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Innovative Competence in On-Line Education

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Teacher stories

Inspiring good pratices
- a booklet of educator stories

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“Teacher stories” - Inspiring good practices - a booklet of educator stories is based on the results of an extensive survey in the partner countries of InCompEdu project: Croatia, Finland, Italy, Poland, Romania and Slovenia.

EXPERIENCES, CHALLENGES AND BEST PRACTICES RELATED TO ONLINE TEACHING

InComp Edu

Innovative Competence in On-Line Education

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1. Introduction

"Teacher stories" - Inspiring good practices - a booklet of educator stories is based on the results of an extensive survey in the partner countries of InCompEdu project: Croatia, Finland, Italy, Poland, Romania and Slovenia. First, experiences, challenges and best practices related to online teaching were collected from academic teachers with a questionnaire. The preliminary results of the survey were presented and discussed in the Multiplier Event, Challenges and best practices in remote and hybrid academic teaching. The results are reported in the 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.

In the second phase, in total 57 interviews were done by the project partners. This booklet, "Teacher stories" presents the results, with quotes and stories of the teachers who took part in the survey. The results are grouped according to the themes which emerged from the questionnaire and the interviews.

2. Methodology of the interviews

Each partner selected the academic teachers and experts to be interviewed. The partners translated the questions into their own languages and compiled the English summaries of the half-structured interviews. In total 57 interviews were done during December 2021 – March 2022. Nearly all the interviews were done online. The replies of the respondents in the open questions are presented qualitatively. The data is structured in themes, according to the main topics featured in the replies. The list of interviewees with information on their background is available in chapter 7.2. by country.

1. *Are you currently teaching online/contact/hybrid? To what extent? What is the share of these?*
2. *Have you changed your working/teaching methods during this long period of te aching online? What kind of good practices would you like to share?*
3. *How have you managed to engage students during online teaching?*
4. *Would you like to share some lessons learned (what does not work)*

3. Background

3.1. Past experiences of interviewees in online education

The interviewees had different starting points in the countries studied. Most of the interviewees from Croatia and Finland had previous experience on sharing teaching materials via online platforms (Learning Management Systems, LMS). Croatian interviewees had used online platforms for communication with students and for exams, homework, tests and assignments. One of the interviewees mentioned creating of online courses with colleagues and another one using of Google Classroom. Finnish teachers had also organized discussions on online platforms. One of the Slovenian interviewees had used online games, videos and quizzes in her teaching before the pandemic. In

Italy, online tools were somewhat known. The interviewees from Poland and Romania did not have any previous experience related to online teaching, thus almost everything needed to be changed when the sudden shift took place.

Furthermore, over half of the interviewees from Finland had previous experience on regular teaching online, with streaming of lessons and recordings available in Moodle afterwards. Some interviewed Finnish teachers had done brief introductory videos and presentations of course topics, as well as MOOC videos, for at least ten years. During this time, the tools developed enormously. Online tools were used in projects and meetings, as well as in internal communication within the universities. Regular teaching online was reported especially by those who teach at the Open University and in the universities which are part of the so called University Consortiums in Finland. Both of these have working students and students from all around Finland. Studying at the Open University is more self-oriented than in degree studies.

Digitalization has been a major change as teaching and studying is not related to time and place. Universities in Finland had made strategic decisions on offering online teaching for students well ahead the pandemic. Hybrid teaching (students simultaneously in class and remote) was introduced before the pandemic, and students have been offered a possibility to choose freely if they attend in-presence or online. However, there have been various kinds of practices.

3.2. Teaching at the moment of interviews

During the time of the interviews (December 2021-March 2022), the practices in teaching were quite different within and between the countries and the universities, depending on the status of the pandemic and the instructions of the University. In Croatia, five of the interviewees taught on-site, one online, and four reported hybrid teaching. Lectures were held mainly online, while the methodical exercises and practical work took place on-site. Sometimes part of the lessons took place on-site with a limited number of students. In Finland, teaching took place mostly online. The interviewees had conducted part of their teaching on-site in the autumn 2021, and a couple of them had experience on hybrid teaching with students simultaneously on-site and online. In the Finnish universities, the plan was to move towards on-site teaching later in the spring.

In Italy, the hybrid mode was dominant. This meant that some of the students were in the classroom and the rest attended remotely. One interviewee told that he was teaching for some master and training courses fully online because the students had some working hours constraints and for them it was easy to connect online. In Poland, two interviewees told that they teach mainly on-site. Six interviewees reported about hybrid teaching with online classes, seminars, exercises or practical activities for smaller groups and lectures to larger lecture groups online. Two interviewees had all of their teaching in online mode.

