermore, the elements which were the least challenging to teachers in 2020 (communication with

colleagues related to teaching, lack of scheduling with in-presence activities, remote working premises/circumstances, availability of information technology, availability of devices for online teaching, Internet connection) remained so in 2021 as well, in which year they represented a lesser challenge to an even larger number of teachers.

To the question of what skills were the most challenging to teach to students in an online environment, 57% of the teachers reported that their greatest challenge was teaching general skills (ability to work independently, problem solving skills, data acquisition, and data production skills), 57% reported learning and study skills (how to prepare for lectures, how to read and write academic texts), and 51% reported skills related with field work. Of the other skills, the teachers reported those skills related to specific areas such as the visual arts, foreign languages, and musical exercises.

Regarding the online teaching methods used by the teachers in the summer semester 2021, presentation was the most commonly used method (in 99% of cases), followed by the use of videos and animation (63%), and online discussions in pairs or smaller groups (50%), unlike the previous year when presentations were used in 87% of cases, videos and animation in 60% of cases, and online discussions in only 12% of cases. Games, as a teaching method, were used the least, both in 2021 (in 22% of cases) and 2020 (in 21% of cases).

Finally, the teachers were asked to share examples of good practices, that is, the useful methods they had adopted that enabled them to improve the quality of online teaching. The teachers primarily underlined that the quality of the teaching process in an online environment can be achieved through frequently-asked questions, discussions, self-assessment tests after each lecture, and so on. Lectures should be as concise as possible, conveying only the most important facts. Students should then be allowed time to critically think about the topic of the lecture, and to research and present key conclusions, that is, it is necessary to actively involve students as much as possible in the teaching process. As to the online platforms that the teachers found to be excellent for online teaching, Padlet – for assigning tasks, clearly stands out, along with Kialu.edu – for discussions; Canva – e.g., for designing posters, mind maps, postcards, presentations, etc.; online whiteboards, and MS Teams for consultations.

6. Future plans

The last part of the questionnaire referred to the future plans of teachers concerning blended learning, that is, the use of online teaching as a supplement to the traditional form of teaching. Thirty-seven percent of the teachers stated that they would continue to practice online teaching from home and from the faculty in the future, 24% stated that they did not know whether they would practice blended teaching in the future, and 3% reported they would not practice blended teaching from the faculty, at least not in the near future. In their comments, the teachers stated that in the future they would use online teaching tools largely to disseminate teaching materials and videos of lectures, to communicate with students, and to conduct brief self-assessment tests, but not to conduct exams or practical exercises which they feel should be carried out exclusively in person.

When asked to estimate how much of the overall teaching process they would want to continue conducting online in the future, the average of all responses of the teachers is that the share would be 30%. Interestingly, the number of teachers who wish to continue with online teaching is the same as the number of teachers who do not wish to teach online at all. Namely, when asked to give a reason for their estimated share of online teaching in the future, 40% of the teachers stated that they do not wish to teach online because of their personal preferences, while 39% of the teachers stated the exact opposite, that because of their personal preferences they would like to increase the share of online teaching. Other reasons include: teachers would like to increase the share of online teaching but believe the Faculty would not allow them to do so (15%), there are not enough classrooms with video equipment needed for online teaching (12%), and methodological support from the Faculty is lacking (12%). To the question of whether their institution plans to provide international online courses for students outside of the University, 57% of the teachers responded that they do not know; 22%, that there are no plans to do so; and 21%, that their institution plans to provide online courses, primarily to Erasmus students, as well as international joint Master's programmes with partners in various countries.

Annex II. Report on identified challenges and problems in Finland

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1. Introduction

Due to the spreading of the COVID-19 virus, the Finnish Government declared a state of emergency restricting the movement of people and the closing down of schools on 16 March 2020. The aim of the measures was to protect the population and to safeguard the functioning of society and the economy. The premises of schools, educational institutions, universities and universities of applied sciences as well as civic education and other liberal education institutes were closed down, and contact teaching was suspended. Instead of contact teaching, the teaching and guidance provided by all universities, universities of applied sciences as well as other education providers were to be organised to the widest extent possible in alternative ways, including distance learning and various digital learning environments and solutions.

Accordingly, the University of Turku announced an operation under exceptional circumstances on 17 March 2020. First, a period of online teaching was determined from 18 March to 13 May 2020. Later, a Coronavirus Management Team at the University was established, and a traffic light model was taken into use. The colours of the traffic light model define the level of the University's restrictions and instructions related to the coronavirus situation; green light signals moderate restrictions, yellow light increased restrictions, and red light strict restrictions. The Coronavirus Management Team had regular meetings, and the Regional State Administrative Agency's instructions on public events were, and are being followed. The University's instructions concern hygiene, safe distance and face masks, as well as facilities, such as the number of people in lessons or public events. The instructions have been regularly updated.

In the autumn semester 2021, the aim of the University of Turku was to offer more contact teaching for students, beginning from the first period of the academic year. The aim was to restore the students' social contacts and safe physical communality. However, it was advised that mass lectures did not have to be changed into contact teaching for the rest of the first period.

The currently prevailing green light of the traffic light model at the University was taken into force on 7 March 2022. In the green light mode, masks are used in the University's facilities if close contacts cannot be avoided. Contact teaching is organised as much as possible by all faculties. The Coronavirus Management Team of the University continues to monitor the situation, but meets only when necessary.

2. Methodology

The questionnaire was compiled using Webropol. The link to the survey was opened 25 May 2021 and closed 25 October 2021. The final number of the filled in questionnaires from Finland was 75. The survey was circulated using several channels. In the University of Turku, the questionnaire was shared via intranet, with e-mails to teachers and via contacts in faculties and departments, as well as via the Open University. The questionnaire was sent to other universities in Finland, to faculties and departments, and for representatives of open universities. E-mails to teachers were used, too. In addition, it was shared via university consortiums in Finland, for example University Consortium in Pori. We also published news items of the survey on the website of the University of Turku, the website of the Brahea Centre and Centre for Maritime Studies. We shared information in the newsletter of the Centre for Maritime Studies, as well as via its social media channels. The news item of the questionnaire was published at the website of the University Consortium in Pori and in the newsletter for its staff. Several reminders were sent, also after the summer holiday.

3. Online teaching in Finland before the COVID-19 pandemic

Before the COVID-19 pandemic most of the Finnish respondents, 55% had practiced online teaching at least moderately and 31% slightly; only 13% of the 75 respondents replied that they had not done that at all. According to those who had practiced online teaching, most common (91% of the replies) was that students had access to teaching materials online. In addition, according to 45% of the respondents, students had access to videos/recordings of registered lessons/lectures. Students could take written exams online, in the premises of the university, according to 58% of the respondents. According to 33% of the respondents, students could attend whole courses from remote, as well as students could attend a certain amount of lessons from remote for some courses.

The respondents gave some examples of online teaching before COVID-19 pandemic.

- Moodle was used as a platform, for blended learning/multimodal teaching. Students could do independent studies with guidelines given online, related to practical assignments. E-learning using Moodle was connected with live lectures and small group learning. Students could do exams remotely, with guidelines given online.
- Essays and reports were done online, individually and in groups. Students also worked in groups on written cases on an online platform by chat (not simultaneously).
- Teacher training was followed online, and virtual microscopy was allowed.
- Research seminars, as well as thesis supervision and doctoral students' meetings were organized online.

Already in 2002-2004, one respondent had managed a long online course (including recorded video lectures, online discussions and linked materials etc.) on environmental policy. International online courses were organized within other European universities (EIT Digital) and as part of the National ExpREES network.

41% of the respondents shared didactic materials (e.g. presentations and lecture notes from courses) on a weekly basis, 28% monthly and 15% daily. 20% of the respondents had regular online teaching weekly and 21% monthly. Online teaching tools and/or collaboration platforms were used also for communication with external partners and in international project meetings. Visiting online lecturers were also mentioned, and peer review tools.

The most common online teaching method by the respondents from Finland was presentations (mentioned by 65%), followed by videos or animations (62%). Activating discussion of students outside the lessons/lectures with their own schedule was done more often (51% of the respondents) than activating the students online during the lecture (21% of the respondents). Examples (before the pandemic) mentioned by the respondents were flipped classroom method; material was shared online before learning in small groups, and in addition to that there were tasks, assignments and exercises. Students visited websites and found materials online. Case learning took place in Moodle platform. During the lecture, there were (online) chat and quizzes, and virtual microscopy.

Concerning the year 2021, teachers used online teaching methods more extensively. In particular, online discussion on the subject during lessons was selected by 55% of the respondents. Presentations were used by 96% of the respondents. The following other methods were mentioned by the respondents:

- Personal guidance, e.g. answering students‘ questions by email.
- Online Q & A sessions with coffee.
- WhatsApp discussions.
- Written guidelines provided at Moodle, chat and discussions during real-time lectures.
- Strict timetables also with online assignments.
- Online exercises.

In spring 2020, 89% of the respondents from Finland taught remotely from home or cottage, and the amount remained the same in 2021. In 2021, 13% of the Finnish respondents had both online and in-presence lessons. Later in the autumn 2021, hybrid teaching has become more common in the Finnish universities.

4. Challenges regarding online teaching

The challenges in online teaching were surveyed first regarding spring 2020, when the shift to online teaching took place, and then for the spring semester 2021. According to the respondents, the most important challenges have remained the same, however the situation has improved during the long period of online teaching. *See table 1. below for comparison.*

Table 1. Challenges in online teaching in the spring 2020 and 2021

Challenges: 2020 compared with 2021	**Significantly challenging**		**Moderately challenging**		**Slightly challenging**		**Not at all challenging**		**Does not apply to me**	
Finland	**2020**	**2021**	**2020**	**2021**	**2020**	**2021**	**2020**	**2021**	**2020**	**2021**
Online teaching methods and techniques	11 %	5 %	24 %	10 %	41 %	38 %	21 %	43 %	3 %	4 %
Communication with students (e.g. keep the contact with them)	15 %	7 %	29 %	25 %	33 %	35 %	20 %	29 %	3 %	4 %
Engagement of students during lessons (e.g. motivation, activation, make students reactive and mentally focused)	24 %	11 %	41 %	25 %	20 %	36 %	12 %	21 %	3 %	7 %
Scheduling with other professional activities from remote (e.g. research)	5 %	4 %	23 %	11 %	28 %	33 %	39 %	42 %	5 %	10 %
Communication with colleagues related to teaching	11 %	6 %	23 %	19 %	33 %	32 %	30 %	36 %	3 %	7 %
Lack of scheduling with in presence activities	5 %	3 %	9 %	6 %	32 %	34 %	37 %	46 %	16 %	11 %
Increased workload due to organisation of online teaching	30 %	14 %	26 %	28 %	27 %	25 %	15 %	28 %	3 %	5 %
Fatigue from prolonged activities on screen	25 %	17 %	24 %	24 %	28 %	29 %	19 %	25 %	4 %	5 %
Ergonomics in remote working	23 %	14 %	33 %	17 %	21 %	38 %	21 %	28 %	1 %	4 %
Remote working premises /circumstances (e.g. restricted or no work space)	13 %	10 %	20 %	10 %	31 %	21 %	33 %	51 %	3 %	7 %
Work-home interference	13 %	9 %	19 %	10 %	33 %	28 %	33 %	48 %	1 %	6 %

Main challenges according to the Finnish respondents were the following:

1. **Engagement of the students during lessons** (e.g. motivation, activation, make students reactive and mentally focused). In 2020, 65% of the respondents considered this significantly or moderately challenging. As many as 41% of the respondents chose that as moderately challenging. Currently, regarding the year 2021, it remains the challenge most often chosen, but the number of respondents who consider this significantly or moderately challenging is much smaller, 36%.

2. **Ergonomics in remote working**. 56% of the respondents considered this significantly or moderately challenging. Ergonomics has clearly improved, as currently in 2021, 31% of the respondents considered this significantly or moderately challenging.
3. **Increased workload due to organisation of online teaching** was significantly or moderately challenging according to 55 % of the respondents to this question. This issue was most often mentioned as significantly challenging (30% of the respondents). In 2021, the share of respondents who considered this significantly or moderately challenging was less, 42%.
4. **Fatigue from prolonged activities on screen** was significantly or moderately challenging according to 49% of the respondents to this question in 2020. In 2021, the share still remains 40%.
5. **Communication with students** was significantly or moderately challenging according to 44% of the respondents to this question in 2020, and in 2021, according to 32% of the respondents.

Teachers mentioned several examples of the challenges

- The shift to online (teaching) was very short, it had to be done even with a couple of days´ notice.
- Content and delivery development had to be changed when the course was already ongoing and planned to be of traditional classroom type.
- It took some time that the students found their way to remote teaching.
- Guiding students in their bachelor and master writings.
- Timetable was too heavy and there was lack of proper breaks.
- Children's distance school guidance was one example given of difficulties of work-home interference.
- Distance learning is not at all part of science and university teaching, instead it suits well secondary schools.
- Some respondents had themselves a positive opinion on online teaching, but they felt that everyone else (including students) were supposed to have enormous problems. Colleagues were complaining about everything. While they were content about applications such as Zoom, the colleagues were missing the students.
- Teachers mentioned advantages, such as a possibility to enjoy being at the cottage during autumn, winter and springtime! "Slowing down the speed of life" was considered very useful.
- Regarding the current situation, 2021, a respondent commented on "Students´ attitudes and well-being during prolonged remote teaching. For those who have self-efficacy and good (independent) learning skills, working remotely suits well. Still, they miss group discussions and social activities." This is also described by another respondent: "*social interaction is never the same online, especially if the class is big*".

ICT-related challenges

Very few of the respondents considered any of the mentioned ICT challenges as a significant one, even during the shift to online teaching in the spring 2020. The reason for this may be

that there was much IT support provided by the universities for the teachers. The respondents described a lot of actions in the universities to share information related to teaching online and resources committed to this issue, including tools and software and online teaching methods. In Finland, the share of online teaching before the pandemic was higher than the one reported by the respondents in the other countries. In general, the internet connections are on a very high level and the functionality is usually very good.

The main ICT-related challenges were the following:

- Internet connection (irregular, poor) and Software or applications were considered causing some challenges according to 23% of the respondents. Instead, 73% of the respondents had minor or no challenges with the internet connection and 74% had minor or no challenges with Software or applications (for teaching or online platforms).
- Digital equipment used in teaching (e.g., availability/use/plugging of a laptop, a web camera, a screen etc.) was causing some challenges for 20 % of the respondents, 49% had minor challenges.
- The respondents did not have major challenges related to Licences for software and applications: 79% had minor or no challenges. With Verifying student identity, 69 % had minor or no challenges.

Other ICT-related challenges mentioned by the respondents included

- Challenges with the facilities or lack of them, e.g. scanner, printer and equipment for remote teaching (headphones etc.)
- The low quality of the internet, also when many users at home.
- Total lack of the topical ICT knowledge, and nobody to ask.
- Laptop (from work) was not a good one, had to change it after some months.

Regarding the situation in 2021, the ICT-related challenges improved even from this level. Conducting examinations was considered most often a challenge, 21% of the respondents considered it significantly or moderately challenging, which is nearly the same amount as in 2020.

5. Solving the challenges

How were the challenges solved then? Most of the respondents, 84%, mentioned that they had help from colleagues. 54% of the respondents received advice and assistance from the university, from their faculty or department, or from ICT department. 45% of the respondents had found themselves information online (*which may also include information shared by their university*). There were mentions by four respondents that they could not solve the challenges. As many as 49 respondents gave examples on solving the challenges or they described the situation more in detail.

Several respondents described in particular ICT/software-related support from the university, from their faculty or department, or from the ICT department. For example, technological solutions related to remote connections were solved. Staff training and support was provided, as well as self-learning tutorials. On different channels, such as in the intranet there are videos,

written guidelines, good instructions and ideas for teaching online, how to share the video lectures, guidance on Zoom, Teams, and other online applications. This helped those who had no experience on remote lectures beforehand.

The challenges were discussed at departmental meetings and via departmental e-mail lists. For example, the department helped by purchasing pieces of hardware, distributed to teaching staff according to their personal needs/preferences. The Faculty of medicine in the University of Turku started a "Teachers support event" (Opetuki) that took place many times a week via Zoom. There the teachers got to learn a lot about digital platforms and programs (Zoom, Teams, Echo, Moodle...). They have still continued with the Zoom meetings on Fridays. One comment was that almost all problems were solved and, in some cases, better processes were developed than in a class. More resources for ICT to support online teaching was mentioned, for example, the university/faculty recruited very quickly IT and pedagogical support and ICT personnel.

Help and discussion with colleagues to solve the problems was mentioned several times, for example testing the solutions together, tips and help to colleagues, for example about Microsoft Teams, how to host Zoom-meetings, and on how to make Breakout rooms in Zoom. The respondents learned with colleagues e.g. Zoom/Teams' various features for the better usage of these programs. However, sometimes it was impossible to get help from the IT department, as it was so overloaded. The respondents also mentioned that they solved the ICT-related problems themselves, for example bought new connections to home (e.g. a fiber or mobile connection, which they paid themselves), and it took time that the system worked. Because of a poor connection, a respondent had to take a video from the lecture, which caused more work. One respondent had even bought a new house to increase the workspace.

Other problems mentioned were the several new applications which are operated on different platforms, and how to link your own computer with the institution's. The respondents also reported on problems with Zoom and its functions, e.g. Breakout rooms and their automatic assignments. The respondents also mentioned "trial and error", "learning by doing" and doing many tasks "old-fashioned way", with email, telephone, traditional letters. Previous experience helped. The respondents googled and watched YouTube videos. It was mentioned that learning to navigate on different online platforms required a lot of time and practice, and it was stressful.

Teaching methods mentioned included good preparation in advance, interactive sessions. "Strong pedagogical competence and management of technologies leads to success". For example, University pedagogics course was targeted to university teaching personnel. The Faculty of Education personnel gave hands-on guidance how to conduct online teaching, how to use different online teaching tools and above all, how to re-design teaching so that the teacher can support his/her students´ learning even though teaching is not provided face-to-face in a lecture or seminar room.

Comments and advice from colleagues helped to find new ways to engage with students and student feedback helped a great deal in developing online teaching skills and tools. An

example mentioned was teaching with a colleague, more interaction with the students and activation of the students as much as in presence teaching. Different applications were mentioned, such as Flinga, Padlet, Mentimeter, ThinigLink.

Another example was about making it compulsory for students to show their faces (cameras open); during, for example, internal discussions among students where showing one's personality and observing other people's reactions is a critical issue.
Online teaching was organised into more interactive sessions, instead of only lectures, clear rules were given for the students on how to operate during the sessions, organise meetings outside with safety rules when possible, mark offline days for the work week to avoid fatigue. A couple of comments were about that lectures should be pre-recorded, and the contact hours should be interactive, with i.e. interactive assignments. Innovative teaching methods and games were mentioned, too.

One respondent told that online transition started several years ago, so we really didn't have any major challenges (at least due to the COVID situation). The only real challenge was that the use of the University's electronic examination rooms was restricted. This was solved by changing a traditional examination to a broader final assignment that defined the grading of the course. Another comment was that examinations also need somewhat different or more tailored software, unless one does plain old multiple-choice question exams. These do not exist, or exist, if the teachers can design them.

Another example was that after an BA thesis seminar, which is conducted in English, the students must take a written test on the topic of their thesis in their mother tongue. This needs to be done in a supervised environment, so it could not be replaced with an essay writing or a take-home exam, as with most of the ordinary courses. The Language Center provided a solution to this problem, and it was practical, relatively easy to arrange, and fairly reliable in terms of control over each student's independent input.

Some respondents, however, pointed out to problems with online teaching; in their opinion, it does not actually suit university teaching, or it is not suitable for some tasks. Certain tasks were simply impossible to do at home, one respondent told he got a permission to do them at the university. One respondent's view was that the most critical challenge is that the online method does not suit at all to university teaching and he does not apply that at all.

The software (Zoom) is not the best option to teaching, the problems still prevail. Lecturing would need different software than for example Zoom, which is for remote meetings, the respondent's view was that there are none available, not that he knows of.

The support for teachers in online teaching may be different in the universities or within faculties and departments. One respondent told that there was no clear information available how to use new systems. There was no training organized for learning how to use them. The university does not hire people - like teaching assistants - to help professors and lecturers or temporary teachers to carry out lectures and seminars. Another respondent told that their management took the view that some challenges could simply be ignored, i.e., related to

remote exam supervision and identity verification. "*The result has been a massive devaluation of student and worker legal rights*".

The challenges related to teaching online certain skills and contents for the students

Teaching online general skills (ability to work independently, problem solving skills, data acquisition and data production skills) was considered significantly or moderately challenging according to 43% of the respondents. The second most difficult challenge with 41% was Learning and study skills (how to prepare for lectures, how to read and write academic texts), motivation to study. Content related with laboratory was considered significantly challenging by 16% and fieldwork by 32% of the respondents. An example given was that the material is based mostly on fieldwork, and it was really challenging, e.g., related to a MA thesis, how to collect material etc.

The respondents also mentioned examples of the challenges in teaching subject-specific knowledge: accounting, economics, international business, geography, history, programming, linguistics, mathematics and philosophy of science. One comment was that it is "*impossible to teach the core issues but not facts as such*".

Successful practices, useful methods

Instructions

- The instructions have been prepared in advance and preferably visualized, they are clear and comprehensive, multi-channel.
- All digital tools are first learned together so that everyone has an equal opportunity to learn.
- Information will be communicated for all.

Best practice sharing

- Teachers have shared tips with each other.

Platform-related solutions, examples

- Flinga, Zoom Breakout rooms work nicely for group discussions.
- Small group discussions.
- Discord, polls with larger groups.
- Activation methods, with chats, whiteboards, online games.

Teaching methods

- Pre-recorded lectures.
- "I have given up on the 90-minute gold standard for lectures and instead I produce shorter pieces of video material".
- More breaks during the lessons than in on-site teaching.
- Starting lectures with a news review, show news items and online video relevant to the topic of the day.

- Freedom and variation of the learning environment, in art education and visual environmental education.
- Lecturing with a colleague.
- Virtual laboratories.

Communication with students

- Courses in Teams, where each group has their own private channel. They can tag me when they have questions and send me Teams messages, which is a huge improvement in communication over Moodle messages and emails.
- Personal meetings with one or two students; good discussions with the students about their situation, hobbies, family, health etc.
- Remaining available (on Zoom etc.) after each online lecture, as some students may wish to ask questions or just chat; or a remote online exam.
- Offering a weekly one-on-one 'office hour' on Zoom for anyone who needs information or just someone to talk to; a coffee break with teachers in Zoom.

Students' communication with each other

- Students helped a lot their fellow students. They created online groups outside of the lectures and studied together.
- In group works, the students shared the groups so that each group involved students with different age and courses, to improve learning experience and students could learn to know each other.

6. Future plans/prospects

Most of the Finnish respondents, 49%, would like to teach online from home or from the university premises in the future. 23% would like to teach from home, and only 8% from the university. 56% of the respondents would like to increase the share of online teaching because of their personal preferences. E.g. teaching at the Open University is primarily given online/remotely.

Students' view is also considered, for example whether it is possible to reach new students using online teaching. One prefers to teach in person but for many students or in some situations it makes the teaching more accessible if it is done remotely, and another says he wants to provide flexibility for students and different types of learners. In addition, there is one comment that online is often pedagogically superior. One respondent is doing research for e-learning and developing it all the time. Online teaching is considered by one respondent a good option to work more at home because it allows pleasant physical and mental activities in the year etc., which makes working time much more pleasant.

On the other hand, 37% of the respondents would not like to teach online. One respondent says that if the COVID-19 situation allowed, then I would not teach online. Another respondent tells that he does not teach online, because he regards it scholarly and

scientifically unprofessional and not suitable for university teaching. One more comment was that online teaching is really only considered as a means for cutbacks and savings. The students do not want very much online teaching any more. In addition, what is being taught also requires physical face-to-face communication; e,g. medicine. One comment was that physical presence allows for creativity and situational response in a different way than a virtual situation.

Annex III. Report on identified challenges and problems in Italy

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1. Introduction

The first outbreak of COVID-19 in Italy occurred during the second half of February 2020 in some areas in the North of Italy. Due to the spreading of the infection, even by asymptomatic people, Italy has become in a few weeks the country with the greatest number of infected people in the world. The large number of severe cases among infected people in Italy led to the hospitalization of thousands of patients, with a heavy burden on the National Health Service. This unexpected situation brought all the universities to close all the structures and services in presence for staff and students and move to online learning.

Immediately after the lockdown, on March 2020 our University moved to online teaching. Suffering all the problems that a quick decision like this implied, for which the Microsoft Teams platform was used. A national legislative decree was adopted in March due to the covid-19 pandemic emergency (https://www.gazzettaufficiale.it/eli/id/2020/03/25/20G00035/sg), with the guideline for the online teaching.

The autumn semester 2021 started with hybrid didactic, allowing students to attend lessons in presence after booking a place through the Delphi platform, the management system of the University.
https://temi.camera.it/leg18/temi/le-misure-adottate-a-seguito-dell-emergenza-coronavirus-covid-19-per-il-mondo-dell-istruzione-scuola-istruzione-e-formazione-professionale-universit-istituzioni-afam.html

2. Methodology

We collect the results from September to October 2021 due to some misunderstandings among institutional offices. We asked the ICT Office to send the questionnaire by email to all professors of our University. From Italy, 57 responses were received.

3. Online teaching before the COVID-19 pandemic

The online teaching before COVID pandemic was not very common, the Universities didn't use the distance learning unless they were accredited as distance learning University. Additionally, only a minority of the general Universities' teaching staff practiced online teaching.

The most common form of distance learning before COVID was the Online University, a Higher Education Institution that provides courses online based on the e-learning technologies. All the Institutions can issue recognized academic degrees/titles, regulated by the Italian policy, with the only requirement to do the final exams in presence**.** Only just after COVID, we were

allowed to do exams online. The European Union in 2001 enact a settlement on the e-learning, encouraging all the State members to adopt the new learning methods. In 2003 the Italian Ministry of education defined, with a decree, the criteria for the accreditation of the distance learning courses of the Universities. The respondent underlined the fact that students had access to teaching materials online, videos/recordings of registered lessons/lectures. Professors underlined the possibility for students to attend a part or a whole course from remote, and do exams. This learning integrates the use of Moodle and Google Drive, the development of an eLearning platform with online didactic materials.

The most used, as an alternative online-teaching, was the sharing of the didactic materials as sharing presentations, lecture, notes from courses etc, and the conferences. We understand that regular teaching as the idea of involving students outside the lessons/lectures was not common before COVID, the same for the lectures and seminars and final exams.

The most common teaching methods in Italy before COVID pandemic, as you can see from the table below, were mainly presentations, followed by video or animation, used as support to the classic didactic, giving the access to online materials, without the involvement of the students in any remote classes.

	n	Percent
Presentations	28	73,7%
Online whiteboard	3	7,9%
Online discussion in pairs or in working groups during the lesson/lecture (real-time)	1	2,6%
Online discussion on the subject (outside the lessons/lectures with their own schedule)	5	13,2%
Polls	2	5,3%
Games	2	5,3%
Videos or animations	9	23,7%
Other, not mentioned above	7	18,4%
Other, not mentioned above	1	2,6%

4. Challenges regarding the sudden shift to online / remote teaching (spring 2020)

During Spring 2020 the COVID-19 pandemic forced many educational institutions to suspend classes in presence and replace them with online ones. Even if the disruption of educational provision was more common than we thought, this event affected the 94% of the world's student population. The shift from face-to-face to online teaching occurred rapidly; this meant that we were not ready to face properly the situation or deal with its limitations. This new circumstance created by the COVID pandemic, tested and pushed us to find new suitable solution to prevent any damage.

If we compare the teaching venue from spring 2020 to summer 2021 we notice that most of the online teaching activities during spring 2020 were carried out from home due to the lockdown restrictions.

	n	Percent
I taught remotely from home or cottage	50	87,7%
I taught online from the premises of the university	7	12,3%
Another location	0	0,0%

During the spring/summer 2021 the situation changed significantly. The online teaching activities were carried mostly blended or remotely from home.

	n	Percent
I teach remotely from home or cottage	21	38,9%
I teach online from the premises of the university	17	31,5%
I have both online and in-presence lessons	27	50,0%
I have mostly in-presence lessons	3	5,6%
Another location	2	3,7%

The most demanding challenges faced in the shift to online teaching were Engagement of students during lessons, Fatigue from prolonged activities on screen, Lack of scheduling with in-presence activities, Increased workload due to organisation of online teaching and Communication with students.

The main reason for the gap between 2020 and 2021 is the result of the Covid restrictions of the lockdown period, when students and professors were obliged to teach and attend classes only online. As the Covid pandemic developed positively during 2021, the government decided to soften the previous restrictions; thus, allowing a hybrid didactics, classes have been held both online and, at the same time, in presence.

In order to prevent contagion risk, the capacity of the classrooms was reduced, allowing students who wanted to attend classes in presence to reserve their sit. Only students with green pass where able to attend classes in presence.

5. Challenges with online teaching faced during pandemic

The most common challenges during this pandemic period are: engagement of students during lessons, increased workload due to organisation of online teaching, communication with students, the fatigue from prolonged activities on screen, verifyng the identity of the students durign examination and the low internet connection. The challenges mentioned in

the comments are related to the interoperability between the university's platforms and other platforms, balance time between work and family and stay always tune.

The solutions identified by the responders are mostly related to the fact that they found information online autonomously, that they received assistance from the University and from the faculty or department.

6. Solutions to the most critical challenges

Online platforms changed challenges for both the learners and teachers. They offered more fair options for students in terms of access to information and education. Both teachers and students need to adapt to the new online teaching and learning environment. They need to have proper training in using virtual classes before they could get started. Teachers also need to know how to encourage and motivate students to get engaged in their online courses.

Teachers have to pay attention to the technical issues related to their online courses. They should make sure that their students have proper internet connections, and that they should not need to download and use programs, or to acquire equipment that are not readily available. They should make sure that their online courses are supported by different browsers and operating systems, and are accessible using available mobile phones, computers and other equipment needed for them.

The solutions founded by the respondents to the previous problems are the following:

- Search the best internet provider, trying to find one that could guarantee a decent bandwidth and the best equipment as webcam, microphones, headset, etc.
- Integrate Teams blackboard because using a drawing software and sharing the screen. Moodle to give exams in Mathematics preparing with the help of the ICT Department, Latex exams or stimulating questionnaires.
- Use of presentation, personal or group work to share during the classes in order to involve students.
- Record classes.
- Monitoring exams to avoid copying, with more than one camera.

7. Challenges and solutions during online teaching

During May-July 2021 classes were almost held both in presence and online. The Covid pandemic trend was improved, even due to the vaccination campaign, letting the Universities came back in part in presence event for exams and thesis.

The challenges related to ICT

The challenges we must face during this period were mostly connected to the engagement of students during lessons, how to motivate them and keep them reactive and mentally focused, to the fatigue from prolonged activities on screen, how to conduct examinations and less verifying student identity an internet connection. If we compare the situation in 2020 with 2021 we can see at a glance that the percentage of the challenges we had to face in 2020 is

lower in 2021. The problems identified by the responders are quite the same, except for the fact that they are fewer than the last year and more manageable.

We notice that, among the biggest issues, we still have the difficulties in keeping the attention, motivation and engagement of the students alive during classes, especially during extra-long classes. Another point that pushed professor to move again to exams in presence was the difficulty in doing exams online, for example the ability to copy, or to identify them**;** beyond this, we can assume that, the online didactic has led working students, and / or non-resident students to benefit from a full didactic, with the same rights of the other students.

Challenges related to teaching online certain skills and contents for the students

The respondent found significantly challenging dealing with contents related with laboratory work and with field-work. They found challenging, with a very low percentage even learning and study skills as to prepare for lectures, read and write academic texts and motivation to study or general skills as the ability to work independently, problem solving skills, data acquisition and data production skills, the so called transversal skills. If we consider the median of all the answers, we can notice that, with the 50%, the respondents identified digital communication and services, that often determine the good success of the classes held online.

Successful practices, useful methods to improve teaching online

Digital education brings with it a range of unknown and unexplored territory, mostly due to its newness compared with traditional teaching methods. Even if not in classroom, there are many ways to create an effective online learning. We have to achieve that online means utilizing a range of different communication methods. Discussion boards, emails, presentation, working groups are just some of the ways you can be present each day in your online classroom; let's see how the respondent involved in the survey improved the online teaching.

Summarizing the topic touched by the respondent we can see that they adopted new and different support for online and hybrid teaching as WYBLO, EIDUCO, new writing software as Notability for remote transmission, this system allows the creations of temporary files and the possibility to create pdf files of the lecture to be distributed to student. Another useful trick was the Q&A that kept the attention of the students alive, by involving them constantly even with plenary sessions and asking them to keep the camera on, without hiding behind it. Very helpful was the combination of both synchronous and asynchronous activities, creating a blend of traditional online learning styles with newer, more collaborative audio and visual tools. Working with a mix of activities makes the content more interesting and exciting, increasing student engagement with both the teacher and other learners. Working groups have proven the deep involvement of students and the necessity to be organized on different channels/classrooms. The availability of the material and the recording of the classes makes easier to stay updated and involved.

8. Future plans / prospects

About the future plans, most of the respondents stated that they will go on with online teaching both from home and the University. The 21% are in doubt while the 17% would not teach online in the near future. Those who have planned not to give up with the online teaching decided to go on using digital tools (EIDUCO, Teams etc.), record lectures and make it available for those who cannot be in presence for different reasons. The idea is to put on a blended system, even if, a part of the respondents totally disagrees with it, at the moment this is the most affordable option.

Estimated share of online teaching. This is the average of the teachers who would like to continue to held classes online.

Min value	Max value	Average	Median	Sum	Standard Deviation
0,0	60,0	27,6	30,0	1130,0	16,8

The 42.9% of the teachers said that, for personal reasons, they would not like to teach online, followed by those who would like to increase the share of online teaching (26.5%) and by those who would like to teach online with a strong support of the institution.

Plans of the universities related to online teaching

The idea of offering online courses for students outside the University see the 73.7% of the respondent state that they don't know and just the 19.3% that they would like to do it. Despite these answers, our institution already has a distance learning school with a wide number of courses and opportunities (www.scuolaiad.it). We are one of the YUFE universities among the European universities projects approved; we are in the YERUN circuit with different online courses and new ones will be activated as soon as possible. We are also planning the virtual mobility for 22/23 under the Erasmus+ and two Blended Intensive Programme, the idea of an online teaching properly designed is in the air, as the idea to go on with the online teaching for a large number of courses.

Annex IV. Report on identified challenges and problems in Poland

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1. Introduction

Due to the increased risk of infection with SARS-CoV-2 virus and subsequent cases of COVID-19 in Poland, the Deputy Prime Minister, Minister of Science and Higher Education Jarosław Gowin - following the recommendation of the Government Crisis Management Team - decided to introduce in March 2020 prophylactic measures to prevent the spread of this virus and thus reduce the risk of an epidemic.

On March 20, 2020, the Minister has suspended teaching activities conducted by HEIs supervised by the Ministry of Science and Higher Education throughout the country. This concerned education on bachelor's, master's, and doctoral degree courses, as well as doctoral schools and courses and trainings organized within the university, post-graduate studies, or in other forms.

The suspension of classes was gradually extended by subsequent decrees:

- March 23, a decree appeared extending the suspension of full-time classes until April 10 and making the obligation of distance learning.
- April 9, the Prime Minister extended the restrictions until April 26.
- April 24, the restrictions were pushed back to May 24 by Wojciech Murdzek, the new Minister of Science and Higher Education.
- May 21 there was another regulation, this time modifying earlier restrictions and allowing some classes to be conducted on a full-time basis.

As a fallback, as it where teachers at universities have been required to teach remotely. This situation was commonly referred to as "e-learning" or "online learning". However, as late as the end of March there were voices claiming that it is in fact emergency remote teaching. In Poland, remote teaching was conducted for almost the entire summer semester 2019/2020 and the entire academic year 2020/2021.

On August 10, 2021, the Minister of Education and Science repealed the regulation on the temporary restriction of the functioning of certain entities of the system of higher education and science in connection with preventing, counteracting and combating COVID-19 (Journal of Laws, item 1464). Part of the learning outcomes covered by the curriculum may be achieved through classes conducted with the use of distance learning methods and techniques. These classes should be conducted using infrastructure and software that ensure synchronous and asynchronous interaction between students and teachers. It is important that classes conducted with the use of methods and techniques of distance education may be implemented if it is allowed by the specificity of education in a particular field of study. The regulation, however, specifies in §13 the limits of ECTS credits in the curriculum that can be obtained through such education.

Article 76a of the aforementioned Act provides for the possibility of verifying learning outcomes using electronic means of communication; under this provision, higher education institutions may organize examinations, including the diploma examination, and final course tests or other forms of verifying the achieved learning outcomes defined in the curriculum outside the seat of the institution.

In line with the above-mentioned national recommendations, the University of Gdansk introduced remote teaching on March 20, 2020, by the Rector's decree. During the suspension of classes specified in separate provisions, deans and directors of general university units were obliged to enable academic teachers to conduct e-learning courses and/or online classes. Three academic semesters have been held in remote mode, with some exception in the summer semester 2020/2021 when some of the exercises were conducted in person.

From the beginning of the launch of distance learning, university authorities have specified that examinations, oral assessments and diploma examinations shall be conducted via videoconferencing in Microsoft Teams application, or another application, if approved by the dean, that allows for recording of the exam or credit. In the first semester of distance learning, teachers were allowed to use any application of their choice, but after intensive training cycles, in the two remaining semesters University Authorities obliged the academic community to use MS Teams in distance learning.

The academic year 2021/2022 at the University of Gdansk began on October 1. Moving towards a gradual restoration of a normal mode of functioning of the university and considering the current epidemic situation in the country, the UG authorities decided that classes at the university will be conducted in a hybrid mode: stationary and remote, with the predominance of the stationary form. The basic form of conducting classes will be stationary, with the exception that lectures in large groups should be held remotely - in this case, the decisions will be made by the deans of the faculties (information on this topic is to be posted on the faculties' websites).

The Deans decided which classes should be held in-person due to the nature of the curriculum and which classes can be taken remotely. Details were published in September with the end of recruitment and preparation of detailed timetables. The UG's didactic offer includes nearly 90 curricula, which are very different in form, number of practical classes, scope of competences to be acquired by the graduates, etc., therefore a hybrid approach, enabling effective use of didactic infrastructure, while meeting the current sanitary restrictions (e.g., regarding the distance between the places of work/study) is necessary.

When planning courses to be taught remotely as part of first-cycle, second-cycle or long-cycle degree programs, the Dean shall be obliged to ensure that students achieve at courses conducted in-person, including courses taught in the academic year 2020/2021, a minimum of

- 25% of the number of ECTS credits allocated to the study programme - in the case of studies with a general academic profile.

- 50% of the number of ECTS credits allocated to the curriculum for degree programs with a practical profile.

2. Methodology

Survey in Poland has been conducted from June to September 2021. In the period preceding the mailing of questionnaires (May 2021), a list of HEIs was determined, along with identification of Departments and Institutes to which the questionnaires were sent. In total, questionnaires were sent to 521 HEI member entities with the request to distribute the questionnaires among their employees. Within the mailed questionnaires, 187 were addressed to universities of technical profile, 244 to universities of different educational profiles, and 90 to natural science and pedagogical universities.

The invitation to take part in the survey was also posted on the website of the Faculty of Economics and on the University's social profiles. It was also sent via internal mail to all employees of University of Gdańsk on June 28, 2021.

During this period several activities were also undertaken to collect as many responses as possible, including numerous phone calls to encourage participation in the survey. As a result of these activities, 144 responses were collected. The respondents included representatives of the largest HEI's in Poland. 73.6% of respondents belonged to the group of establisher/permanent position, 12.5% have intermediate/temporary position and 13.9% were at the early career stage. This is also reflected in the age structure of the respondents, with the largest group being 40-49 years old (44.5%), followed by 50-59 years old (24.1%). People under 29 years old constituted 18.3% of respondents, whereas people between 60-70 years old constituted 13.1%. 57.2% of the answers were given by women and 39.9% by men. Respondents worked at verity of Faculties, represented almost all fields of study, except for medicine, music, sport and theology (fig. 1 and 2).

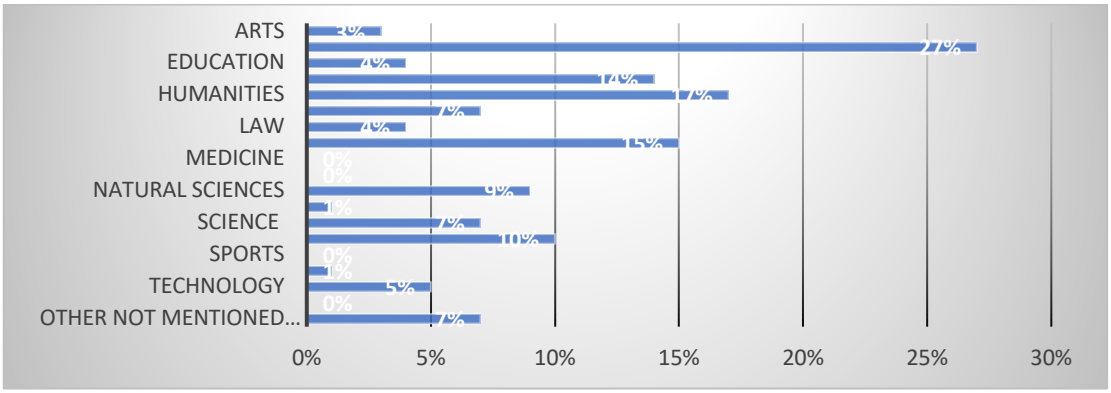


Fig. 1 Faculties where respondents teach

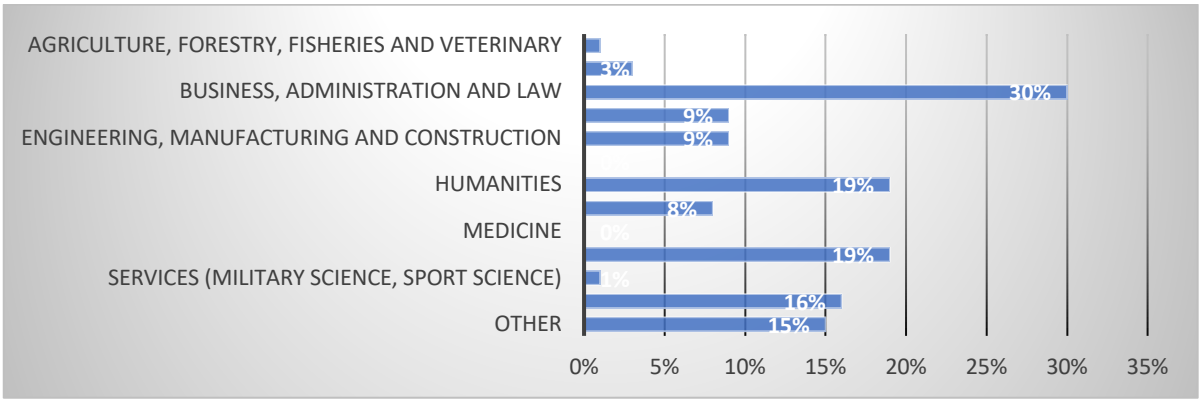


Fig. 2 Field of study

Among the answers classified as other science (15.3%), the most frequently mentioned were architecture, spatial management, language learning and transport.

3. Online teaching before the COVID-19 pandemic

The results of the survey show that remote learning was not used frequently in Poland before the Pandemic (fig. 1). Almost 69 % of respondents did not use it at all (41%) or to a small extent (28.5%). The most popular form of online teaching was access to teaching materials online (84.7%), e.g., sharing presentations and lecture notes from courses. The respondents pointed out that students had access to information such as the range of tests topics, literature needed etc. Students could also attend a certain number of lessons from remote (27.1%), participated in online written exams (22.4%) and had access to video/recording of registered lectures. Live streaming or online oral exams have not been practically applied (fig. 2).

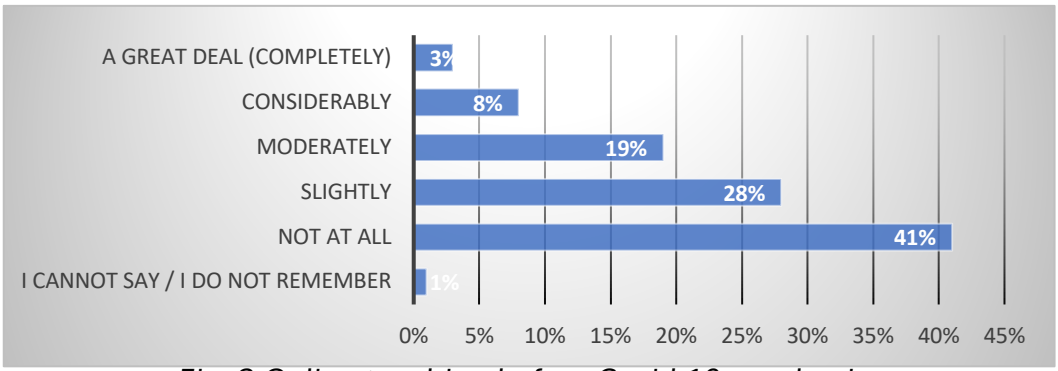


Fig. 3 Online teaching before Covid-19 pandemic

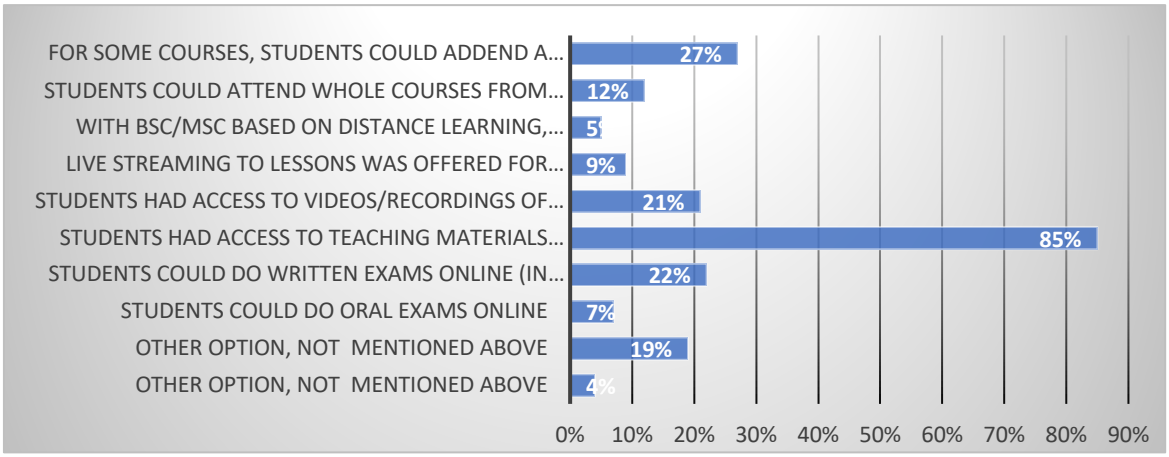


Fig. 4 Forms of online teaching before Covid-19 pandemic

Another practice used was to have students' complete assignments remotely and email them to the teacher. Some of the teachers offered asynchrony e-learning courses (attending the whole course – 11.8% or attending a certain number of lessons from remote (27.1%).