In Romania, most of the interviewees taught online. Two interviewees told that their university uses hybrid teaching. There had been certain periods in which the courses were held on-site. In Slovenia, most of the interviewees had majority or all of their teaching on-site with different kinds of hybrid teaching. For example, consultations were hold remotely for students who were logistically unable to come to the Faculty's premises. Remote or hybrid teaching was given e.g. due to quarantines or faculty management stipulations, or case-by-case related to students' needs.

4.

Experiences on online teaching

"Many have described the situation in the spring of 2020 as “emergency remote teaching”. Later on, in the autumn of 2020, it was possible to concentrate more on the contents and tools to interact with the students."

4. Experiences on online teaching

4.1. Sudden shift to online teaching

Many have described the situation in the spring of 2020 as "emergency remote teaching". Later on, in the autumn of 2020, it was possible to concentrate more on the contents and tools to interact with the students. The experiences in the spring of 2020 were often felt as hard and stressful, in particular if the technologies related to online teaching were not familiar. It took time and efforts to reorganize the courses and adapt materials for the online version. At the beginning of online teaching, sometimes the lectures needed to be recorded beforehand due to lack of proper internet connection or an unstable technical system. There was lack of coordination related to platforms and applications used.

> ***Teacher, Slovenia:*** *At the beginning of distance learning, there was no single system in place on how it should work, which platforms to use, etc. As a result, teachers used different methods and programmes. This proved to be very disturbing for the students and quite confusing for them. For this reason, it was very welcome later on when we mostly all started using Zoom and additional content, instructions etc. were regularly posted on the e-classroom for the students within the individual courses.*

An estimation was that an online course can be up to three times more labor intensive compared to a direct contact course. Due to the demands of online teaching, there was no time for other projects and academic work. Also, the students emphasized that they have more work alone during distance learning than during normal classes because independent study requires more.

The Finnish interviewees with previous experience on online teaching noted that shift to online was easier when the available IT technologies were familiar and worked nicely. On the other hand, previously it was more of digitalisation of lectures than focusing on specific teaching pedagogics.

> ***Teacher, Finland:*** *It is easier to turn into online teaching when you have the pedagogical background and experience of different methods, already. It can be difficult, if a teacher's earlier experience is only lecturing.*

Support, both pedagogical and related to ICT was provided by the universities, and teachers themselves searched for information from various sources. YouTube videos and tutorials were very useful for gaining the knowledge. Teachers themselves invested financially on e.g. internet connections, device and software.

In Finland, online or hybrid teaching assistants were available in some universities. While they provide the cameras and microphones, testing and monitoring the chat, the teacher can concentrate in teaching and leading discussion during the lessons. One university employed several students as part-time teaching support staff. They were helping teachers changing into online/hybrid teaching, not only by increasing resources, but also by bringing student perspective to the process.

Support of colleagues, the exchange of experience and knowledge with them was crucial. In order to keep up with technological development and its application, it is necessary to constantly educate oneself. However, for busy teachers, even to attend brief learning sessions may not be possible.

> ***Teacher, Finland:*** *Webinars and newsletters of Harvard Business School (Publishing) offered useful tips and case examples. The webinars are free of charge and require registration.*

Few interviewees reported not changing their teaching methods very much. They mainly gave lectures. The similar methods of activation were used than in the class before the pandemic. In case of lectures, sharing the screen for example in Zoom was enough. It enabled also assisting and helping students with their exercises.

4.2. Challenges related to the field of study

The field of study has impact on how online teaching is experienced and which kinds of methods can be applied. Subjects with laboratory or field work and exercises were considered most challenging to teach online. Teachers tried to show and guide how to do the laboratory exercises with methods of a different kind, but the skills cannot be fully learned online. In the questionnaire, a respondent from Finland mentioned that use of virtual microscopy was allowed, even before the Covid-19 pandemic.