Among other forms of distance learning mentioned were:

- Tutoring in form of online classes.
- Working on Skype with doctoral students from abroad on preparation of their dissertation.
- Seminars on What'Up.
- Turning assignments by mail.
- Using applications like Kahoot to do short exams online.
- E-mail consultations.
- Students can ask questions through dedicated forum.

Adaptation of online teaching tools and platforms was very minimal. Almost 60% of respondents do not use these tools in regular teaching. On regular basis teachers used electronic tools mainly to make course materials available on-line to students. Almost 33% of respondents did this on a regular weekly basis, 22% once a month and 10.6% daily.

Electronic platforms have been used also to small extent in asynchrony e-learning courses offered to students (attending the whole course – 11.8% or attending a certain number of lessons from remote (27.1%).

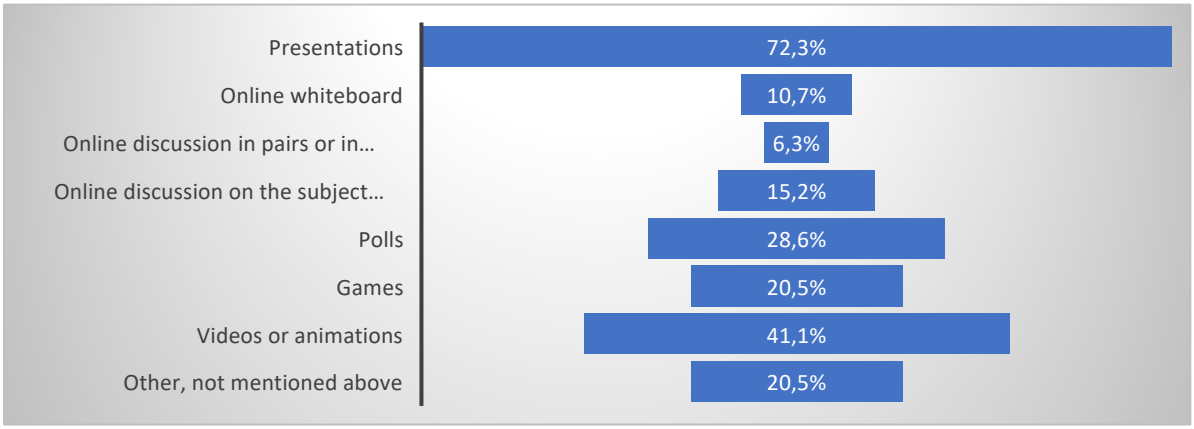


Fig. 5. Online teaching methods before the pandemic

The test and exams were only marginally organized online, and usually within the university premises for final exams (once a semester – 18.4%). What was also noticeable was the lack of use of online tools for activating students, either during lectures (59%) and for discussions outside the lessons (63.7%).

The forms of distance learning used at Polish universities before the Pandemic are closely correlated with the methods used, so it is not surprising to see the popularity of presentations (72%) or the use of video materials (41%). The frequent use of poos (29%) was also reported, which is undoubtedly related to the conduct of online tests and examinations. Respondents mentioned using such tools as Moodle portal or Kahoot for this purpose.

Some of the respondents also used electronic tools to create e-learning content or to organize online ad-hoc tutorials navigated by peers. It is interesting that the respondents also mentioned games among the tools used. This may be a sign of the growing popularity in Poland of including the so-called gamification in the teaching process.

4. Challenges regarding the sudden shift to online / remote teaching (spring 2020)

Remote teaching at the beginning of Pandemic, that is in the summer semester 2020, was mainly carried out remotely from home (86%), with the minor exception of the realization of teaching activities from the University premises (11%). In the following semesters, with the admission of the possibility to teach both online and in-presence, it was used by 11% of the respondents.

The rate of teaching activities realized remotely from home changed slightly in the summer semester 2021, decreasing to 80%. The increase in the number of remote classes conducted on university premises (up to 27%) may partly result from the fact that some in-presence classes were also offered by 11% of the respondents.

The greatest challenge associated with the transition to distance learning was undoubtedly the increased workload due to organization of online teaching, which almost 60% of respondents identified as significant. And, therefore, nearly 50% of them noticed an increased fatigue due to prolonged work in front of a computer screen (48.6%), and problems related to ergonomics in remote learning (34.9%). Another important issue for the teachers was to get the students involved in the lessons. This issue was rated as a significant challenge by 58% and as moderately significant by 24% respondents.

Despite the low adoption of e-learning before the Pandemic, the use of online methods and techniques was only the biggest problem for less than a quarter of the respondents, with over 75% of them describing it moderately challenging (32.1%), slightly challenging (30.8%) or even not challenging at all (14%). However, over 50% of academic staff reported challenges related to conducting examinations, of which 21% rated them as significant. Teachers also reported problems related to the verification of students' identity, describing it as significant (18%) or high (21.5%).

70% of respondents also reported that using applications and platforms posed some problems, describing them as significant (14%), important (37.7%) or minor (30.8%). However, there were almost no problems related to licenses for software and applications. 42% of respondents also indicated other significant challenges, primarily related to technical issues such as quality of internet connection and hardware problems (lack of camera, headphones, graphical tablets) which affected both teachers and students.

In the first period after the introduction of distance learning, half of the respondents ranked the challenges related to the availability of digital equipment used in teaching as by far the greatest or causing great difficulty.

5. Solutions

Overcoming the challenges faced by the academic community in the summer semester 2020 required a great deal of personal commitment, which was emphasized by almost 75% of the respondents, who indicated that they had searched the Internet for information on how to solve the problem themselves. The support received from colleagues, university authorities or others was also helpful. And although almost 40% of the respondents said they had received support from the ICT Department, the responses mentioned that there had been considerable delays or even misunderstanding of the teachers' plight. Support for teachers by both university and ICT departments was also described as inconsistent and chaotic.

The whole academic community has taken numerous measures to overcome the difficulties that have arisen. Most of them related to the acquisition of new knowledge concerning the use of It tools in distance learning. Many of them attended courses on the functionalities of applications and platforms. This was done both individually, using tutorials created by the teachers and courses available on the Udemy platform, as well as - over time - in training courses that universities and IT departments began to organize. Some teachers, who for

various reasons had difficulties in speaking online, recorded their classes and made them available to students via educational portals and platforms.

Some academic staff who did not have access to tools necessary for teaching, such as a whiteboard, overcame that problem by transmitting view from a smartphone camera with paper. Setting appropriate resolution and installing necessary drivers allowed them to e.g. math during the courses as in the classroom.

Many teachers who did not have the necessary equipment (camera gateway or microphone) decided to buy it at that time without waiting for support from the university. The quality of internet connections for remote work was also improved by buying better packages.
Technical problems were often overcome by trial and error. Collaboration and peer support became important at this time. Teachers organized support groups which also brought together people from other departments and practiced before classes how to conduct them (mainly technical issues).

As far as the conduct of exams and tests was concerned, which was a major problem, some lecturers decided to change the form from written to oral, some introduced a series of micro-projects instead of the former big projects.

6. Situation during online teaching (spring semester, May 2021 - July 2021)

In the following year of remote teaching, respondents showed a significant reduction in the challenges they faced. Most of the issues previously considered significant or important have moved into the category of having little or no impact on the learning process. Online teaching methods and techniques became slightly challenging or not challenging at all (70%). 50% of respondents noted a reduction of workload resulting from the shift to distance learning, although it remained quite high (described by 28% of respondents as significantly challenging). One of the most important challenges, reported by 60% of respondents as significant and important, was the engagement of student during lessons.

An increase in the skills of academic staff in the use of ICT tools can be observed. Most of the problems reported in the previous period have decreased significantly, with the importance of issues such as software or application dropping by 30.7% in significantly and moderately challenging issues, digital equipment used in teaching by 22.3%, accessibility related to ICT by 15.8%. However, challenges related to student verification and examination administration remained, though to a lesser extent. Respectively, identity verification issues were reported as significantly and moderately challenging by 35.7% of respondents (a decrease of 24.3%) while the conduct of examinations by 37% (a decrease of only by 3.9%).

Challenges related to teaching online certain skills and contents for the students

The biggest challenge during this period was remote teaching of subject-specific knowledge (reported by almost 41% of respondents), including quantitative methods, technical drawing, psychology of learning, laboratory activities, improving foreign language speaking skills.
Content related with laboratory work and with fieldwork posed a significant challenge for, respectively 34.8 and 32.6% of respondents. The teaching staff reported also challenges in teaching students learning and study skills (24.1% as significantly and 41.9% as moderately challenging) and general skills such as ability to work independently, problem solving skills and data acquisition (25% describing them as significant and 38.1% as moderately challenging).

Online teaching methods were used

Analyzing the information relating to the teaching methods used, it can be noted that academic teachers continued to use presentations, although fewer respondents declared their use: 72.3% compared to almost 100% in the previous period. The use of animation and video continued to be popular (with a slight decline of 3.6%).

An increasing number of teachers (22.3% compared to 9.2% in previous period) have also started using new methods that they had not used before, mentioning, for example, online textbooks, Jamboard software, pre-producing e-learning content, application of software characteristic for the field of study, flipped classroom and 3D software for modelling, texturing, rendering, etc.

7. Successful practices, useful methods to improve teaching online

Many teachers specified successful practices and effective methods and used by them. It is impossible to list them all, as more than 50% of respondents gave such examples. Among them we can mention the most frequent or unique, such as:

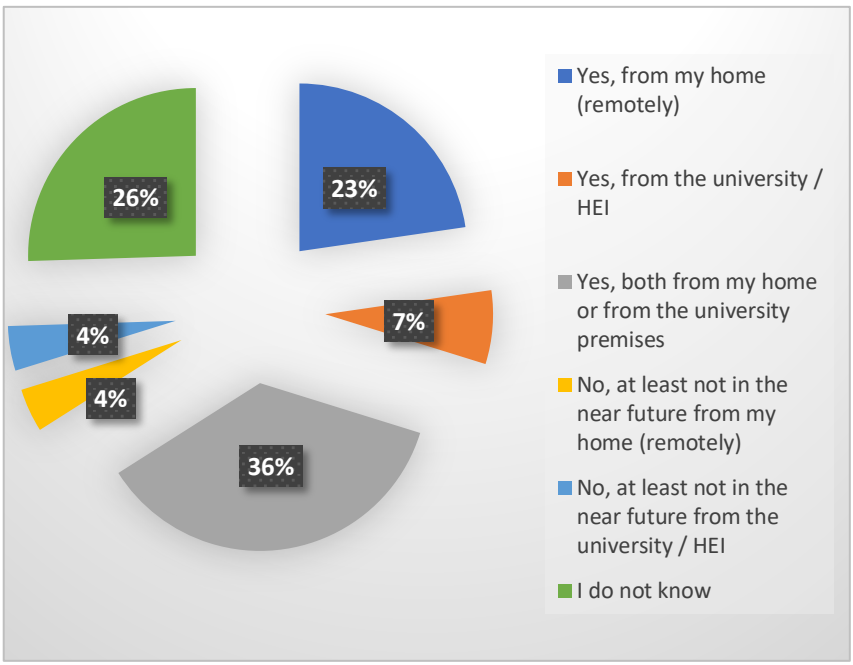
- The implementation of even short assignments to be completed individually or in groups, but using new tools such as Mentimeter, Worldwall very much activates students.
- The use of a shared whiteboard (Miro, Jamboard) on which students can work in real time in groups - at the same time seeing the work of their peers; and on which it is possible to post different types of materials, including videos, photos, links to websites.
- Case study templates and review forms for individual self-assessment of the results of the case study, displaying the revised by me individual examples of the concept of the thesis, chapters of the thesis, research tools, etc. and discussing them in the group forum.
- Competitions to check whether students have read the texts for the classes.
- NanoLearning - divided the lectures into small portions.

- Preparation of course contents in the form of printable lectures, sometimes enriched by added presentations.
- Small exercises during lectures, some small lectures during exercises.
- Gamification, visual thinking.
- Changes in students' evaluation: resignation from the end-of-course colloquium (identical solutions to tasks, identical mistakes) and introduction of partial marks instead: students performed various tasks/work in a group on the basis of the knowledge acquired or organized during the classes, then presented them and received points.
- Working in pairs in breakrooms.
- Shifting from teaching knowledge to teaching skills. Developing a warm-up method project work in groups.
- Working in groups using the Metaplan technique. Each group has its own channel where it collects materials, partial works and prepares a presentation of a solution to the problem set at the beginning of the class.

8. Future plans

University teachers seem to appreciate the positive aspects of distance learning, as 66% of the respondents intend to use it as an additional method to traditional classes, with a preference for a mixed system of classes, i.e., both at home and at the university (36%). Only 8.5% of the respondents stated that they do not intend to continue with distance learning, while 25% do not have an opinion about it now.

The academic staff, having learned from the previous two semesters of distance learning, expressed their willingness to continue with online seminars, tutorials, consultations and lectures, especially for large groups of students. In the case of lectures, it was pointed that some of them can be also given online partially online or have the form of students 'own work based on materials and tests provided via electronic platforms such Moodle.



Teachers also stressed the advantages of online classes for extramural students. Some teachers plan to enrich laboratory classes and exercises with elements of remote working. Many respondents intend to use the methods and tools practiced during the pandemic to engage students, such as Kahoot, Mentimeter, etc. Some teachers plan to enrich laboratory classes and exercises with elements of remote working.

Respondents also plan to use materials prepared for online classes during the pandemic, including practical tasks, to conduct hybrid classes. The responses emphasized further plan to share materials with students online, assign tasks using IT applications, conduct final exams in a hybrid mode (in-presence but using IT applications like Moodle quizzes).

Analyzing the responses concerning the acceptance by respondents of online activities' share in their working time, the average level is 33%. Half of the respondents declared that they would like to increase the number of online classes for personal reasons. Some of the respondents expressed the opinion that they are willing to teach from home, but this may not be in the university's plans (18%). Some respondents expressed concerns about lack of methodological support from the university (6%) or lack of classrooms with video conferencing equipment at the University.

It was emphasized that the continuance of remote classes will depend on the University's position on this matter. There were also comments on the reluctant attitude of students towards remote classes, which is not conducive to their effectiveness. However, it was emphasized that some classes are not predisposed to be conducted remotely, including laboratory or field classes. However, in such case some blended techniques can be used where there is no risk regarding drop in quality and /or logistic favors such method.

The respondents also emphasized the usefulness of using online classes for international courses. Most respondents, however, are not aware of the University's plans to continue providing these courses in the online format (73.3%). At some HEIs, which declared the continuation of the online course, it will be offered to Erasmus students and under international alliances formed by HEI, for example within the Universities of the Sea (SeaEU) consortium, an alliance of 6 European and coastal universities from Gdansk, Cadiz, Brest, Kiel, Split and Malta.

Annex V. Report on identified challenges and problems in Romania

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Silvia Maican, Senior Lecturer and the Head of the Business Administration and Marketing Department, Faculty of Economics, University "1 Decembrie 1918" of Alba Iulia, Romania
Andreea Muntean, PhD, Vice Rector and Associate Professor at Business Administration and Marketing Department, Faculty of Economics, University "1 Decembrie 1918" of Alba Iulia, Romania

1. Introduction

Due to the increased risk of infection with SARS-CoV-2 virus and subsequent cases of COVID-19 in Romania, in 10th of March 2020, the Romanian Ministry of Education and Research organized a videoconference with the Primary Schools Inspectors and after the consultations with the National Committee for Emergency Situation, decided to suspend all the teaching activities in the primary school, at national level, starting from 11th of March till 22nd of March with the possibility to prolong the period. Starting from this moment, the Romanian education system is reoriented towards new communication and cooperation practices to ensure continuity of learning and organizational functioning.

At university level, as a result of Public Health Department's recommendations, the Senat of University "1 Decembrie 1918" of Alba Iulia decided, starting from March 9, 2020, the following: the sanitation and medical-sanitary protection measures were accentuated and strictly followed in the entire university campus; it was decided that any scientific, socio-cultural or other extracurricular activities scheduled until the end of March 2020, to be suspended; any type of international mobility (incoming / outgoing) was suspended, as well, both for students and for teachers or auxiliary teachers; It was recommended to avoid, as much as possible, any travel between localities and outside Alba County, especially by public transport. International students were advised to avoid moving to their home countries.

As in 16 March 2020, The President of Romania, Klaus Johannis, declared emergency situation for the whole Romania, our University moved to online and took the following measures: access to the institution was prohibited for all persons, except UAB's own staff; it was recommended to avoid leaving the workplace (office) until the end of the program; the circuit of documents was to be made mainly online, except for the situations that necessarily require the physical circuit; payment of fees will be made only by bank transfer or postal order (detailed information can be found on the website of the university).

So, the period for the suspended teaching activities in HEI's started on March 17 and lasted till March 22, 2020. After this moment, the online teaching period started. The University Senat decided that, were possible, the teaching activities should be organized online, or there should be done a rescheduled programming for the teaching activities that were considered impossible to be held online, like: sports, computer engineering, electronics, kinesiotherapy and so on. This was the case for all the Romanian HEIs. This concerned education on

bachelor's, master's, and doctoral degree courses, as well as doctoral schools and courses and trainings organized within the university, post-graduate studies, or in other forms.

On 22 March 2020, it was again extended the suspension of face to face courses and seminars until March 31, 2020, and the online teaching activity continued. During this period 11-31 March, at University level, the management of the university tried to organize the online teaching activities. First, the IT Department checked the licenses that our institution had for online platforms and renewed them. It was the case for Microsoft Teams and Zoom. After that, they started creating institutional email addresses for all students, teachers and staff, as only some of us had and used these. During 1 week (17 – 25 March), 5000 email addresses were created for students and 300 addresses for teachers and staff and several training meetings were organized with each department in order to prepare teachers and staff for online working. For most of the Faculties, the official online teaching activities started on 25 March 2020. Some of the teachers had their classes also during the period 17 – 25 March 2020, but each of them decided the manner in which they teach. Some of them used ZOOM, other used Google Classroom, other Skype and some even send the courses to students by email and had the discussions on WhatsApp. But each of our colleagues understood the importance of keeping the contact with the students, even if it was online.

What is important to mention is that for distance learning specializations our institution was already using Moodle platform. But, till then, the platform was used only to provide students with access to teaching materials and never for videoconferences. In this case, for distance learning students, as they were already familiarized with the Moodle platform and already knowing how to use it, the faculties decided to maintain Moodle as online teaching platform for distance learning students and the Blue Button for videoconferences was activated. Also, the exams were carried out for them on Moodle platform. During the suspension of classes specified in separate provisions, deans and directors of general university units were obliged to enable academic teachers to conduct e-learning courses and/or online classes. Three academic semesters have been held in remote mode, with no exception.

So, starting from 25 March 2020, after all the organizational processes has ended (creating addresses, having training meeting with teachers, communicating the information to students etc.) the teachers at universities have been required to teach online, using the officially recognized teaching platforms in our University: Microsoft Teams and Zoom. This situation was commonly referred to as "e-learning" or "online learning". At the University, remote teaching was conducted starting from 25 March 2020 for the entire summer semester 2019/2020 and the entire academic year 2020/2021. It’s worth mentioning that not all the universities in Romania worked the same. Starting with the summer semester 2019-2020, some universities adopted a hybrid system of teaching. That meant that all the theoretical courses were taught online, while the seminars and laboratories were taught face-to-face, especially in the case of computer science, engineering, medicine, sports specializations as they require much more the contact between the professor and the student while teaching-learning process. This could be possible because of the university autonomy and as part of the learning outcomes covered by the curriculum can be achieved through classes conducted with the use of distance learning methods and techniques (like philology or economics). These

classes could be conducted using infrastructure and software that ensure synchronous and asynchronous interaction between students and teachers. It is important that classes conducted with the use of methods and techniques of distance education may be implemented if it is allowed by the specificity of education in a particular field of study.

Ministry of Education and Research adopted in this period Emergency Ordonnances that gave the possibility of verifying learning outcomes using electronic means of communication; under this provision, higher education institutions were allowed to organize examinations, including the final examination, and final course tests or other forms of verifying the achieved learning outcomes defined in the curriculum outside the seat of the institution.

From the beginning of the launch of distance learning, university authorities have specified that examinations, oral assessments and diploma examinations shall be conducted via videoconferencing in Microsoft Teams application, or Zoom, these being the only online platforms agreed by the university, that allows for recording of the exams. In the first semester of distance learning, for the first week (17 – 25 March 2020), as mentioned before, teachers were allowed to use any application of their choice, but after the 25 March 2020, in the two remaining semesters our University obliged the academic community, through the newly introduced procedures for online teaching, to use only Microsoft Teams in online teaching for the regular students and Moodle for distance learning specializations. For the summer semester 2019-2020 all the online teaching activities were carried out on MS Teams, Zoom and Moodle for the distance learning students.

In Romania, the primary schools start in the September 15, and usually the start of the academic year is influenced by what happens in the first two weeks of primary schools. This was the case this time as well. There was no decision taken regarding the new academic year before September 15, 2021 as every university and even the Ministry of Education and Research wanted to see how will the situation evolve after starting the primary school. It did not take more than 10 days after the primary schools started and the sanitary situation in Romania get the worst. This is the reason why, even though many Romanian universities suggested that they will start the activities face-to-face, they changed in the last minute in online or hybrid mode.

The academic year 2021/2022 at the University “1 Decembrie 1918” of Alba Iulia began on October 4 in a hybrid system. This hybrid system meant that all theoretical courses and seminars that involved the physical presence of more than 80 students were taught online, while smaller ones were taught face-to face. Also, all the master classes were taught online. This situation lasted only two weeks, as the number of the quarantined students and teachers from our university started to increase. On 23 October 2021, the University Senat decided that, starting from October 25, 2021, a.l the courses will move online. The next day, also the Ministry of Education and Research, considering the national sanitary situation recommended all the primary schools suspend their activities for 2 weeks. Since then, we are having all the classes online, till the winter holidays.

2. Methodology

Survey in Romania has been conducted from June to September 2021. In the period preceding the mailing of questionnaires (May 2021), a list of HEIs was determined, along with identification of Departments and Institutes to which the questionnaires were sent. In total, questionnaires were sent to 40 HEI Romanian entities with the request to distribute the questionnaires among their employees. Within the mailed questionnaires, 10 were addressed to universities of technical profile, 20 to universities of different educational profiles, and 10 to natural science and pedagogical universities.

The invitation to take part in the survey was also posted on the website of the University and Faculty of Economics and on the Faculty's social profiles. It was also sent via internal mail to all teachers at our University. During this period different activities were undertaken to collect as many responses as possible: personal emails, WhatsApp and Messenger messages.

As a result of these activities, 67 responses were collected. The respondents included representatives of 10 of the largest HEI's in Romania. 78% of respondents belonged to the group of establisher/permanent position, 16% have intermediate/temporary position and 6% were at the early career stage. This is also reflected in the age structure of the respondents, with the largest group being 40-49 years old (45%), followed by 30-39 years old (37%). People by 50-59 years old constituted 17% of respondents, whereas people between 60-79 years old constituted 1%. 65% of the answers were given by women and 34% by men. Respondents worked at variety of Faculties, represented almost all fields of study, except for arts, medicine, music, natural sciences, and political sciences (fig. 1 and 2).

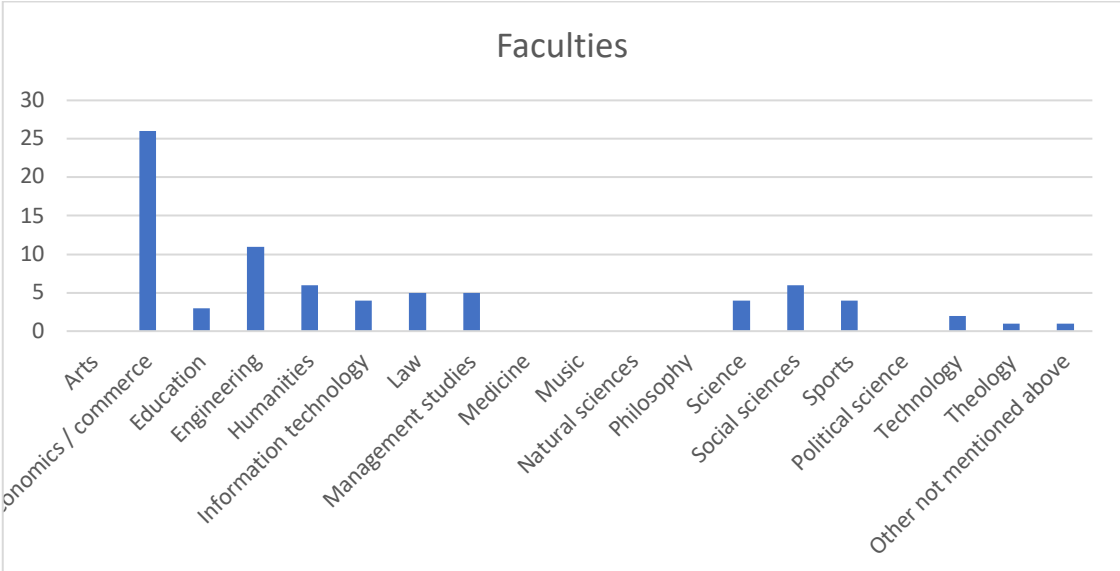

Fig. 1 Faculties where respondents teach

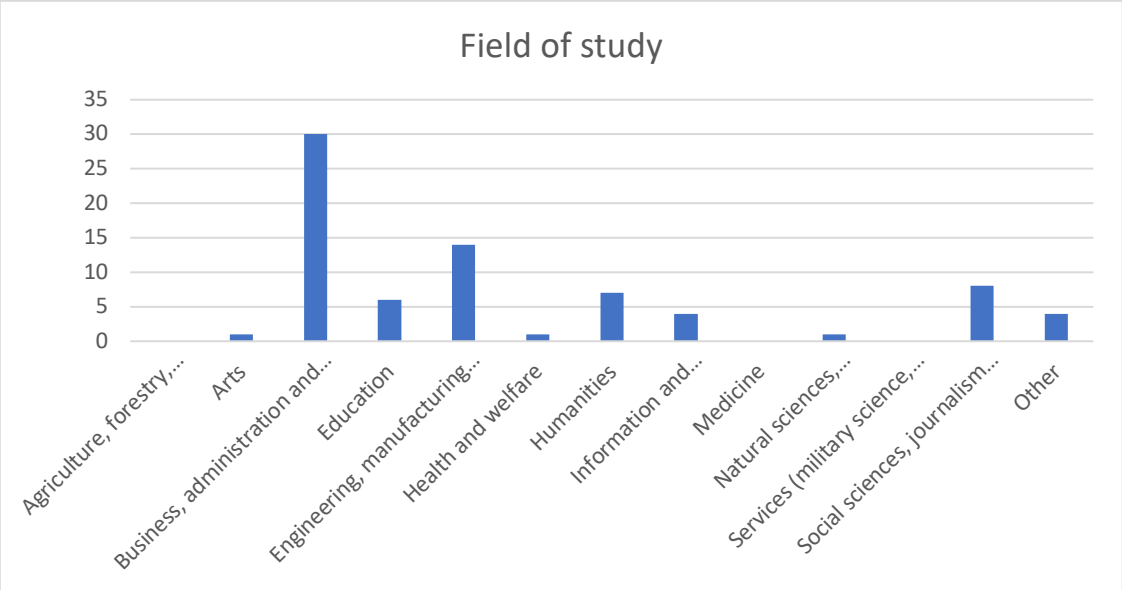

Fig. 2 Field of study

3. Online teaching before the COVID-19 pandemic

The results of the survey show that distance learning was used in Romania in moderation. It was predominantly used in educational institutions that had taught without attendance. 33% of respondents used moderately and 37% did not use online teaching at all.

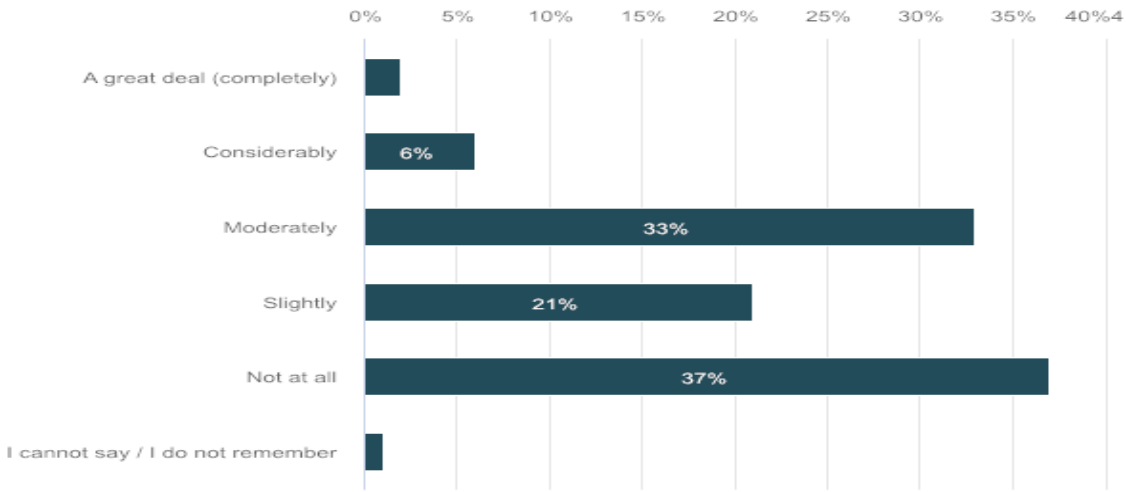

Fig. 3 Online teaching before Covid-19 pandemic

In the previous period, students from Romania used online education only in accessing courses. In Romania, the public education system did not provide for the use of online examination. Students could also attend a certain number of lessons from remote (12%), participated in online written exams (7%) and had access to video/recording of registered

lectures. Live streaming or online oral exams have not been practically applied. 83% of those who responded that they used the online system did so for part-time education - distance learning. Live streaming to lessons was offered for students 5%.

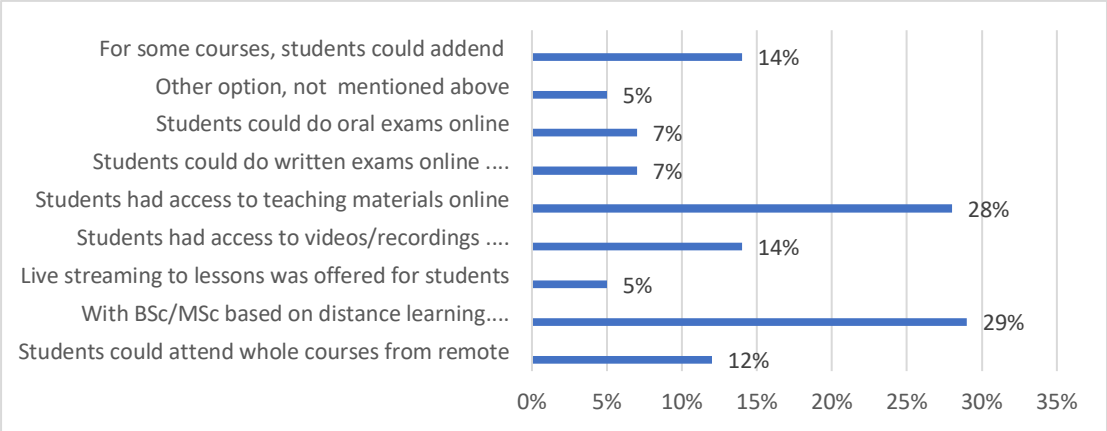

Fig.4 Forms of online teaching before Covid-19 pandemic

In the pre-pandemic period, online platforms were used monthly in teaching by 21.3% of those interviewed, but these people are generally the ones who took classes in part-time education. Most of the interviewees used it less than once a semester or never.

Analysing the answers regarding **online teaching methods** in figure 5 is observed that approximately 64% used the presentation and videos animations 28%. Presentations were often used before the pandemic.

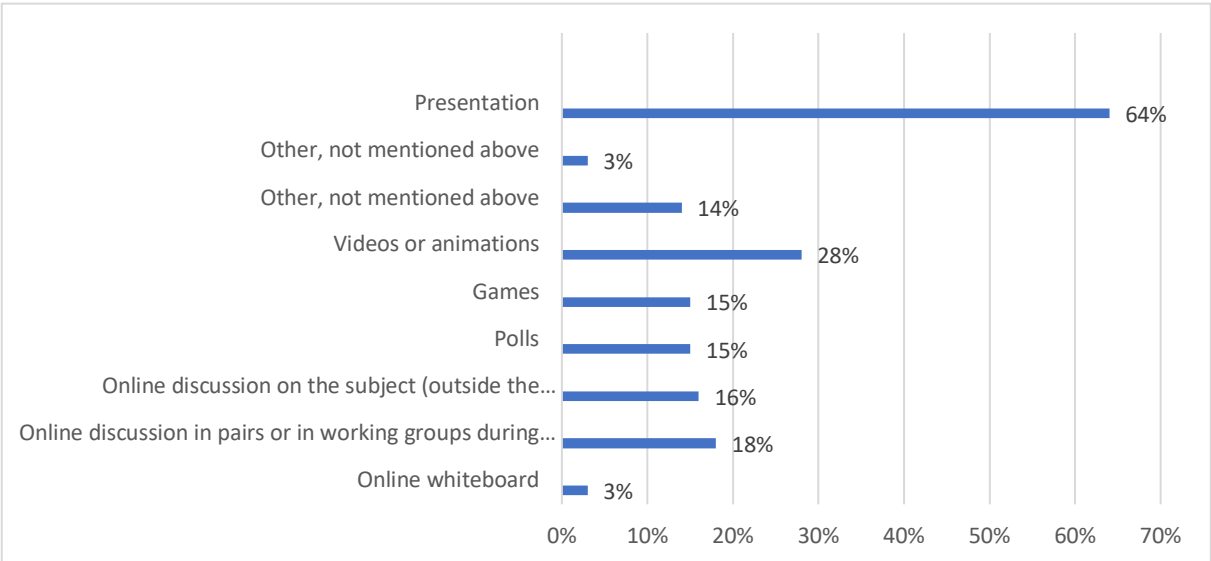

Fig . 5 Online teaching methods used before the pandemic

Online discussion is used by approx. 18% and polls by 15%. Among other forms of distance learning mentioned were:

- E-mail consultations.
- Discussions in Forums.
- Skype.
- Sharing didactic materials.
- Google Sheets, Google Forms, Google Docs.

Some respondents also used electronic tools to create e-learning content or to organize online ad-hoc tutorials navigated by peers. It is interesting that the respondents also mentioned games among the tools used. The results show a link with the predominant form of pre-pandemic education.

4. Challenges regarding the sudden shift to online / remote teaching (spring 2020)

In Romania remote teaching at the beginning of Pandemic, that is in the summer semester 2020, was mainly carried out remotely from home (76%), with the minor exception of the realization of teaching activities from the University premises (23%).

Challenges with online teaching

For the Romanian respondents, a big challenge associated with the transition to distance learning was: engagement of students during lessons (e.g. motivation, activation, make students reactive and mentally focused) 52%, identified as significant and moderately challenging 36%. The work done in front of the computer was felt by most of the interviewees: increased fatigue from prolonged activities on screen 54% (Significantly challenging) and problems related to ergonomics in remote learning 33%.

Another important issue for the teachers was to get the students involved in the lessons. This issue was rated as a significant challenge by 54% and as moderately significant by 35% respondents.

Table 1. Challenges faced in the shift to online

Expenditures on new gadgets
Preventing fraud for online examination is not very easy
Work environment (child at home)
Some of the students (mostly non-regularly attending students) writing messages during the evaluation all the time, 24 from 24 hours, 7 days, sometimes requesting personal answers even when everything was properly and publicly announced in the team; in general, it was very tiring to coordinate non-regularly attending students to follow some evaluation rules and requirements for the exam.
Limitations due to network connection

Challenges related to ICT

The big challenge of this period was examining students and checking their knowledge. However, over 66 % of academic staff reported challenges related to conducting examinations, of which 28% rated them as significant. Teachers also reported problems related to the verification of students' identity, 52 % of which describing it as significant 21%.

Internet connection (irregular, poor) as significant 16.4% and high 22.4%. Digital equipment used in teaching (e.g. availability/use/plugging of laptop, web camera, screen etc.) as significant 14% and high 28%. Some teachers reported problems in the absence of licenses. This led to limited access to teaching platforms (e.g., 40 min on Zoom).

Internet access was good and this has not been considered a challenge for teachers. As it is known, Romania is on the third place in EU when it comes to internet as its internet infrastructure is a new one and a most of the internet users use optical fiber and the speed of internet is very good. Internet connection (irregular, poor) – 16% as significant.

5. Solving the challenges during the sudden shift to online teaching (spring 2020)

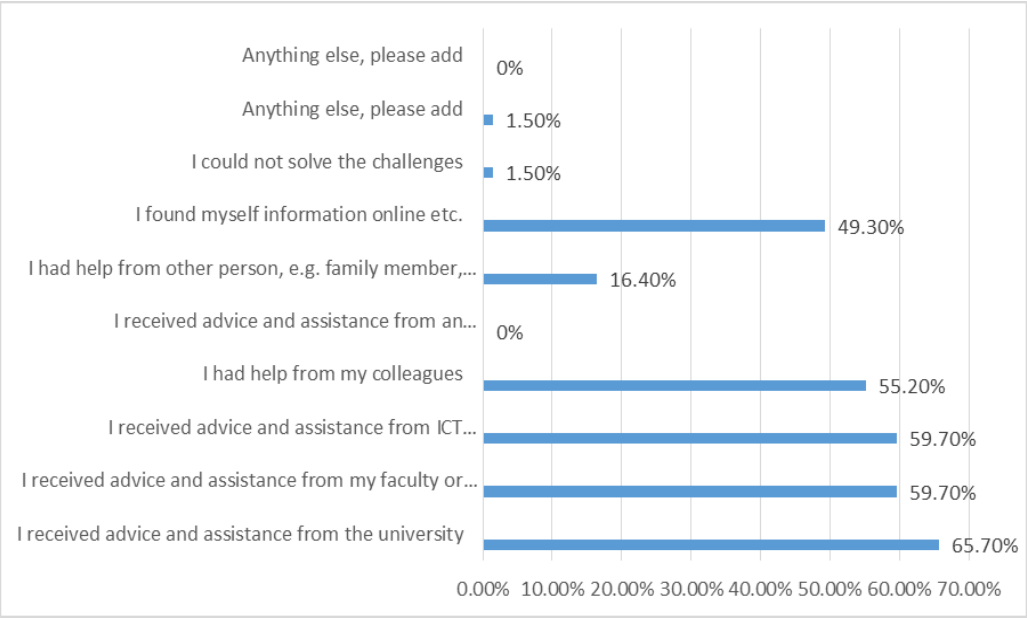

Fig. 6 Solutions to overcome the challenges

From the analysis of the answers provided, it can be seen that most universities have been concerned with providing support to teachers in the transition to online teaching. Assistance from the university 65% and assistance from my faculty or department 59%.

The support received from colleagues, university authorities or others was also helpful. Although almost 59 % of the respondents said they had received support from the ICT Department. However, a considerable percentage searched for information on their own 49%

Universities have taken steps to overcome the difficulties and ease the work of teachers. In general, the activities focused on acquiring new knowledge on the use of IT tools in distance learning and organizing courses for the platforms used in the university. Even if some platforms were known, the courses offered made the work more efficient. Teachers should learn to organize their classes, materials more efficiently. For those who needed specific equipment, halls were equipped within the university. Many teachers who did not have the necessary equipment (camera gateway or microphone) decided to buy it at that time without waiting for support from the university. The quality of internet connections to remote work was also improved by buying better packages.

As far as the conduct of exams and tests were concerned, which was a major problem, some lecturers decided to change the form from written to oral, some introduced a series of micro-projects instead of the former big projects. In terms of examining students, there was a need for openness from both teachers and students. Examination forms have been changed where possible.

6. Situation during online teaching (spring semester, May 2021 - July 2021), the challenges

While in the first year of online teaching the higher percentages were on the “significantly challenging” column, in the second year of remote teaching, Romanian respondents showed a small reduction in the challenges they faced. As the percentages in the first column decreased, the ones in the “moderately challenging” and “slightly challenging” increased. For 47.6% fatigue from prolonged activities on screen remained slightly challenging as well as Increased workload due to organisation of online teaching (31.3%). Online teaching methods and techniques became moderately challenging (36.4%) or not slightly challenging (37.9) or at all (12.1%). Communication with students (e.g. keep the contact with them) is considered moderately challenging by 43.9%, while slightly challenging by 33.3% or not challenging at all by 7.6%. Also, scheduling with other professional activities from remote (e.g. research) was considered moderately challenging by 43.9%, while slightly challenging by 24.2% or not challenging at all by 16.7%. Even the engagement of students during lessons (e.g. motivation, activation, make students reactive and mentally focused) became less challenging. As we can see from the figure bellow, it was considered moderately challenging by 41.8%, while slightly challenging by 16.4% or not challenging at all by 9.0%, while only 32.8% still consider it to be significantly challenging.

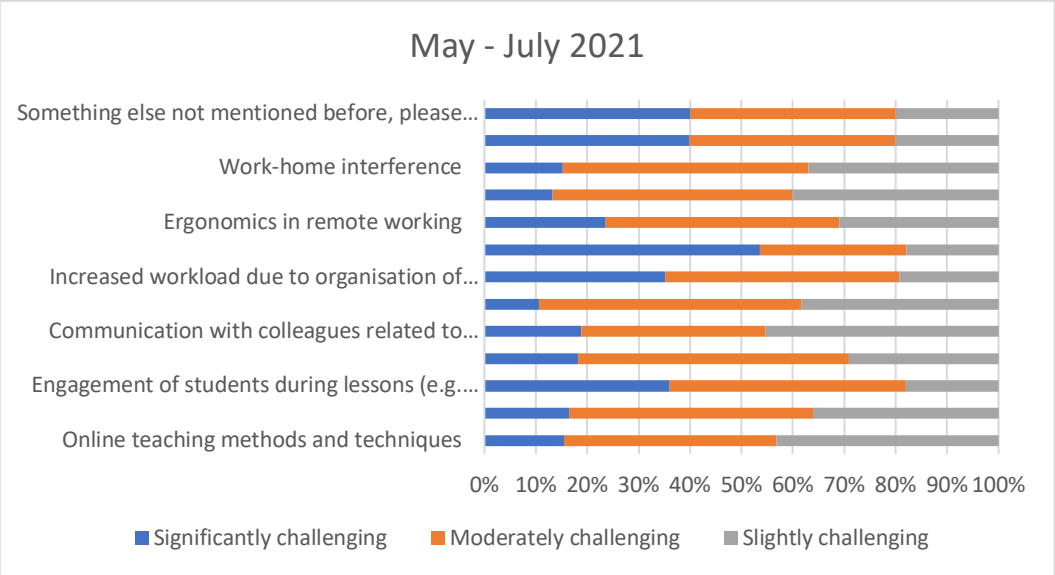

Fig. 7 Challenges for online teaching during May – July 2021

Most probably, the trainings that were organized for each university and their own experience during the last two semesters, brought an increase in the skills of academic staff in the use of ICT tools. It can be observed from the graphic bellow that most of the problems reported in the previous period have decreased significantly. Internet connection (irregular, poor) still was significantly challenging only for 6.10% (10% less than in 2020), for 28.80% was moderately challenging, while for 39.40% was slightly challenging or not at all challenging for 24.2%. Most of the respondents considered to be moderately challenging conducting examinations 36.9%, and 36% accessibility related to ICT, followed by verifying student identity (33.9%) and software and applications (33.3%), while slightly challenging was considered to be Internet connection (irregular, poor) (39.4%), software and applications (37.9%), licenses for software and applications (29.7%). On the opposite site, the less challenging are considered to be digital equipment used in teaching (e.g., availability /use/plugging of laptop, web camera, screen etc.) (36.9%), accessibility related to ICT (35.9%), licenses for software and applications (35.9%).

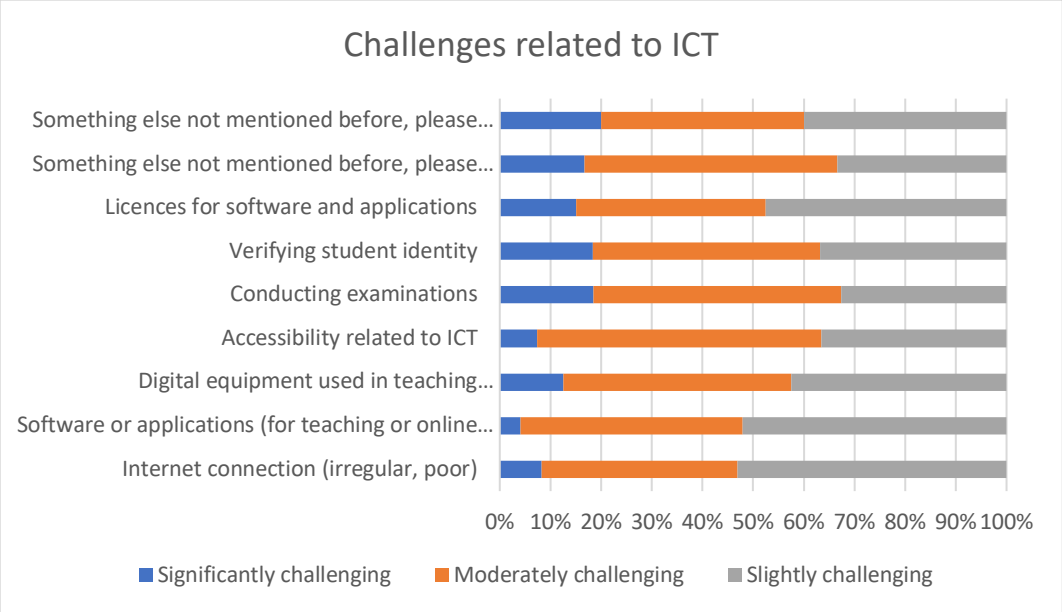

Fig. 8 Challenges related to ICT

Challenges related to teaching online certain skills and contents for the students

For Romanian respondents, the biggest challenge during this period was online teaching of content related with laboratory work (reported by almost 35% of respondents). This is the case especially for medicine, engineering, sports specializations. As well, content related with fieldwork posed a significant challenge for, respectively 30.7% of respondents. The teaching staff (24.5%) reported also to be significantly challenging teaching students general skills like ability to work independently, problem solving skills, data acquisition and data production skills.