> ***Teacher, Slovenia:*** *I teach several classes with different demands, so I had to adjust the teaching methodology for each one of them, to provide the best possible outcome for students. My classes have always been practical, either in a laboratory or in a computational lab. We had to improvise so students can have some form of practical learning, but a lot of classes and topics demand actual experiments, which is also connected with students' competence.*

> ***Teacher, Croatia:*** *When doing practical lab work, I recorded the video clips of microscopic slides and sections and shared them with the students. When preparing for exams, I integrated photos taken under the microscope.*

> ***Teacher, Slovenia:*** *There is no valid virtual alternative to laboratory experience, the students might acquire the theoretical knowledge with online courses, but they will still lack the actual skills and they are painfully aware of this. Students need to build relationships, both with the teacher and among themselves. The virtual setting, despite chats, shared spaces and virtual rooms, does fully allow for that. I can see the difference now that the same students I have been teaching online are allowed to attend in person.*

> ***Teacher, Italy:*** *Teaching online a practical course was considered also extremely limiting for students, because there is no way to share microscopy live images; students also loose the opportunity to acquire skills in handling instruments in the laboratory. Replacing it with movies is still very limiting for students, reducing the full achievement of the training objectives. At the present stage, I think that 'contact' teaching is still the most efficient method, yet the use of online tools greatly facilitates communication and exchanges with a teacher and among students.*

> ***Teacher, Slovenia:*** *Not only content-wise, but more importantly lab exercises are important for students to gain actual skills working in the lab (pipetting, microscopy, reagent preparation, experiment design etc.). Teaching students how to use a microscope in an online format is impossible. I performed the experiment with the additional step-by-step explanation, while they observed online and pose questions. I tried to show them as much as possible with the camera, zooming in, explaining. The overall response from students was very positive. They appreciated the live version and not only video format from the internet. I have also uploaded videos on the e-classroom platform, so they could use the video while preparing for the exams.*

Another challenging field of study mentioned is architecture and design. In it images, as well as seeing physical place have the key role in teaching which was not possible during the pandemic.

> ***Teacher, Poland:*** *The viewing of the images (photos, pictures and drawings) on a small computer screen does neither influence the imagination nor enhance perception as efficiently as it works on a large screen in a lecture hall proper. Physical field trips, surveys, research in situ, construction site supervision, are crucial, indispensable and it is unimaginable to supersede them by any online context viewing! Design corrections require mutual involvement; in spite of being technically possible, via platforms such as MS Teams or Whiteboard, are both tiresome and awkward, as they eliminate the direct, physical application of the most useful, tried and tested tools – i.e. freehand sketching on paper and making working models in a studio. Of course, it is technically possible to comment professionally, both online in real time or via chat, on drawings, virtual models presented online, be it in the converted pdf or CAD form (or even on physical models). However, nothing compares into the creative and free studio atmosphere.*

4.3. IT solutions and online platforms – challenges and best practices

4.3.1. Experiences and challenges related to ICT

The interviewees who had little or no previous experience on online teaching had to learn new IT technologies, solutions and software and solve problems with them. They also needed to consider that solutions, software and applications would be compatible and adaptable to students, so that they would not need to buy licenses. Not all students were familiar with teaching/learning devices and teachers needed to prepare guidance for them. Some students had problems with internet connections and access to the internet, thus they had weakened opportunities to participate in online classes. This led to lack of direct contact with the instructor and colleagues. In addition, there was lack of equipment, e.g. a suitable laptop/computer. Not all students nor all teachers afford them and more funding was called for.

> ***Teacher, Romania:*** *The students connected with mobile phones, and then they could not clearly view the presentations or word files; feedback from them was weak, and their reaction time was longer.*

On the other hand, teachers reported benefits which the new solutions offered for them. Even before the pandemic different kinds of platforms were used for sharing and storing various teaching materials, in advance and after the lessons, in group work etc. During the pandemic, the benefits became familiar to those who had not used these kinds

of platforms before, such as constant accessibility. Content sharing and information exchange within the online teaching environment is a useful aid to the teaching process. Recordings and notes made during the teaching sessions can be saved and made available immediately after the lecture. Furthermore, platforms are used for scheduling and the students have a much clearer picture of how the course is going. Online it is easier to share links to reports or articles. Also in student projects with real-life cases, the sharing of the knowledge and visualization is easier via the online platforms, e.g. in cases for companies, in which materials are created for customers. Joint work and development are easier, students do for example different kind of infographics.

4.3.2. Issues to consider

Subtitles and copyrights need to be paid attention to while sharing materials for students. Videos need subtitles, if they are available online over 14 days. In Finland, this has reduced the use of videos as it is a huge effort to do both videos and subtitles. Course-related videos with restricted access to students are not subtitled. Automatization would help to provide subtitles.

In connection with copyright, a teacher can decide his/herself on streaming or recording of the lesson, but the student's consent is needed if material is distributed, for example, from the exercises. Sharing must be decided jointly and consent for a particular course must be collected from each student.