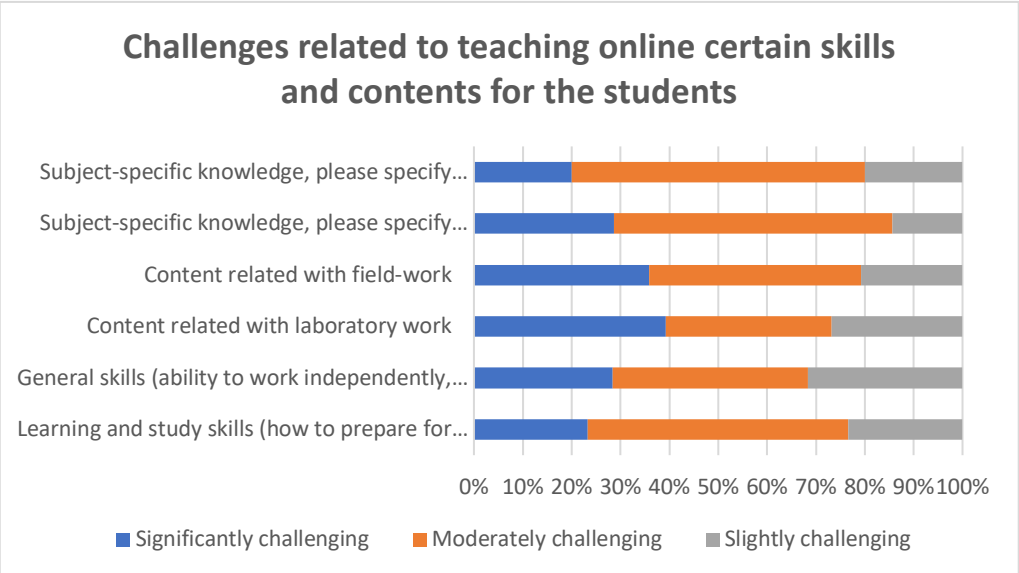

Fig. 9 Challenges related to teaching online certain skills and contents for the students

Online teaching methods

Analysing the information relating to the teaching methods used, as it was expected, presentations remained the most preferred way of teaching (95.50% in 2021, compared with 63.90% before pandemic), followed by online discussions in pairs or in working groups (59.70% in 2021, compared with 18.00% before pandemic) which has had the most significant change if compared with the period before pandemic (the difference is 41.70%) as it can be observed in the figured bellow. As well, an important change can be observed in the case of online discussion on the subject (56.70% in 2021, compared with 16.40% before pandemic), which means that even more teachers (40.30%) stated to use this way of teaching. Also, the use of whiteboard (with 31%), the use of videos and animations (with 19.90%), the use of polls (with 18%), and the use of games (with 16.50%) increased if compared with the period before pandemic.

Other ways of online teaching mentioned by Romanian teachers are: discussions in Forums; discussions on Skype; sharing materials; Google Sheets, Google Forms, Google Docs.

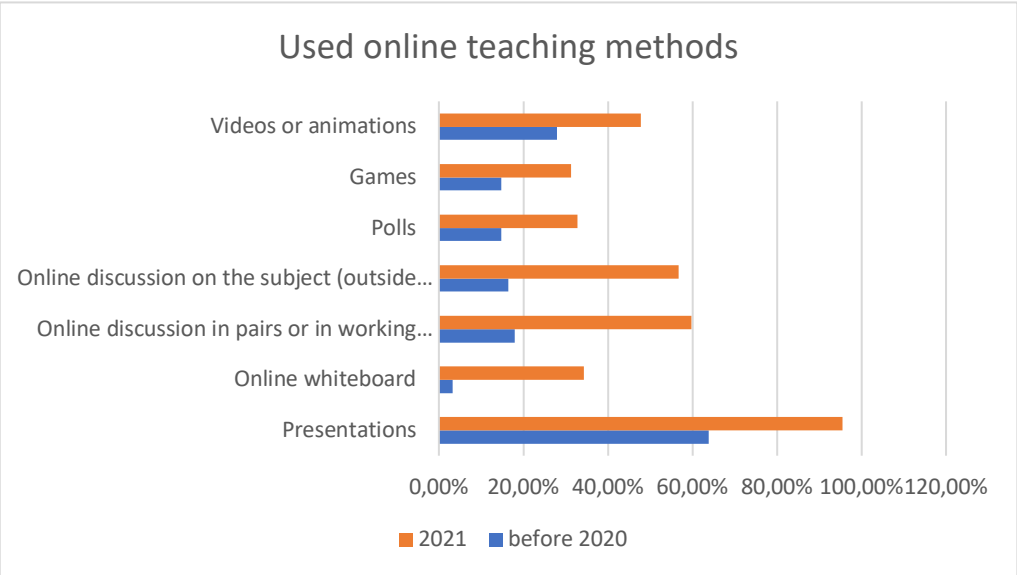

Fig. 10 Used online teaching methods

Examples of successful practices, useful methods to improve teaching online

Almost half of the respondents mentioned the practices that they consider to be successful and effective methods used by them during online teaching.

From all of them, we mention the most frequent or unique ones:

- Personalized written feedback on the activities, homework or exams, with additional verbal communication session.
- More intense use of audio-video resources in order to stimulate the formulation of opinions.
- Giving greater importance to the ongoing evaluation.
- Providing course materials in different formats (ppt, pdf, audio-video recordings).
- Random selection of a student to continue an idea during the course.
- Multiplying the applied activities in the detriment of the theoretical ones.

- Change of emphasis from final, summative, theoretical evaluation to continuous, formative, applied evaluation.
- Completing the evaluation with forms of self-evaluation and inter-evaluation.
- Keeping permanent contact with the students and engaging them in different activities.
- To maintain their attention, I use polls done with Kahoot and award points in seminars for the winners.
- I use different videos on Youtube or other websites to maintain their attention and make sure they will get the information in a more funny or animated way.
- Convincing the students to keep their cameras on improved significantly communication and their engagement.
- I used online whiteboard and challenged students to use it also, in the interactive parts of the courses and seminars.
- I asked students to present their works online, to the other students, I assessed their works and their involvement with additional points which contributed to the final mark.

7. Future plans / prospects

Romanian respondents appreciated online education as a positive experience. 33% intend to use online teaching both from their home or from the university premises and at the university (25%). Only 11% of the respondents stated that they do not intend to continue with distance learning.

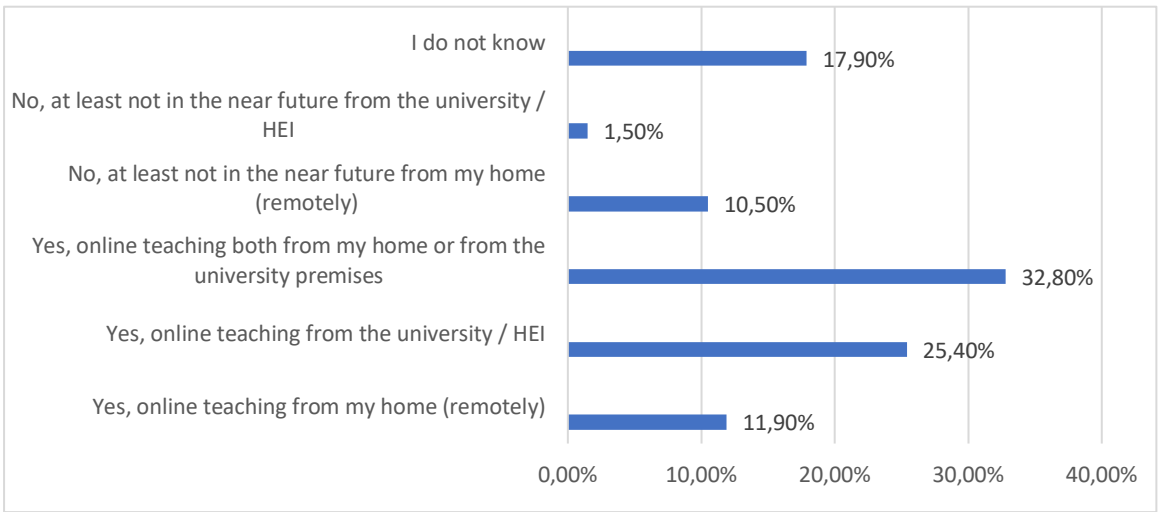

Fig. 11 Are you planning to use online teaching as additional method to your traditional class

Teachers say they will continue to use the online platform to manage student homework, provide written feedback and achieve faster communication with students. They want to stimulate the team activity (projects) of the students by using the facilities of the online platforms. They will use online learning resources to ensure a faster transmission of additional resources and alternative ways of providing specific learning materials. They want to

encourage participation in webinars given by people outside the university. It is better for students that work or at the master courses. The presence is higher online.

Participating in training supporting online teaching
Teachers want to continue participating in online teaching development programs. A preparation is desired for:

- Online teaching methods: 33.3%
- Students' activation online: 37%
- Verification of knowledge: 34%

University offering or planning to offer international online courses for students outside of your own university

Regarding this aspect, 47% said yes and 46% do not know about these programs. In general, universities offer courses in the following areas:

- English Language and Literature.
- Marketing.
- Economics.
- ICT.
- Vocational training courses.

Annex VI. Report on identified challenges and problems in Slovenia

Prof. dr. Elena Bužan, dr. Laura Iacolina, dr. Felicita Urzi
The University of Primorska, Slovenia

1. Introduction

At the end of March 2020, due to the increased risk of infection with SARS-CoV-2 virus and subsequent cases of COVID-19, university teachers had to switch to emergency remote teaching. This pedagogical approach is commonly referred to as "online learning", however, most teachers were not prepared for it. As part of the project InCompEdu, a survey regarding the difficulties they faced in this period was conducted from June to September 2021 in Slovenia. Here we present the summary of the results of a first online survey of a sample of 86 University teachers.

2. Online teaching before the COVID-19 pandemic

The results of the survey show that remote learning was not common in Slovenia before the Pandemic (Fig 1). In total 74,1 % of respondents did not use it at all (41%) or only implemented it to a small extent (33,1%). The most popular form of online teaching was providing online access to teaching materials (84,6%), e.g., sharing presentations and lecture notes from courses. The respondents pointed out that students had access to information such as the range of tests topics, literature needed, etc. Students could also attend a certain number of lessons from remote (21,2%), participated in online written exams (17,3%) and had access to video/recording of registered lectures (21,2%). Live streaming or online oral exams were only sporadically implemented (Fig. 2). Some of the teachers offered asynchronous reporting of student's projects, or online hand in of the homework. Some other online practices were used to engage students in group collaborations, forums for discussions as part of research projects or other online activities including analyses, infographics creation or quiz. Also mobile applications were used for student's fieldwork, collaborative mapping or cocreation of written/multimedia documents.

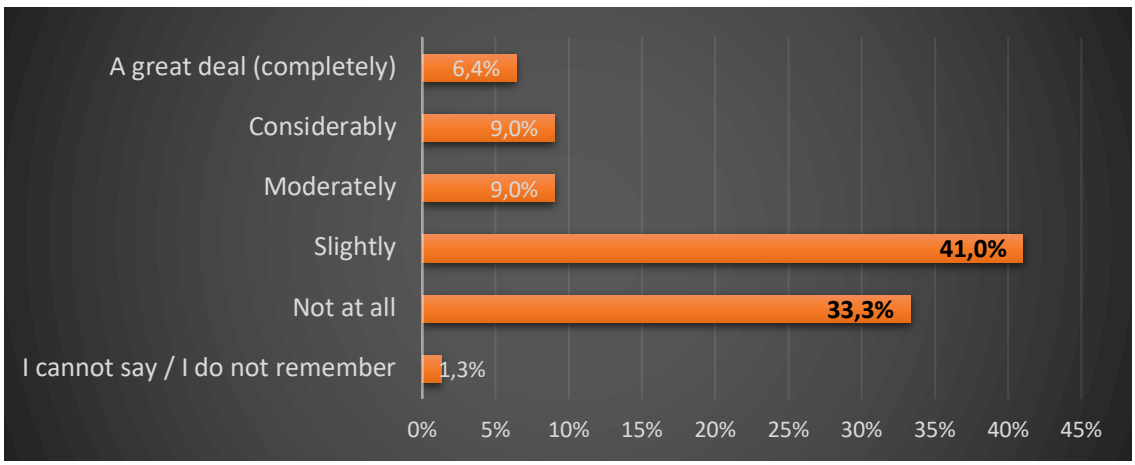

Fig. 1. Did you practice any form of online teaching?

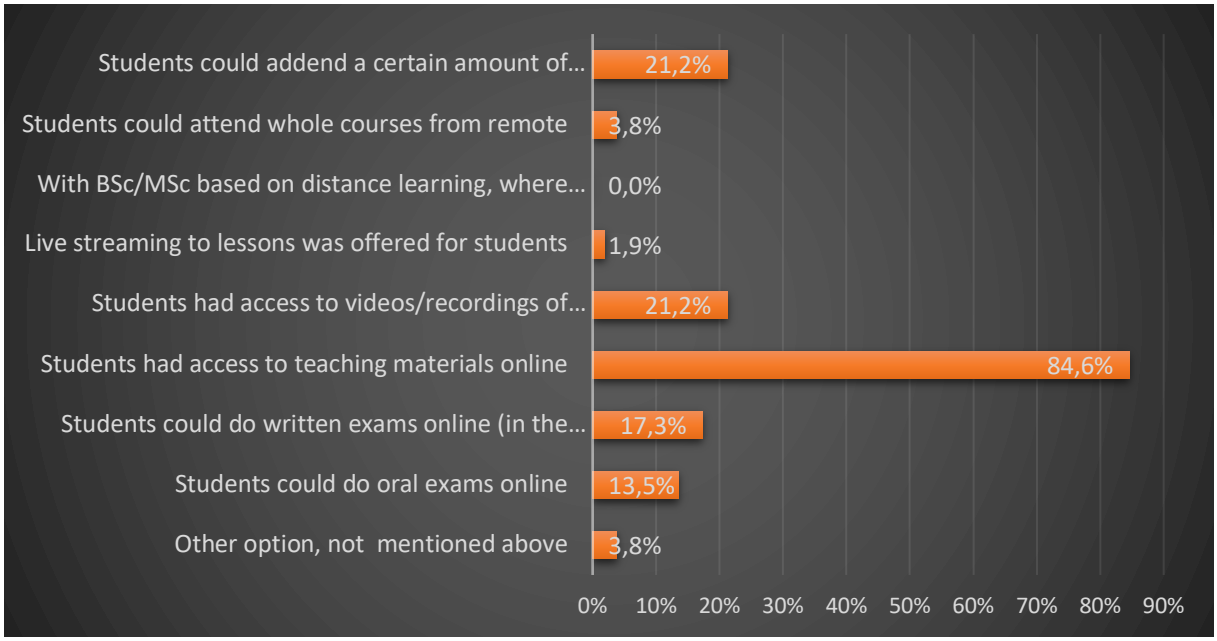

Fig. 2. Which kind of online teaching you were involved with before the COVID-19 pandemic?

Before COVID-19 adoption of online teaching tools and platforms was minimal. Almost 52% of respondents did not use these tools for teaching activities, 73% never used these tools for giving lectures, seminars or talks at the University, and 64% never used these tools for examination (Fig 3). Among those that did, most of them used presentations (66%) or video material (43%). Additionally, pools were quite frequently used (42%) (Fig 4).

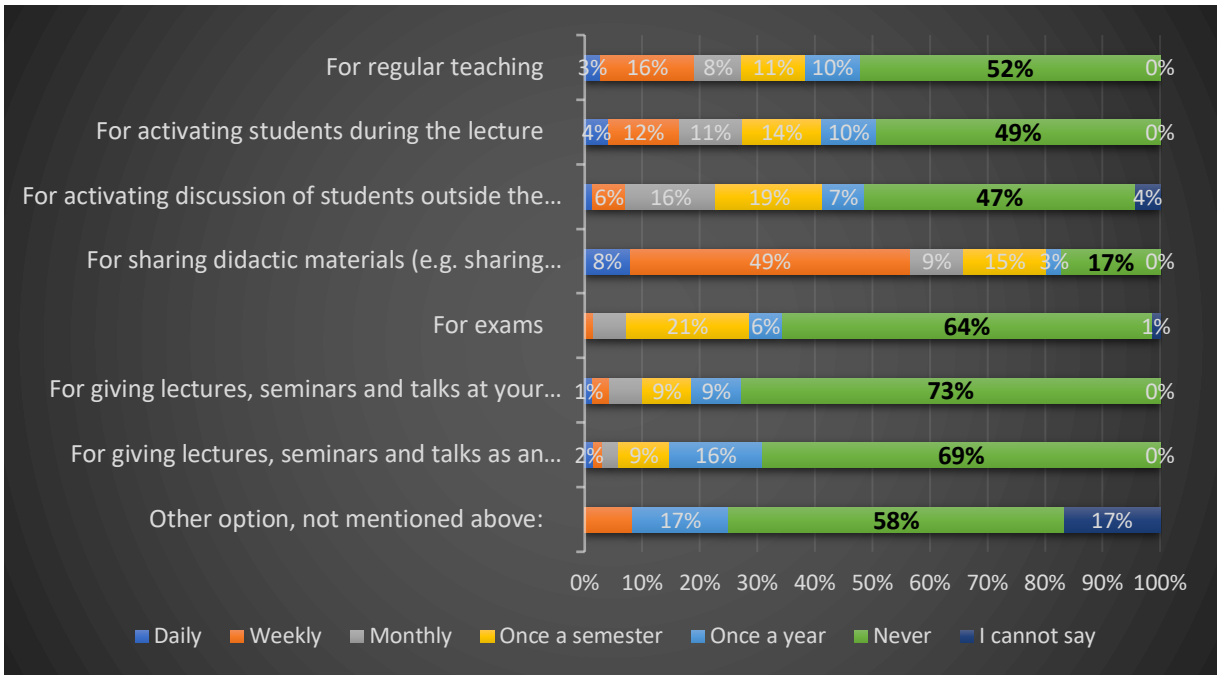

Fig. 3. How often did you adopt online teaching tools and/or collaboration platform before the pandemic?

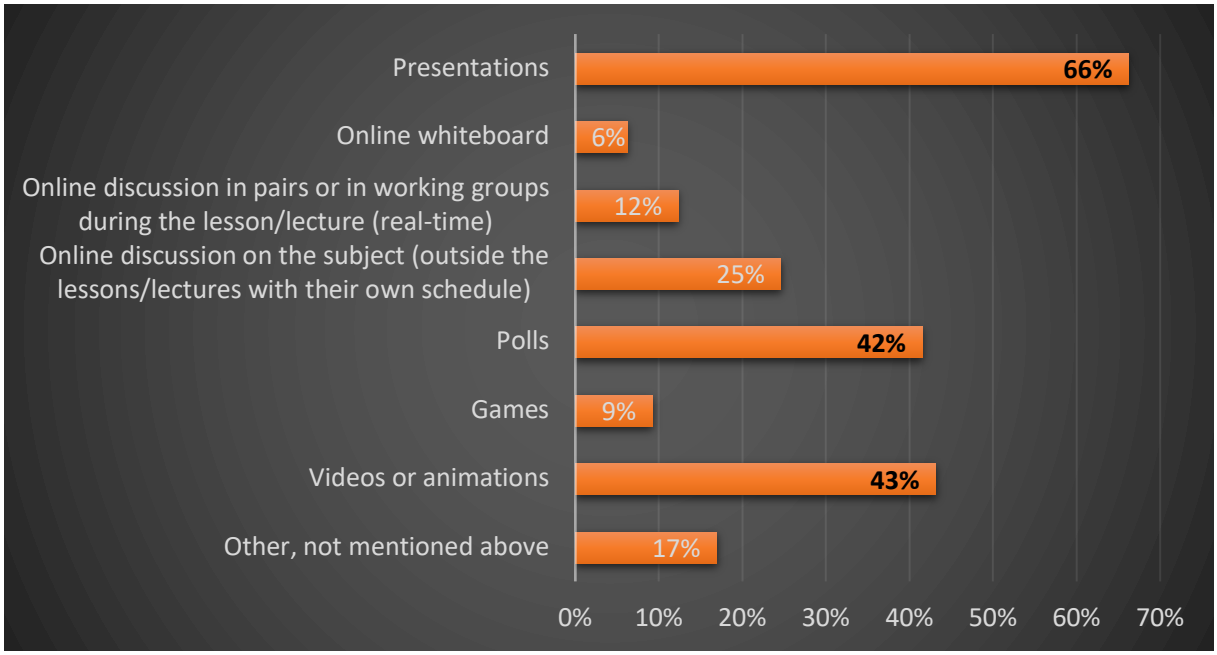

Fig. 4. Which online teaching methods did you use before the pandemic?

3. Challenges regarding the sudden shift to online teaching (spring 2020)

At the beginning of pandemic (summer semester 2020), most respondents performed online teaching activities from home (88%), and only a few used the University premises (9%) (Fig5).

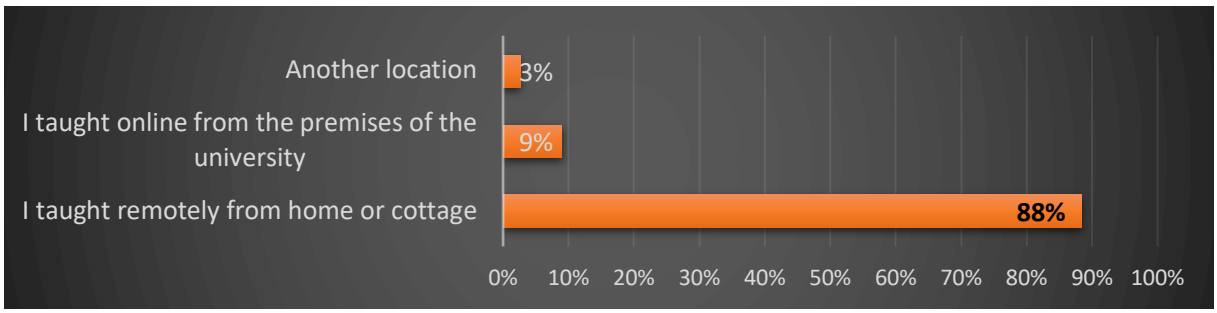

Fig. 5. From where did you carry out your online teaching activities in spring 2020?

The greatest challenge associated with the transition to distance learning was to get the students involved in the lessons (41% significantly and 29,5% moderately challenging). A large proportion of participants identified the increased workload due to organization of online teaching as significant (29%) or moderately challenging (43,3%). Therefore, nearly 60% of them noticed an increased fatigue due to prolonged work in front of a computer screen (29% significantly and 43,4% moderately challenging), and problems related to ergonomics in remote teaching (32%) (Fig. 6).

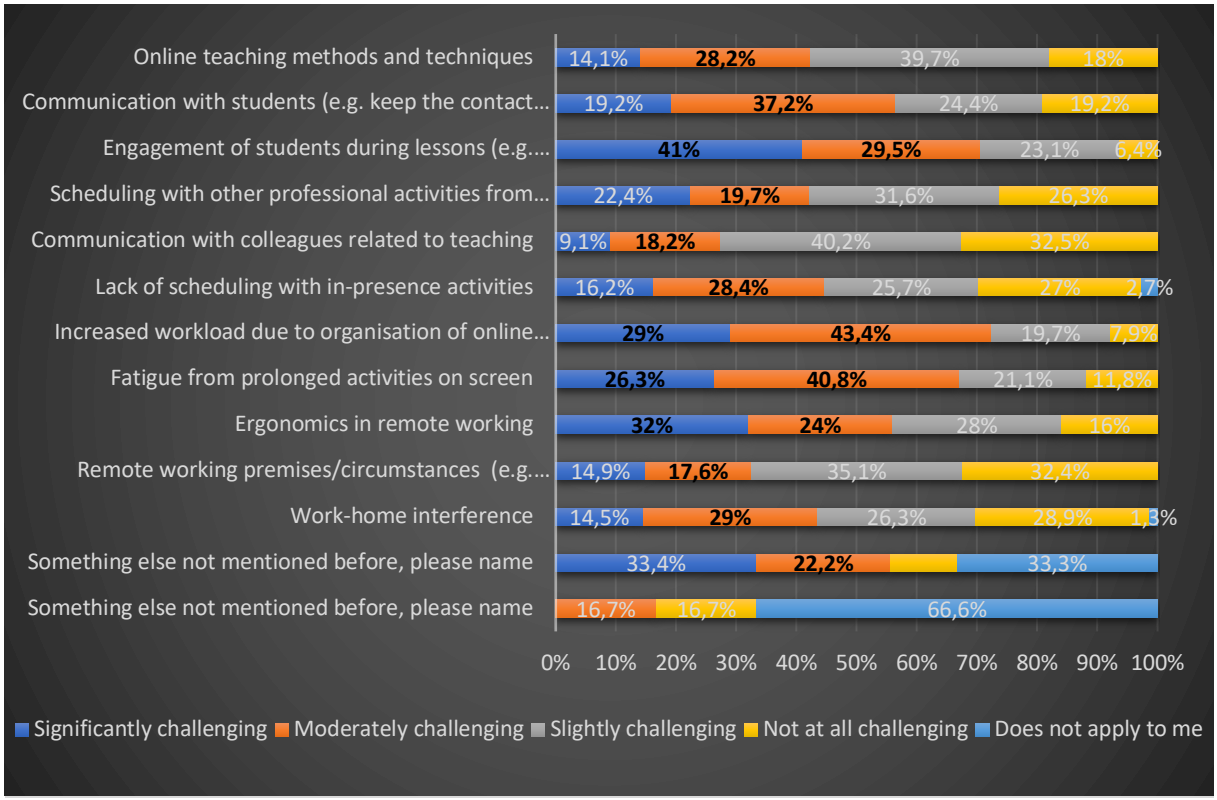

Fig. 6. Challenges with online teaching

Despite the low adoption of online before the Pandemic, the use of online software or applications for online teaching was a minor problem for the participants (38,5%), or they did not have any challenges at all (34,6%). However, over 50% of academic teachers reported challenges related to conducting examinations, out of which 22,7% rated them as significantly and 33,3% as moderately challenging. Respondents reported some challenges to access related to ICT solutions (22,4%) or rated them as minor challenge (32,9%). There were almost no problems related to digital equipment used in teaching, internet connection or licenses for software and applications (Fig. 7).

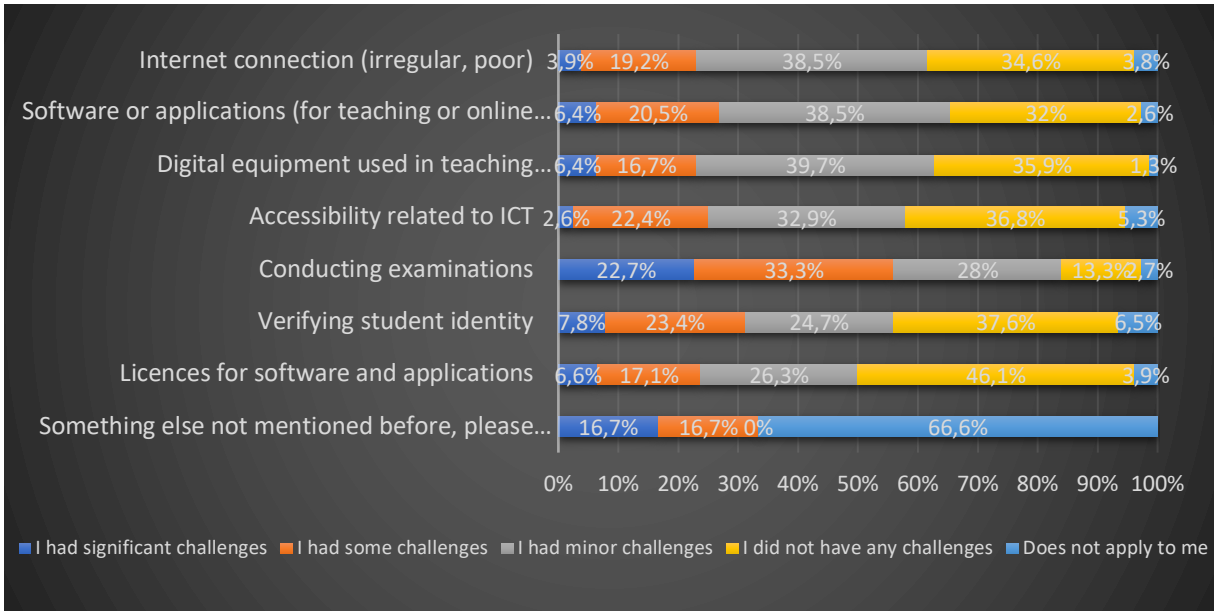

Fig. 7. Challenges related to ICT

Academic professors who faced sudden changes when switching to online teaching in the summer semester 2020 had to put in a lot of personal effort, as pointed out by almost 65,4% of the respondents, who indicated that they had searched the Internet for information on how to solve the problem themselves or received helpful information from colleagues (59%). It turns out that some faculties had an adequate ICT support, since the responses of 50% of participants showed that they had received support from the faculty (Fig 8).

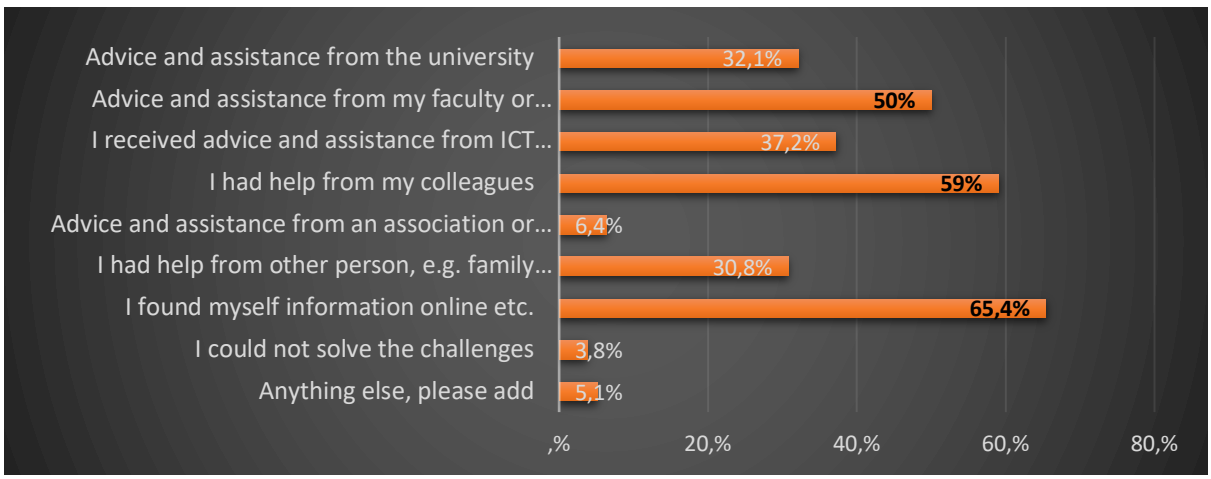

Fig. 8. How did you manage to overcome the most critical challenge(s)?

The whole academic community has taken numerous measures to overcome the difficulties that arose. Most of them related to the acquisition of new knowledge concerning the use of IT tools in distance learning. Academic teachers managed to overcome the most critical challenges in different way. The answers are summarized in Table 1.

Table 1. Brief examples on overcoming the most critical challenges

Responses
I adapting the lecture and asking students more questions during the lecture, just to see if they are following etc.
I overcame the majority of my connectivity problems by getting a new laptop.
The most critical challenge was conducting exams. Students came well prepared for cheating during online exams.
The help of a colleague of how to use online teaching tools was very important.
I learnt to use new platforms and create exams on Moodle. I bought myself a graphic table to draw equations
Additional hours on the internet looking for the solutions.
I bought a new laptop
Unstable or poor internet connection solved with a better (and considerably more expensive) internet package and hardware, for which I had to pay myself.
I had to dig a 35 m long canal 0.5 m deep in order to get the fiber optics cable to my premises. Once done, my internet provider laid the cable and I moved from ADLS to FO.
An iPad purchased by the Faculty, used as whiteboard. Students appreciated a lot as well as I.
Motivation of students to follow lectures - I tried using more polls, give some bonuses, but I was not able to get the same quality discussions with students.
Talking to my colleagues, we shared the experiences. I helped myself with physical activities and being a lot in the nature in my free time.
Mirroring of whiteboard in the room through camera.
Collaboration with colleagues (who were familiar with ICT; we created numerous "guidelines" for other colleagues and students) and colleagues who actually pointed out the issues to be solved
The greatest challenge I was faced was finding a quite space for conducting on-line teachings. I do not have my own office, and our institution conference spaces were refitted as provisory laboratories for COVID-19 diagnostics, so I had to improvise (asking colleagues who were not at work, etc.)
Online courses, webinars on the use of ICT platforms for remote teaching/learning (MS Teams, Zoom), other online teaching tools, as well as courses in remote teaching pedagogy.
Starting with new software, without any exercises.
By spending more time with PC and in communications with faculty ICT and students.
Trial - error - improvement approach brought comparatively good adaptation to remote work with students.
On line learning - YouTube presentations, tips and challenges or online learning, learning about Teams and Zoom tools.
By asking a question in a forum in MS Teams group that was created on the first day of the lockdown that included the colleagues from several faculties at our university.
All pedagogical teachers at the Faculty got initial written instructions on how to use Teams and after a few days, the lectures started in purely on-line form. Then, we got additional instructions and ideas on how to conduct lab work on-line (a challenge, indeed) - mostly watching existing videos of other institutions (as we did not have any of our own before). Thereafter I prepared some

videos on my own regarding the theoretical background of the lab experiments (that were otherwise performed in labs) and shared them with students. Ideas on how to conduct examinations came later, but on time. Nevertheless, I decided for only oral on-line exams - as this diminishes the problem of student's identity and cheating, but it took a week for the first round (60 students, I reserved 30 min for each of them). The responses from the students were mostly very positive to the whole semester.

Identity checking - a solution was provided with Moodle or the students showed their students' cards before exam. Cheating - partially solved with video proctoring (asking students to show their environments, etc., constant monitoring the students).
When comparing the test results with previous non-COVID19 years, we did not find differences. Designing online tests, so that students were not able to return to a question.

4. Situation during online teaching (spring semester, May 2021 - July 2021)

In the second year of remote teaching, the situation and challenges that teachers faced had changed. The proportion of teachers who taught remotely from home decreased in 2021 (from 88,4% to 55,1%). In spring 2021 part of our respondents (33,3%) had the opportunity to teach from the University premises, while only a smaller proportion (21,8%) were already able to teach both online and in-presence (Fig. 9).

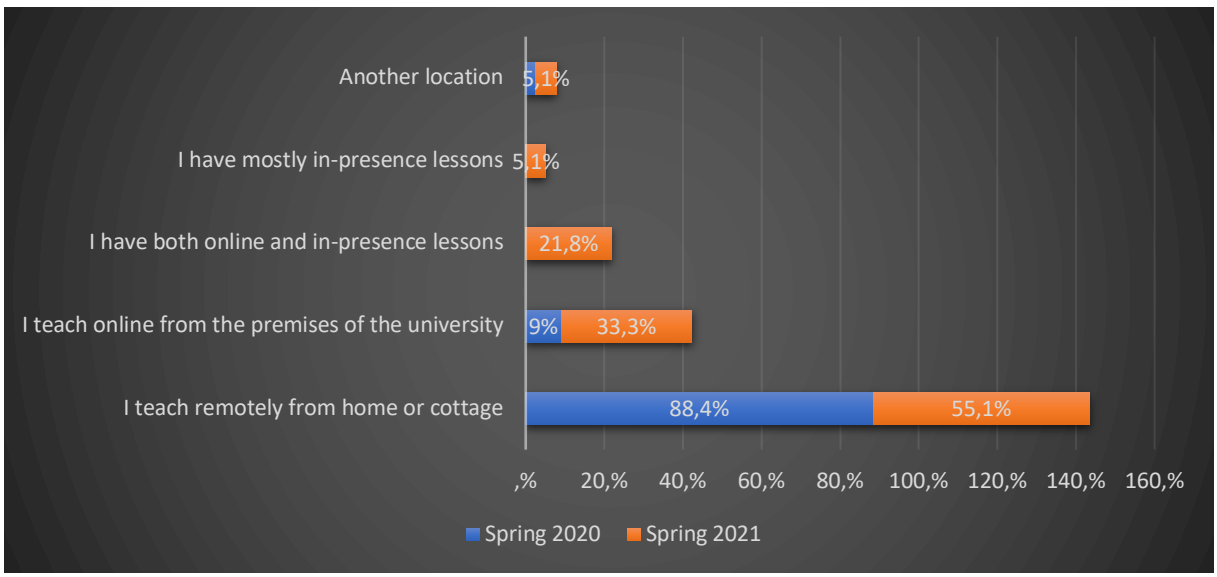

Fig. 9. Differences in where do you teach online (spring 2020 – spring 2021)?

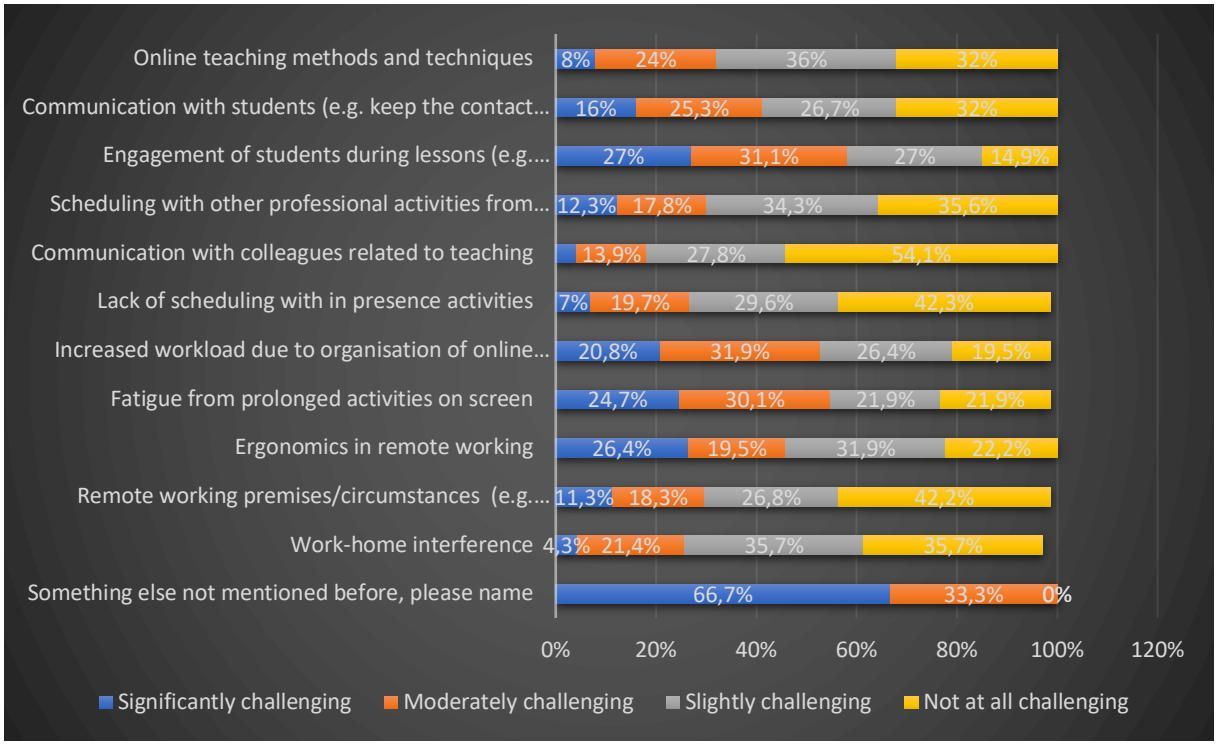

Fig. 10. Current challenges with online teaching – Spring 2021

In the spring semester, may 2021, respondents showed a slight reduction in the challenges they faced in remote teaching compared to the spring semester in 2020. Teachers had experienced a reduction in significantly and moderately challenging issues, such as workload due to organisation of online teaching (19,7%), lack of scheduling with in-presence activities (17,9%), work-home interference (17,8%), communication with students (15,1%), engagement of students during lessons (12,4%), fatigue from prolonged activities in front of a screen (12,3%), scheduling with other professional activities from remote (12,0%), online teaching methods and techniques (10,3%), ergonomics in remote working (10,1%), communication with colleagues (9,2%), and remote working premises/circumstances (2,9%) (Fig 10).

Additionally, some of the previously reported problems with ICT decreased, with the importance of issues such as conducing examination dropping by 22% in significantly and moderately challenging issues, software or application by 10%, licences for software and applications by 7%, accessibility related to ICT by 6%, verifying student identity by 6% and digital equipment used in teaching by 5% (Fig 12).

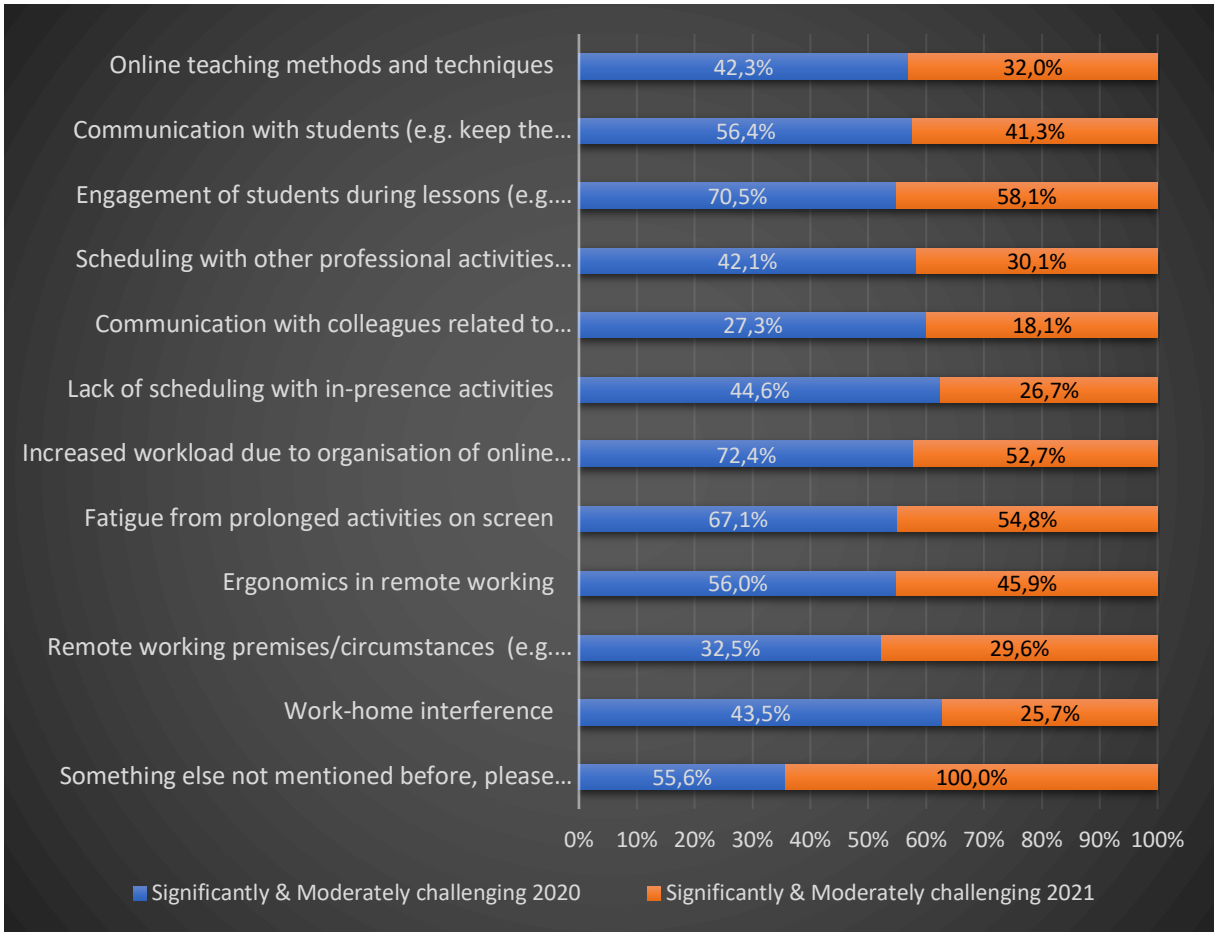

Fig. 11. Differences in challenges with online teaching in spring 2020 and spring 2021

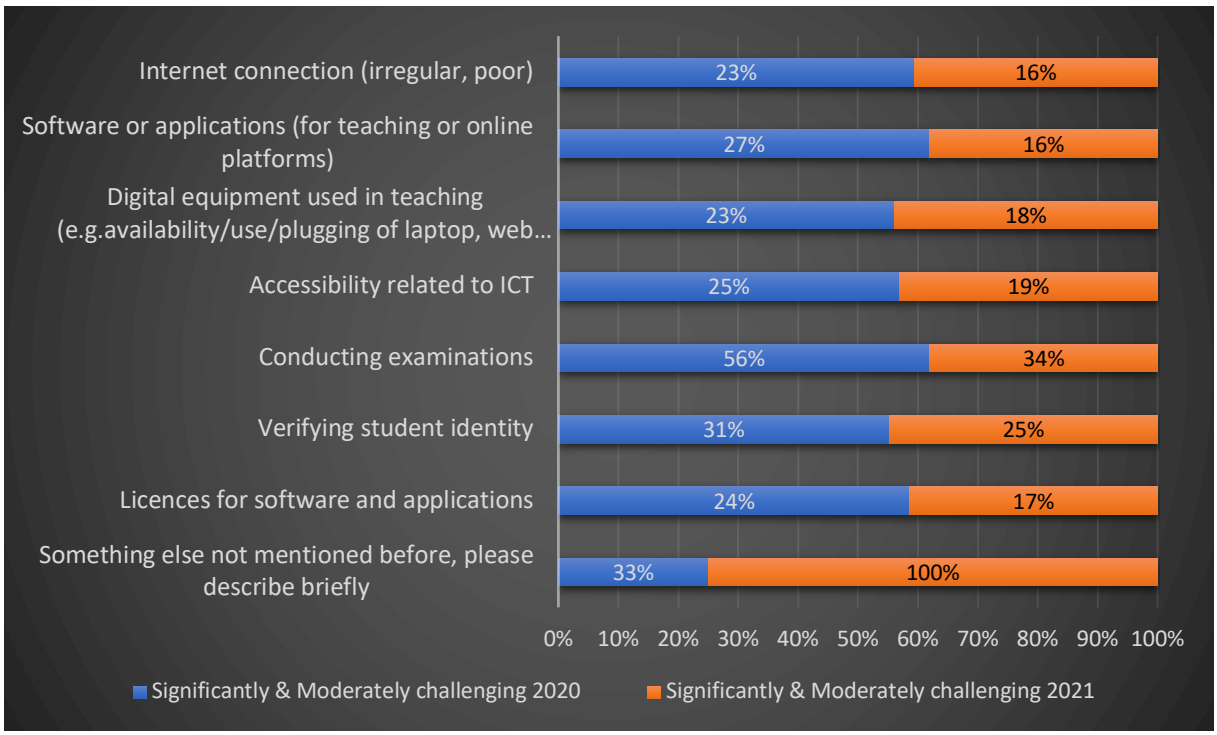

Fig. 12. Differences in challenges with online teaching in spring 2020 and spring 2021

The biggest challenge during this period was related with laboratory work and fieldwork (reported by 39,4% and 43,7% of respondents, respectively). The teachers reported also challenges in remote teaching of subject-specific knowledge (reported by 33,4% of respondents). Content related with learning and study skills and general skills such as ability to work independently, problem solving skills and data acquisition posed a minor challenge for, respectively, 18,9% and 15,1% of respondents (Fig 13).