- Due to copyrights, it is better to provide direct website links, and students will look for information at the link.
- Recording and storing the lectures on e.g. in Teams: the possibility to view the recording only on the platform without the opportunity to download protects from copyright issues that we may have if the recording is on YouTube or other channels.

Teachers need to advice students also to pay attention on code of conduct and ethical issues while using online platforms and discussion forums, on the confidentiality of the discussions and responsibility of students. Passwords to platforms help in this.

4.3.3. ICT applications and tools used by the interviewees

- Office 365 functionalities allowed easy contact, planning collaboration with students.
- Google Docs for preparing and writing project group work.
- Private channels for groups of students in MS Teams.
- Flinga whiteboard to engage. It may be used also in groups in the Breakout rooms, for discussion and synthesising together. Polls can be used, too.
- MIRO whiteboard, different programmes to make quizzes like Quizlet, Quizziz, Wordwall, in lectures and exercises to summarize material and to verify what students remember.
- Mentimeter for surveys in the class and discussion on them, to obtain feedback. Especially for large classes the effectiveness of this instrument for the survey is sig-

nificantly higher than what you can do in presence. The students are more comfortable in answering when they know that the survey is anonymous.

- Mentimeter and Kahoot! were used to recall what had already been learned or to provide a reflection on what had been learned about a particular lesson.
- Dotstorming, Google Jamboard, Mural for collaborative brainstorming, voting and debating on ideas that we share on a board.
- Activity notebooks with individual student sheets or homework.
- Breakout rooms in Microsoft Teams, Miro, Microsoft OneNote, Slack.
- Remarkable, an e-ink writing tablet for reading documents and textbooks, sketching and note-taking with the aim of achieving a paper-like writing experience.
- Canva proved useful for sharing students' notes. Students were able to revise and edit their notes and share them with other colleagues.
- Dream Broker online video software
- BigBlueButton, a web conferencing system designed for online learning; possible to save chats with students.
- Mattermost channel for real-time chat.

4.3.4. Tips for using ICT

- Tools and applications available in Office 365 for various forms of collaboration, individual or group
  - » In lecture groups, I used the possibility of setting up thematic channels, e.g. Q&A, in which students could, during a break between classes, enter questions about the discussed content.
  - » MATERIALS: additional links to films, articles, websites, etc., related to a particular topic.
  - » EXIT TICKETS: links to forms prepared in forms allowing students to express their opinions about the classes. The forms included questions about what they liked/disliked, what they learned, how they evaluate the dynamics of the classes, the way the content was delivered, etc.
- Taking advantage of the possibilities for organizing teamwork offered by the MS Teams platform, I created private channels for groups of students, in which I created tasks for them using, among other things, MS Notes. The MS Notes package enabled them to work on shared files, and starting a private meeting on a channel provided the communication necessary to work on the task together. Work on the exercises was done using different methods so that as far as possible each exercise was different. The work on the Teams was followed by a summary of the task for the whole group.
- An attractive form of cooperation for students were shared documents on which they cooperated, and for some groups, co-created schedules (Kanban boards) used in the implementation of classes - determining the next steps of actions, responsible persons, deadlines, etc.
- Moodle is used for course materials, videos are shared via YouTube, as brief sets, behind a closed link. Students watch videos e.g. before an exam, difficult parts; the assimilation of knowledge. Good feedback from the students about the recordings.
- Students were encouraged to search for additional information on the subject and self-study tasks were posted on the e-learning platform for later review and

evaluation as an extension to the meeting.

- Video calls in MS Teams to avoid the misunderstandings of written communication.

- In language classes, voice/video recordings turn out to be a good way to hear students' voice and pronunciation and see their facial expressions while speaking a foreign language.

- I use a laptop and iPad simultaneously (instead of more than one displays). I encourage the students to do the same. Most of the students have both, in any case, so it has not been a problem. I have Zoom open on my laptop and Moodle in iPad, so that I can easily send an assignment to Moodle right at the moment when we get there.

- Graphics tablet: when I lecture remotely in mathematics, I present the theory on slides to the students, while I solve all the examples using a graphics tablet. I also use this tool during other lectures. On the graphics tablet, I draw various kinds of diagrams, tables, etc., which are used for ongoing discussion in real time together with the students.