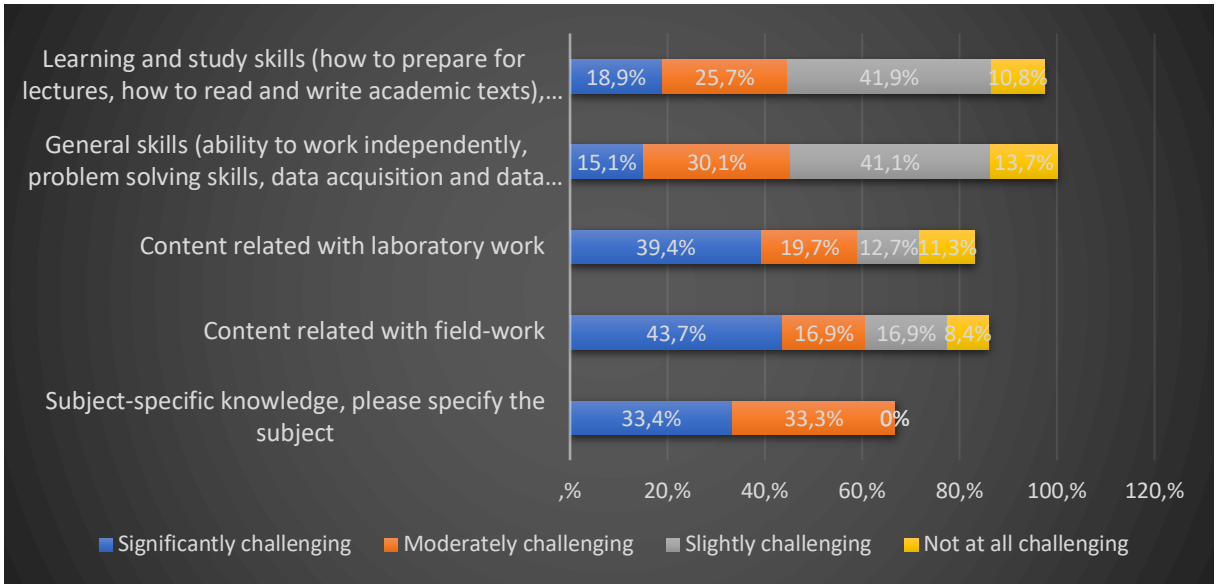

Fig. 13. How challenging is it to teach online the following skills and contents for the students?

Comparing the results relating to the teaching methods used in spring 2020 and spring 2021, it can be noted that an increasing number of teachers (26%) used presentations and that it was one of the most widely used teaching methods. The use of polls slightly increased (46,8% compared to 41,5% in the previous period), animations and videos continued to be incorporated in online lessons (with an increase of 11,4%) as well as games (with a slight increase of 2,5%). A significant increasing number of teachers (41,6% compared to 6,2% in previous period) also started using online whiteboard as a teaching method. No additional teaching method or tool was reported for this period.

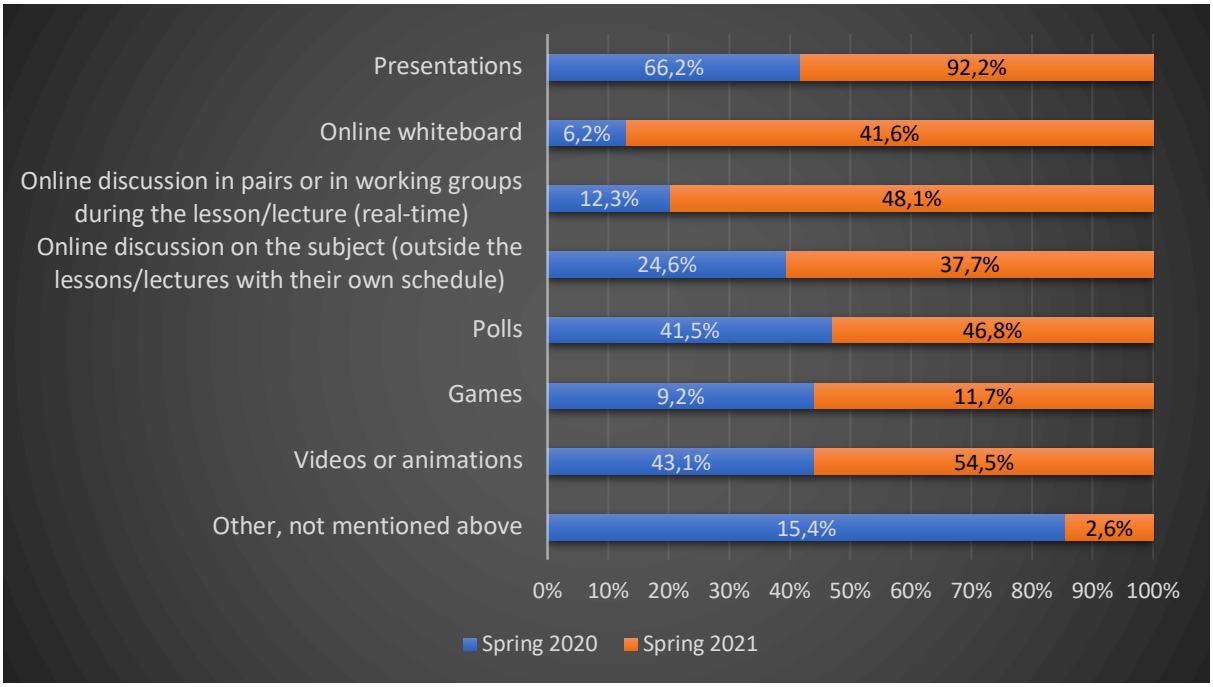

Fig. 14. Differences in online teaching methods used in spring 2020 and spring 2021

Some successful practices or useful methods to improve online teaching (regarding communication with students, student engagement, activating tools, course materials, assessment methods, online exams etc.) were recognised. In Table 2 are shown the few responses about successful practices or useful methods that the respondents provided.

Table 2. Successful practices or useful methods to improve online teaching

Responses
Polls (in Moodle) to get some feedback or to make decisions where students voice counts.
Providing extra material for interactions, such as reading and debate on current topics, videos...
Substituting some activities with asynchronous ones, that students can watch multiple times if needed. Combining written and video information on Moodle. Use of Miro to enable discussion and Kahoot for engagement. Gamification of some practical activities.
Mostly providing assistance to students, when needed and longer availability via e-mail. Using online polls (on rare occasions). Also, some students claimed benefits from recorded lectures.
We adopted secure browser for exams that does not allow student to change windows during the exam.
Flipped learning approach, online forum for discussion and collaboration, several Moodle integrated tools and other tools for formative knowledge verification, creating collaborative workspace and activities etc.
Online asking students and engage them into the presentation.
Working in pairs, finding solutions to specific problems, teamwork, feedback, self-evaluation.
Assessment during whole course.

Every lecture is challenging, every exam, every fieldwork. I used to work hard with my students, try to understand their needs, show compassion, and share ideas on how to improve the process - and everything went well.
Quick answers quiz. It consists of a large number of very short questions and encompasses the whole content of the lecture.
Polls were a success when they were followed by explanations, useful remarks, personal attitude.
Demanding that they turn on the camera when they speak; by asking directly for opinions, discussions by calling their names; by creating discussion rooms in groups and pairs;
Videos on theory and practical execution of lab work that students need to see and to understand to be able to execute lab work. Less introduction and instruction thus needed in the lab before actual work, thus more time left for real lab work.
Discussions in pairs, groups, development of new assessment methods - reports on real-life problems, etc.

5. Future plans

University teachers do not plan to integrate online learning with traditional classes in the long term, either because of the technical or pedagogical challenges. Only a few of the respondents intend to use it as an additional method to traditional classes, from home (18,2%), from the university (11,7%) or both (19,5%).

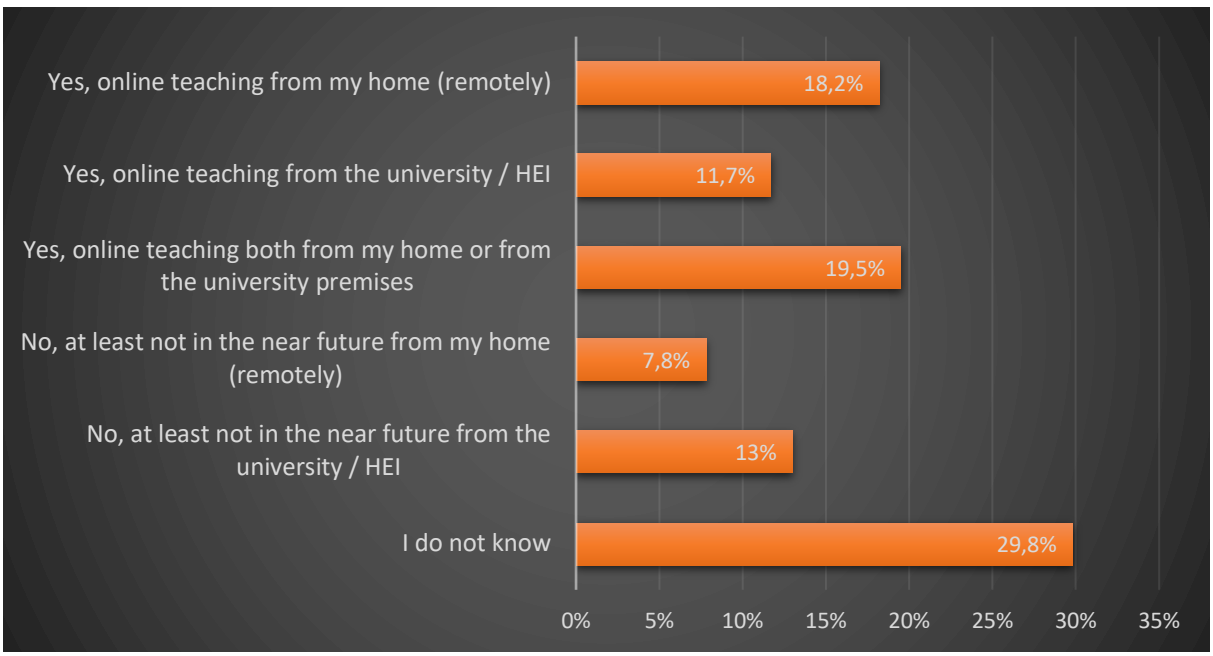

Fig. 15. Are you planning to use online teaching as additional method to your traditional classes (blended learning)?

Some of the teachers provided concrete examples on how and why they plan to use online teaching as additional method to traditional classes (Table 3).

Table 3. Concrete example of online teaching as additional method to traditional classes

Responses
The online could be used for providing examples of specific cases, with animation and videos.
I plan to have some flipped classes, but that does not fall within any of the previous options
In my case the online teaching provides great time saving measure, since I can avoid commuting.
I plan to use online teaching when staying at home sick and when away on conferences.
Teaching online for a prolonged period of time disengages students and the concentration just drops.
Online as flexibility (e.g. when abroad), or in case of another episode of closing the universities due to corona or other reasons.
During my absence (guest lectures or conferences abroad)
Solution to part of lectures late in the afternoon and evening are otherwise quite a challenge.
The use of online tools and workspaces/platforms (Moodle) for flipped learning and collaborative assignments, pre-recorded video lectures to replace real-time in presence teaching in case of absence due to fieldwork, illness or attendance of scientific conferences etc.
Use it for direct individual contact to students.
Online courses for international students, research work from home
Lectures on line, practicals in presence

39% of the respondents declared that they would like to teach online and 35% would like to have the option for online teaching due to personal reasons. Some of the explanations mentioned the flexibility provided by the hybrid implementation, or presented it as a solution for shortage of space at the University premises, although some respondents expressed concerns about lack of support from the University (19%). There were also comments on the quality of lessons in person and that some topics might be taught online. However, most would prefer in person activities.

However, most respondents are not sure if their University is willing to offer or plans to offer international online courses for students outside of their university (68%). Currently, some online courses are offered to Erasmus students, or as part of joint efforts with a foreign university to computer science students. The double degree program in Language Sciences (University of Nova Gorica and Ca'Foscari University in Venice) is currently taught entirely online and student from both locations in Slovenia and Italy can attend classes.

Annex VII – Report of InCompEdu IO1 Multiplier Event - Challenges and best practices in remote and hybrid academic teaching

Time: Wednesday 16 February 2022, 9.00-15.00 CET

An online workshop *Challenges and best practices in remote and hybrid academic teaching* was organised by the Brahea Centre at the University of Turku, Centre for Maritime Studies. The workshop was moderated by Timo Halttunen, Head of Unit, Areal Research and Development, Brahea Centre at the University of Turku.

An opening address was held by *Piia Björn, Vice Rector (Education), University of Turku*. Mrs Björn welcomed the participants to the event. She noted that with or without Covid-19, learning is in process of major changes, with possibilities and challenges: how to learn, teach and develop in the practically limitless world. Principals of learning remain the same. Online teaching needs variation in tools to enhance higher level thinking and learning, starting from knowledge built on basics. Knowledge is applied and integrated, as well as is the learning environment. Mrs Björn mentioned the role of learning in solving global ecological, cultural, societal and economical challenges, and solutions offered by the HEIs. Excellent remote learning mechanisms and applications are needed also in wider society. Meeting and interacting with people, emotionally and caring pedagogically, wise combination of remote and meaningful face-to-face meetings is the key to succesfull learning. Differently built learning entities and modules are needed. Björn concluded with the quote „*Variatio Est Mater Studiorum*" [6] - Variation is the mother of learning.

The morning session was focused on online teaching during pandemic.

Views to the progress of higher education studies in Finland in the pandemic times. *Kati Isoaho, Senior Evaluation Advisor, Finnish Education Evaluation Centre (FINEEC)*. FINEEC is responsible for external assessment of education at all levels in Finland.

In 2020, FINEEC carried out a survey on the impacts of the exceptional teaching arrangements, on the realisation of equality and equity at different levels of education (FINEEC 8:2021). A survey for all the HEIs was conducted in September 2020. Available data on the study progress in 2017-2020 (completed degrees and ECTS credits) was used in evaluation as a baseline and comparing the developments during the pandemic.

Almost seven HEIs out of ten considered that Covid-19 pandemic has had an effect on the equal opportunities of learning among students. The need for the support had increased most among the students who have learning disabilities. All the HEIs reported that already before the pandemic they had electronic guidance services, and new services were developed. In particular, support for newcomers was discussed in the Finnish HEIs. Almost nine out of ten institutions considered that students´ contacts to the guidance services remained on the normal level or increased to some extent, and they had been able to respond to the contacts

[6] Marton, F. & Trigwell, K. (2010)

well or in an excellent manner. Discussion took place whether the need for support had been more visible in the student health care services, and had all students been able to seek for help.

As an indicator of study progress, first the number of completed degrees per 1 000 students who had registered as ”attending” was selected. In Finland, the students register each year as attending or not attending. Another indicator created was an average of completed ECTS credits per student. Universities and universities of applied sciences were studied concerning years 2017-2020, on the bachelor-level and master-level degrees. No remarkable changes were found concerning completed **bachelor degrees** in 2020 compared with the previous three years in the universities of applied sciences. In the universities, there was decrease in the autumn term 2020. A possible reason behind the result might be that there was support for new students but perhaps lack of support for those finishing their bachelor`s studies. Whether the number of students who registered as ”attending” changed remarkably has not yet been investigated.

At the universities of applied sciences the **completion of the master`s degrees** increased in 2020, whereas at the universities there was an increase in an autumn term. Reasons for this may be weakened labour-market situation, which forced part of the student body, working adults, to study faster for their master degrees at the universities of applied sciences. Similarly, at the universities many students are usually working part-time. In addition, Mrs Isoaho questioned master level studies being so independent that they were easily transferred into distance studies.

Regarding the **average of the ECTS credits** per student in spring term 2020, most of the HEIs belonged to the group where the average followed the trend of the past years. However, at the institution level there was variation, both increase or decrease. The number of degrees may have increased in the groups of students who are working adults or those who are working part-time. At the moment, it cannot be said whether the extensive and well-developing offer of electronic services has benefitted most those learners who have best skills and self-motivation, or has the situation between different learners become more **equal. It has been noted that there is polarisation among the students. In some regions of Finland, the pandemic has had an impact on possibilities for practical training, which is part of studies at the** universities of applied sciences.

Moderator Timo Halttunen added that pandemic has had an **impact on international students** of the University of Turku. According to a study, students with lower socio-economic status did not consider online education suitable for them. For example, the students do not necessarily have access to multiple kind of devices, for example to follow a lecture in a laptop and chat via a smart phone as asked by a lecturer. The attendees of the workshop commented that also sharing of devices takes place, with other members of the household who are also either working remotely or siblings also participate in distance learning.

Mrs Isoaho noted that international students have been an important customer group for universities. Equal services are understood differently: one option is that the same services

are being offered for all, another viewpoint is that there are different arrangements for students according to their needs.

Emergency online teaching or pedagogical success stories? *Satu Hakanurmi, Head of Development, Educational Support Services, University of Turku.*

Mrs Hakanurmi started by launching a poll asking the participants about their favorite tools in teaching. Three most preferred tools by the attendees were 1. Webmeeting tools (Zoom, Teams etc.) 2. Learning Management System (Moodle etc.) 3. Interactive tools (Flinga, Miro, HowSpace, Kahoot etc.).

While the lockdown started, Satu Hakanurmi worked at the Teacher Support Unit at the University of Turku. According to Mrs Hakanurmi, the problems now remain the same, but the infrastructure is different. While the lockdown started there were three days to change into online mode at the University of Turku. Quick and cheap emergency remote teaching took place. Zoom was recommended as teaching tool and exams took place via Moodle. Online exam rooms were closed. Later on, they were opened for a restricted number of students. In the University of Turku, the Teacher Support Unit had been organized before the pandemic with technological and pedagogical expertise. An intranet website had been established for teachers, aimed to support becoming a good teacher, including recommendation of tools for online teaching.

Towards the autumn 2020, there was a move from transferring of teaching towards learner centered solutions. Different kinds of solutions were identified:

- Peer support.
- Planning before teaching, better quality.
- Increase in use of videos from 1 800 videos in 2019 to over 5 000 videos in 2020. Flipped learning as a teaching method became more common.
- Teachers asked pedagogical questions concerning big groups, seminars, poster exhibitions, evaluation during the process.
- New tools for activation and participation: Kahoot, increased use of Flinga (Finnish tool), Howspace, Miro.
- Questions on well-being of students.
- Electronic exams, which are common in Finland.

Mrs Hakanurmi mentioned that there has been much technology driven pedagogy. Also, there is confusion on the concept. It may be understood as 1) Synchronous studies, where simultaneously part of the students is in the classroom and part of the students participate with Zoom, Teams etc., or 2) Studies include both asynchronous self-study and synchronous collaborative studies. The concept tends to cause confusion, and people may understand it differently.

Mrs Hakanurmi likes the illustration of Bates and Sangra (below), in which there is no clear difference between the concepts but the share of e-learning differs in different options. Currently, digitality is included in all teaching. Since autumn 2021, Learning Design is

something all teachers need to consider. In an online mode, it was not possible to lecture only, and the learner's view was considered more. Flexible learning means learner centered thinking and learning design. More information is available at e.g. Learning Design Toolkit (Akseli Huhtanen, FITech) https://fitech.io/en/about-fitech/for-teachers/

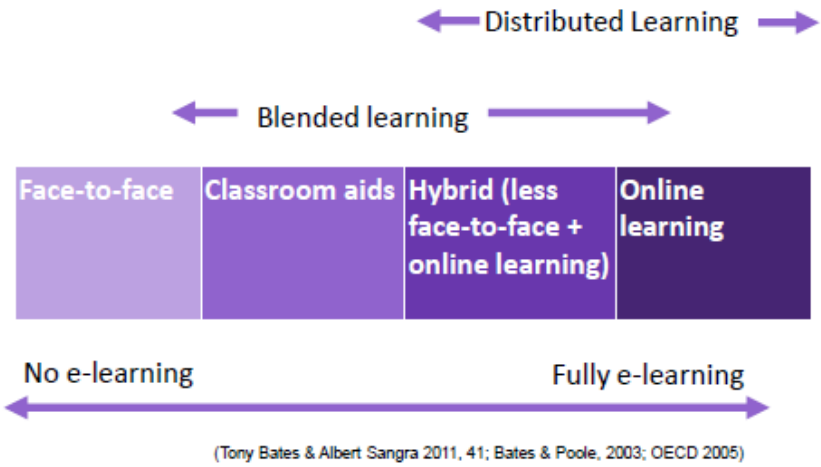

Figure 1. Variations of e-learning.

An example from a teacher at the University of Turku was that **students liked a clear structure, deadlines and the variety of assignments**. Students do what the assessment methods expect them to do. Interesting activities (e-tivities), assignments, project, capstones, cases etc. are a backbone for every blended/hybrid online course in the future. One of the questions is whether we will have synchronous or asynchronous learning sessions. According to a study, students rated higher a course with a **synchronous component** (Snyder, T. & Garner, B. 2020. Engaging Faculty to Connect with Online Learners in Real Time). The component may be e.g. real-time feedback. Tips for lecturing include options for course welcome online, or office hours in Zoom. New paradigm of teaching includes multiple options, for example blended and HyFlex.

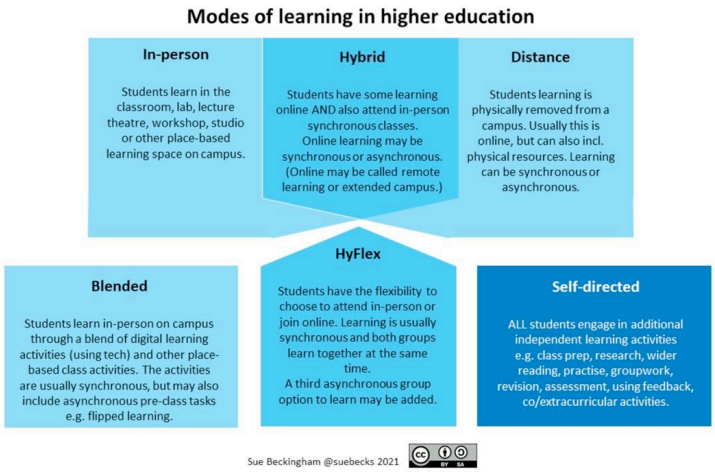

Figure 2. Modes of e-learning in higher education

According to Mrs Hakanurmi, currently there are more options to organize teaching than ever in the history. The third poll in Mrs Hakanurmi's presentation concerned the participants' own experiences: What is your favourite model to teach in the future? It is up to the organisations' decisions too, which modes they will offer. The participants chose Face2face most often. Other options were Hybrid (self-study + collaborative study); "Pandemia-Hybrid" (synchronous combination of f2f and distance participation); Hyflex (combination of previous two). Mere online learning was not supported by the attendees. It needs to be noticed which kind of learners there are, e.g. full-time or continuing education. Entrance exams have been a very difficult problem to solve during pandemic. An example of commercial exam-software is https://proctorio.com/

Innovative Competence in Online Higher Education – idea and goals of the project. *Olga Dębicka, University of Gdańsk, InCompEdu project*

Mrs Dębicka hopes that the deliverables of the project InCompEdu will benefit the teachers as well as students with presenting tools and examples on innovation for online education. A need analysis was done for the project. A reshaping of the future of education takes place, and there is a need to reflect the change on the future courses. Experiences and good practices from online courses are shared. In developing academic courses there is a need to combine digital skills with knowledge of educational psychology. The aim is more inclusive, engaging and effective education. We need to apply different pedagogy for distance learning, which is a challenge for online teaching.

The project partners are universities from Poland, Croatia, Finland, Italy, Romania and Slovenia. We aim to share the knowledge and experience gained during Covid-19 pandemic, to improve digital competences of academic teachers, including use of online platforms in higher education. New competences are developed also in creating innovative curricula in online education. The main target groups are academic teachers and university authorities responsible for study programmes. We will share information about IT tools, for example tools for online exams, which can be used by the teachers. Mrs Dębicka also pointed out that we need to inform university authorities about the challenges faced by the teachers, and on the other hand on the good practices, and which methodologies have been used.

The project's intellectual outputs are the following:

- IO 1. Identification of problems and good practices with transferring academic teaching to on-line mode, led by the University of Turku, Centre for Maritime Studies.
- IO 2. Building the digital competences in the academic community of tomorrow, led by the University of Primorska.
- IO3. Reimagining on-line courses for the future of high education, led by the University of Gdańsk.

Regarding IT solutions, InCompEdu project will provide some recommendations on available solutions and how they can be used smartly. User needs will be focused on. Design thinking methodology will be used. Model lectures will be held in the Design thinking workshops in Slovenia, Italy and Romania. Scenarios will be tested by partners.

Challenges and best practices in online teaching. Preliminary results of InCompEdu survey.
Riitta Pöntynen, University of Turku.

A questionnaire on identified challenges and problems and best practices was part of the IO1, Identification of problems and good practices with transferring academic teaching to on-line mode. Interviews are ongoing. Based on the interviews and the results of the questionnaire, a publication on Good examples - teacher stories will be compiled. The workshop is an important tool to have feedback and interaction on the results.

The situation before the COVID-19 pandemic and the experience of teachers in online teaching and teaching methods used were first mapped in the questionnaire. Regarding the sudden shift to online teaching, the main challenges and how they were solved were asked from the respondents. The respondents were also asked about the main challenges, teaching methods and best practices at the time of the survey, which was May 2021 – October 2021. Finally, future perspectives such as the planned share of online teaching and activities were surveyed.

Before the COVID-19 pandemic, the share of online teaching was relatively low in many of the countries surveyed. Students' access to teaching materials online was the most often reported online teaching type in all the countries surveyed. When the shift to online teaching took place in spring 2020, the most often mentioned challenges were engagement of students during lessons, increased workload due to organisation of online teaching and fatigue from prolonged activities on screen, followed by ergonomics in remote working. There were different views on the use of cameras, some of teachers had made that obligatory while some considered it a sensible issue. Some respondents stated that online teaching is not at all suitable for academic teaching. In spring/summer 2021, the main challenges remained the same, however the percentage of those who considered those as significantly or moderately challenging decreased. In spite of that, for example engagement of students during lessons was still considered significantly or moderately challenging by as many as 59% of the respondents. ICT-related challenges were reported less often than challenges previously mentioned. The main challenges were reported on conducting examinations. Verifying student identity was also considered a challenge.

Even 261 respondents gave examples on overcoming the most critical challenges. The most often chosen solutions were finding information online and help from colleagues. Teachers had also advice and assistance from the university, their faculty or department or from ICT department. It is positive that a minority of the respondents reported that they could not solve the most critical challenges at all. Challenges related to teaching online certain skills and contents for students covered quite evenly the proposed options: teaching online general skills as well as learning and study skills. Content related with laboratory or field work were considered most often as significantly challenging. Several teaching subjects were mentioned as challenging by the respondents.

The most often used online teaching methods before and during the pandemic were presentations. The most increase was noticed in the use of online discussions during a lesson, real-time. Use of online whiteboard increased, as well as asynchronous online discussions.

Best practices were reported by multitude of respondents. The themes may be classified for example as follows:

- Preparing for the lessons/lecture; e.g. guidelines and procedures, pre-recorded lectures.
- Collaboration with colleagues; e.g. teaching, testing.
- Platform/software-related solutions; various possibilities, combining tools and applications during a lecture.
- Teaching methods, various examples.
- Activation and communication with students.
- Students' communication with each other.
- Verification of knowledge/evaluation.

On the average, the respondents in all the partner countries would double the working time online or remotely. Besides personal preferences, the plans of the university matter, or whether there are plans for online teaching. Some respondents would like to teach online, but they assume that online teaching from home would not be supported by the university.

Working groups

The aim of the working groups was to discuss the methods which were used during the pandemic in online teaching, which are there benefits and challenges and which experiences and recommendations the participants of the working group have. Discussion on teaching methods started with selection of interesting teaching methods with the help of Flinga Wall. The moderators had chosen examples on teaching methods based on the results of the questionnaire and interviews. First, the participants gave their likes to interesting methods. Then, the participants could add interesting methods or IT tools. Discussions on the chosen methods continued with the help of a Flinga Whiteboard. Three working groups were planned to take place, however due to lower number of participants than expected, we combined Group 1. and Group 3. into the same Breakout room.

1. Online teaching methods. *Moderated by Riitta Pöntynen and Sari Nyroos, University of Turku.*

The benefits of gamification include that it is possible to reduce monotony and keep students' attention, as well as increase their involvement and motivation. Possible methods are for example Kahoot and Escape room. A challenge mentioned was that it takes time to learn the method and design that properly. Another challenge is difficulty to find or develop resources. In addition, pedagogical and technical support might be necessary.

In smaller groups, it is easier to discuss. There is also possibility to focus the discussion on specific interests. First year students can get to know each other easier. Involvement of students is also easier and results may be presented in the groups. Challenges consist of age

dependency; older students may dominate the discussion. Some students will not discuss. A moderator is needed for the group. Possible solutions to active discussion in the groups are for example Breakout rooms and use of note catching documents. It is recommended to give roles for the students, as well as extra points for active participation.

Figure 3. Result of vote in Flinga about teaching methods

Group 2. Digital tools, platforms and programmes used in teaching. *Moderated by Olga Dębicka and Adam Borodo, University of Gdańsk.*

In the second group, the discussion focused on the possibility of using IT tools and programmes to support remote or hybrid learning in higher education. The workshop participants agreed that the listed systems are important, and suggested adding a few new ones to the list. They emphasized the enormous potential of using IT programs, such as pools and games, to engage and activate students. The discussion also focused on the potential benefits of using IT tools, mentioning among them learning flexibility and adding interactivity to lessons. It has been pointed out that using IT tools will be more interesting for the future students who will be accustomed to using technological solutions, while also giving them access to already available materials (e.g. materials and courses from other Universities or in MOOCs) and increasing students' employability through improvement of their digital skills on the other hand.

In addition, the participants have recognized **the challenges** posed to teachers and students by the use of new technologies, mentioning among them securing intellectual property rights to the courses created and made available to students, increased workload for both students

and teachers (in preparing coursework). Maintaining student attention is also an important issue, due to the possibility of other online distractions.

It was also emphasized that it is necessary to develop official strategies for the use of these tools and acquisition of commercial digital tools which have more features than the free versions.

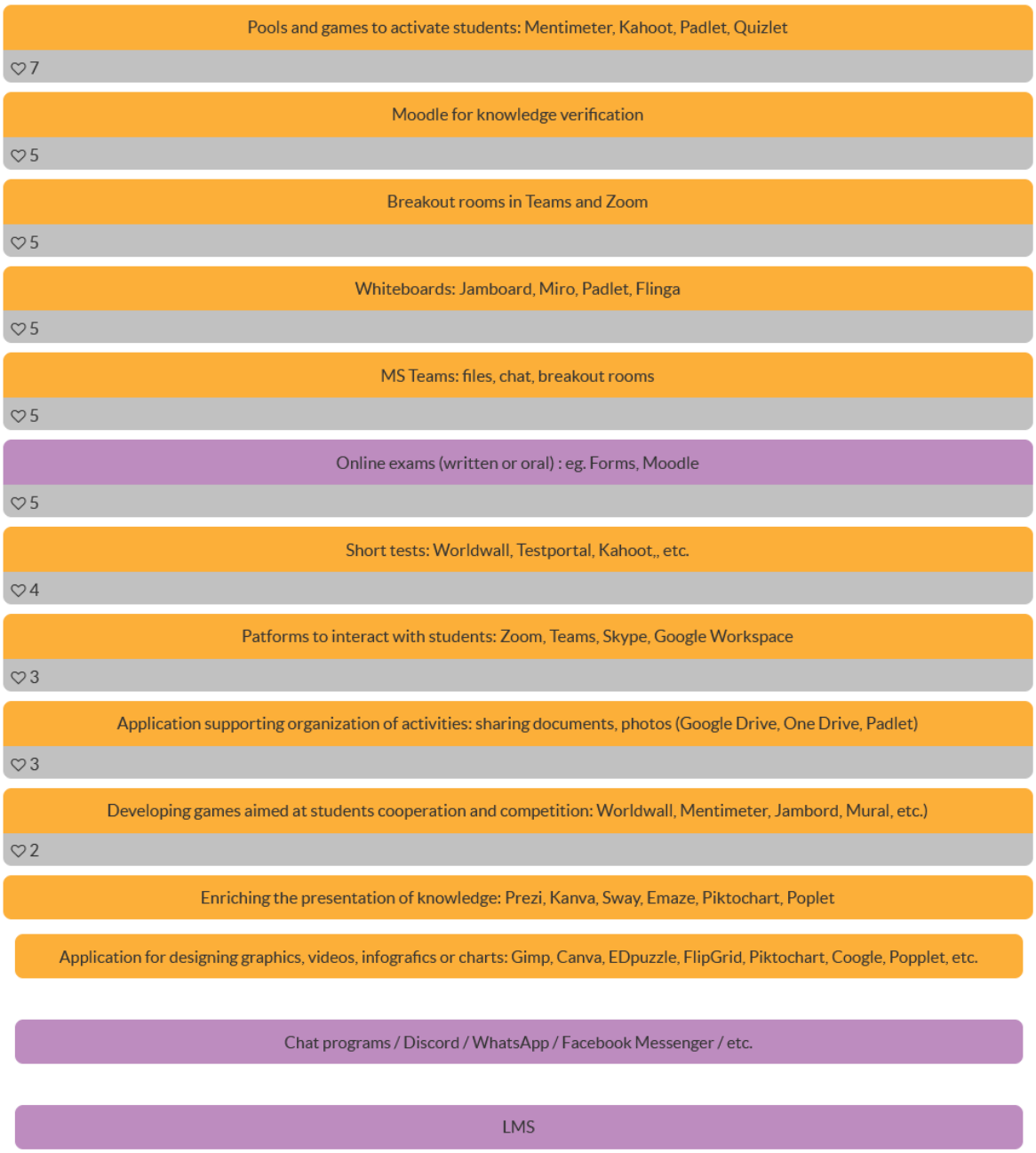

Figure 4. Result of vote in Flinga about IT tools and applications.

Group 3. Interaction with and motivation of the students in online environment. *Moderated by Jelena Dorčić and Helga Maškarin Ribarić, University of Rijeka.*

Chat, polls and other interactive tools are good examples of how to engage students more during lessons. Polling provides immediate feedback that helps to identify learning problems and disrupts the monotony of a lesson by breaking up the content flow. Chat is good for students who have great ideas but are usually quiet during discussions or debates. However, for teachers who need to both teach and follow chat conversations, chat can be distracting.

Flipped learning is a method that helps teachers focus on active learning during class time by assigning lecture material and presentations for students to watch at home or outside of class. This method can improve student engagement but relies on student preparation. All students must complete the assignments before the class. To use this method properly, it is necessary to give clear instructions and take extra time to create collaborative workspaces and activities.

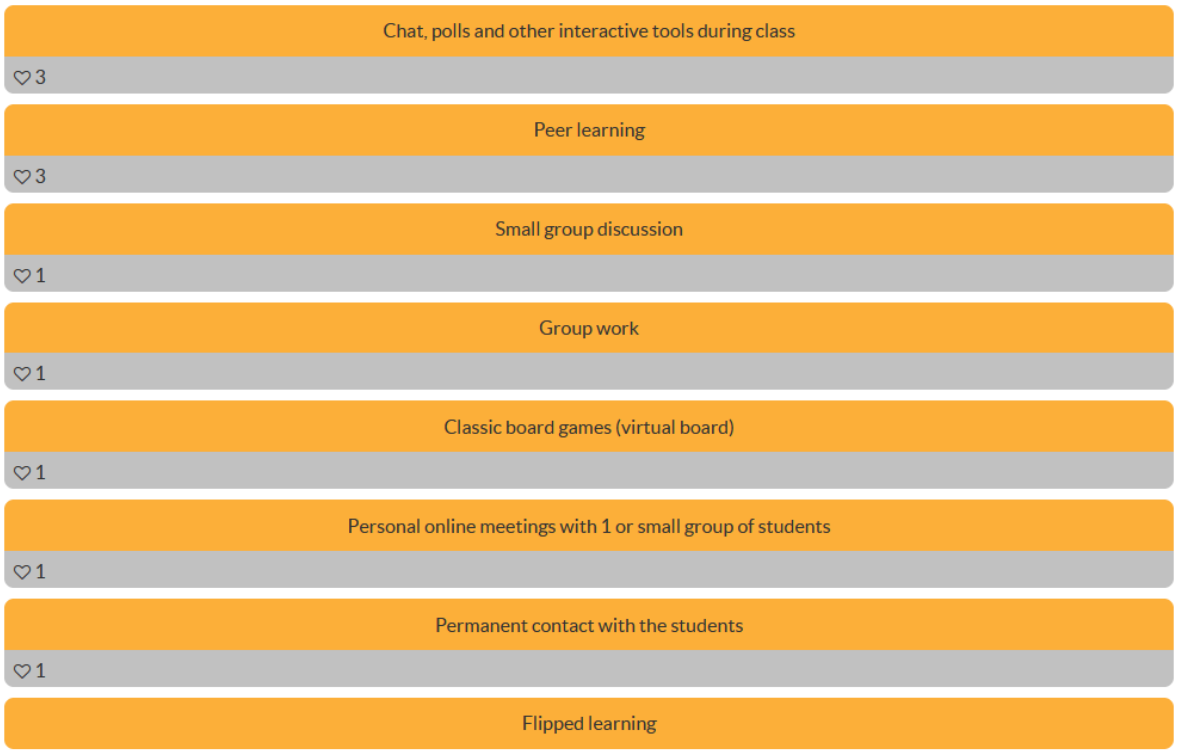

Figure 5. Result of vote in Flinga about interactive teaching methods

Peer learning is a collaborative learning method where classmates work together to learn from each other. This method encourages students to think critically and learn how to give feedback. This method is a little challenging for both students and teachers. It increases the workload of the students, depends heavily on the attitude of the students and their ability and responsibility to meet deadlines. During the discussion in the working groups, it was noted that this method is especially problematic when the group is not homogeneous (e.g. cultural, age, gender and ethnic differences). For example, older students tend to participate more than younger ones. It is a useful method if students have to prepare a research paper individually during the course and then get feedback on their work from other classmates. It

is useful to provide a template for the feedback and ask students to identify problems as well as positive aspects.

Permanent contact with students proved very important during the pandemic, as most students felt they were being left alone. Even though it is difficult for teachers to be available 24 hours a day, 7 days a week, this is crucial for student motivation, satisfaction and support during the learning process. **Personal online meetings** are a great way for students to get quick answers to their questions and reduce their anxiety about the course. It is also a great opportunity for teachers to get to know their students better and offer them support and guidance. It is advisable to set up rules for communication and, for example, provide students with time slots where they can put the meeting with the teacher in their calendar.

Summarizing the day, Mr Timo Halttunen raised up a few issues. First, it is clear that the pandemic situation forced us all to increase flexibility in learning and teaching; a variety of tools and methods were integrated in learning processes in order to help teachers and students to tackle the situation. A clear design of the learning process is a key factor when various tools and methods are used. A student needs to know which tools and methods are used, why they are used and what is expected from the students in each phase of the learning process. In the end, variation in the use of tools and methods as well as use of different types of assignments and assessment methods in teaching increase the quality of teaching and enhance deep learning. Teachers for their part benefit from sharing and developing tools and methods with peers.

Mr Halttunen also emphasized that it is important to keep everyone onboard; no student should be left behind. Permanent support should be available for students according to their needs. Some students are more self-directive than others. Equality should be kept in mind, and more support offered for those who need it. It is also important to gather feedback from students during a course, not only at the end. When feedback is received during the course, the teacher can take action and modify the methods during the course. Further, Mr Halttunen also pointed out that assessment of a course has an effect on student engagement. In addition to diagnostic assessment in the beginning of a course, formative assessment to help the students to carry on and summative assessment at the end of a course, as well as integrative assessment can be applied during a course. Integrative assessment concerns life-long learning skills and can take forms of peer assessment or self-reflection. A recent study at the University of Turku shows that the use of integrative assessment methods in teaching increases the students' engagement and preparedness to support others in learning, as well.

Concluding the day, the project coordinator, Mrs Olga Dębicka highlighted the clear change that is going on to move towards online and hybrid modes of teaching and the necessity of universities and university teachers to modify their courses accordingly. The findings from the discussions today, including challenges identified in online teaching as well as different perspectives from different scientific disciplines will be integrated in the intellectual outputs of the InCompEdu project. The project activities help teachers to face the challenges and overcome them in the future.

Annex VIII. Questionnaire - Challenges in online teaching

The content of the IO1 topics of the Questionnaire in English

A. Before the COVID-19 pandemic: your experience in online teaching		
Questions	**Items/selections**	**Scales**
A1a. Did you practice any form of online teaching before the COVID-19 pandemic? *Please consider any mode of online teaching, or use of online collaboration platforms connected to teaching, for example to share materials online or for discussion of students in an online platform.*		• A great deal (completely) • Considerably • Moderately • Slightly • Not at all • I cannot say /I do not remember
A1b. Which kind of online teaching you were involved with before the COVID-19 pandemic?	• For some courses, students could addend a certain amount of lessons from remote • Students could attend whole courses from remote • With BSc/MSc based on distance learning, where most/all courses were designed to be attended from remote • Live streaming to lessons was offered for students • Students had access to videos/recordings of registered lessons/lectures • Students had access to teaching materials online • Students could do written exams online (in the premises of the university) • Students could do oral exams online • Other option, not mentioned above	
A2. How often did you adopt online teaching tools and/or collaboration platforms before COVID-19?	• For regular teaching • For activating students during the lecture • For activating discussion of students outside the lessons /lectures with their own schedule • For sharing didactic materials (e.g. sharing presentations and lecture notes from courses) • For exams • For giving lectures, seminars and talks at your university • For giving lectures, seminars and talks as an invited speaker at other institutions	Daily / Weekly / Monthly / Once a semester / Once a year / Never

	• Other option, not mentioned above	
A3. Please estimate the percentage of your working time that you devoted to online teaching activities, before the COVID-19 pandemic?		Slider selector 0 % - 100 %; option: I cannot say
A4. Which online teaching methods did you use before the pandemic? *Please select, which methods to real-time online teaching you adopted.*	• Presentations • Online whiteboard • Online discussion in pairs or in working groups during the lesson/lecture (real-time) • Online discussion on the subject (outside the lessons/lectures with their own schedule) • Polls • Games • Videos or animations • Other, not mentioned above	
B. Questions regarding the sudden shift to online / remote teaching (spring 2020). *At the beginning of COVID-19 pandemic, in early 2020, almost all universities in Europe moved to distance learning. In the following questions, we would like to know more on how the COVID-19 pandemic affected your teaching activities.*		
B1. From where did you carry out your online teaching activities in spring 2020?	• I taught remotely from home or cottage • I taught online from the premises of the university • Another location	
B2. Challenges with online teaching *Please assess here the challenges which you faced in the sudden shift to online / remote teaching (spring 2020)*	• Online teaching methods and techniques • Communication with students (e.g. keep the contact with them) • Engagement of students during lessons (e.g. motivation, activation, make students reactive and mentally focused) • Scheduling with other professional activities from remote (e.g. research) • Communication with colleagues related to teaching • Lack of scheduling with in-presence activities • Increased workload due to organisation of online teaching • Fatigue from prolonged activities on screen • Ergonomics in remote working • Remote working premises/circumstances (e.g. restricted or no work space) • Work-home interference	Significantly challenging / Moderately challenging / Slightly challenging / Not at all challenging / Does not apply to me

	• Something else not mentioned before, please name	
B3. Challenges related to ICT	• Internet connection (irregular, poor) • Software or applications (for teaching or online platforms) • Digital equipment used in teaching (e.g.availability/use/plugging of laptop, web camera, screen etc.) • Accessibility related to ICT • Conducting examinations • Verifying student identity • Licences for software and applications • Something else not mentioned before, please describe briefly	I had significant challenges/ I had some challenges/ I had minor challenges/ I did not have any challenges/ Does not apply to me
B4. How did you manage to overcome the most critical challenge(s)? *Please assess the situation related to the sudden shift to online teaching (spring 2020). Think about how you managed to overcome the challenges that you mentioned before.*	• I received advice and assistance from the university • I received advice and assistance from my faculty or department • I received advice and assistance from ICT department • I had help from my colleagues • I received advice and assistance from an association or similar • I had help from other person, e.g. family member, friend • I found myself information online etc. • I could not solve the challenges • Anything else, please add	
B5. Please give brief examples on overcoming the most critical challenge(s) *Please provide some concrete examples on how you managed to overcome the challenges, in English or in your national language.*		Open-ended question
C12. How would you consider your proficiency in using online tools and platforms? *After a few months of online teaching, how would you consider your current proficiency with online tools and platforms, compared with the time before the COVID-19 pandemic?*		Significant improvement in skills / Improvement in skills / Slight improvement in skills / No change in skills / Worsened skills / I cannot say
D. Questions on current challenges. *In this section, please think about your teaching activities, in spring semester 2021.*		
D1. From where do you teach online currently (May 2021 - July 2021)? *Think about your current*	• I teach remotely from home or cottage	

teaching activities, in spring/summer semester 2021. From which place do you challenging semester 2021 carry out most of them?	• I teach online from the premises of the university • I have both online and in-presence lessons • I have mostly in-presence lessons • Another location	
D2. Current challenges with online teaching	The same topics as in question B2.	The same scale as in question B2.
D3. Current challenges related to ICT	The same topics as in question B3.	The same scale as in question B3.
D4. How challenging is it to teach online the following skills and contents for the students?	• Learning and study skills (how to prepare for lectures, how to read and write academic texts), motivation to study • General skills (ability to work independently, problem solving skills, data acquisition and data production skills) • Content related with laboratory work • Content related with field-work • Subject-specific knowledge, please specify the subject	Significantly challenging / Moderately challenging / Slightly challenging / Not at all challenging / Does not apply to me
D5. Which online teaching methods do you use currently?	The same topics as in question A4.	
D6. Which kind of successful practices or useful methods have you adopted to improve your teaching online (regarding communication with students, student engagement, activating tools, course materials, assessment methods, online exams etc.)?		Open-ended question
E. Future perspectives Please assess your plans regarding online teaching after the pandemic, when teaching will be mostly in presence teaching.		
E1a. Are you planning to use online teaching as additional method to your traditional classes (blended learning)?		Yes, online teaching from my home (remotely) / Yes, online teaching from the university / HEI / Yes, online teaching both from my home or from the university premises / No, at least not in the near future from my home (remotely) / No, at least not in the near future from the university / HEI I do not know
E1b. If you answered yes, please specify or provide a concrete example of your plans		

E2. Please estimate the share of your working time you would like to teach online / from remote in the future?		Slider selector 0 % - 100 %; option: I cannot say
E3. Please give us reasons for your choice	• For personal preferences, I would not like to teach online • For personal preferences, I would like increase the share of online teaching • The university has no plans for online teaching • I would like to teach online, but there is lack of support in my university • I would like to teach online, but there is lack of methodological support in my university • I would like to teach online, but there is lack of classrooms with video conferencing equipment in • my university • I would like to teach online remotely from my home, but may not allowed by the university • Other reason, please specify	
E4. How interested would you be in participating in training supporting online teaching?	• Software for online teaching activities (real-time) • Online platforms for teaching activities (used by • students according to their own schedule) • Creating of presentations • Online teaching methods • Students' activation online • Verification of knowlegde • Other	Extremely interested / Very interested / Moderately interested / Slightly interested
E5a. Is your university offering or planning to offer international online courses for students outside of your own university? *Are there currently courses online or any plans for the future?*		Yes / No / I do not know
E5b. Please specify briefly, which kind of courses or programmes		Open-ended question