- Text documents can be made available to students with relative ease, however graphical files can be problematic. In the teaching of subjects related to machine design and engineering graphics it is typical to solve example tasks live for the student audience either by the teacher or by students under teacher's guidance. Typically, on the wall board and by hand. It is an indispensable part of the process when students witness a drawing of a machine component or a solution to a design calculation task developing right in front of them. Progressive transfer of knowledge and skill development is thus realized. Attempting to repeat the process by digital media is a completely different and difficult experience. Manual drawing while lecturing was not a repeatable process in online teaching environment. I had to use Computer Aided Design (CAD) software to facilitate a platform for the teaching of descriptive geometry and engineering drawing. The purpose, for which the tool was not designed, but with extra effort, proved to be quite useful.

- From time to time, in order to diversify the form of the message, lecturing on the monitor screen was replaced by a flipchart filmed by a camera, thanks to which the students could observe me talking and writing or drawing on the blackboard at the same time.

- In case of prolonged distance learning or blended learning, it would be extremely valuable to equip classrooms with systems that allow the camera to cover both the lecturer and the multimedia or ordinary whiteboard, so that the image observed by the student was as dynamic as possible. This would be particularly valuable in the case of those lecturers who are dynamic during the classes, where body language, gestures, movement are important for the message.

- Virtual guests appeared during the lecture, in the form of cardboard cut-outs, with whom I carried on a dialogue.

5.

Best practices related to online teaching

"Online teaching is more time-consuming, as it needs to be planned precisely beforehand. One cannot improvise as in the classroom, instead you have to be more organized and select your teaching materials more carefully in order so that they can be digitised."

5. Best practices related to online teaching

5.1. Good preparation in advance and explicit instructions for students

Online teaching is more time-consuming, as it needs to be planned precisely beforehand. One cannot improvise as in the classroom, instead you have to be more organized and select your teaching materials more carefully in order so that they can be digitised. The presentations need to include more practical exercises and tasks to engage and attract students better during the lesson. The new applications and possibilities of cooperation require precisely prepared instructions for students, films or demonstrations showing the functionality of tools.

> ***Teacher, Poland:*** *At the beginning of the course, I try to establish with students a style of work, and a protocol of working together. During the first class, we always ask ourselves the question, what and how we may work in order for this course to be significant at the end.*

> ***Teacher, Finland:*** *I prefer to explain the work plan week by week, in shorter periods, rather than burdening students with current plans together with longer-term plans.*

> ***Teacher, Finland:*** *Sometimes students may be late from online lesson. On the one hand, you might not let them in, on the other hand this may be due to problems with connectivity and broadband requirements. Actually, the teachers do not know about the real situation of the student.*

The clear rules of the game and instructions are helpful, as well as information on what is expected of students. Requirements on attendance should be determined in advance, as students may attend from various locations and via mobile, which makes following the lessons and proper participation difficult or even impossible. Information needs to be communicated for all.

5.2. Scheduling of online teaching sessions

Teaching online needs to be scheduled differently, with shorter teaching sessions and regular short breaks which change the dynamics. Time was allocated for the regular engagement and activation during a lecture. Discussions and group work were used to activate the students, as well as other methods of activation such as polls and surveys. Students were also encouraged to move during the breaks, to do short exercises.

> ***Teacher, Italy:*** *The attention of the student in an online teaching activity is significantly lower than the one in presence and so lectures' time has to be revised accordingly.*

> ***Teacher, Slovenia:*** *A regular lesson of 45 minutes or 1.5 hours without break just does not work, students learn next to nothing. In a classroom it is still possible to hold their interest, online it is impossible.*

> ***Teacher, Romania:*** *It does not work presenting the theoretical part without interacting with students every 10 minutes. Also, it does not work giving them homework each week, from one course to another. It does not work to have very practical or very theoretical courses online without trying to integrate some interactive activities during the courses.*

> ***Teacher, Finland:*** *I agreed with students that during an online seminar, several breaks were held, including a proper lunch break. In the course with problem-based learning, 1.5 hours works, because it is discussion and dialogue within the group, it is not too heavy.*

5.3. Activation and engagement of students

The engagement of the students was considered the main challenge in online teaching. Few interviewees mentioned that they did not have any problems in engaging the students. The interaction and keeping students' interest are difficult online. Even though the internet connection would work properly, and all the technological aspects were in place and functioning well, the features of direct, face-to-face interaction with non-verbal interaction cannot be fulfilled or compensated in the online mode. The sense of community was missing.

> ***Teacher, Poland:*** *Being on-site with students and working with them in contact means that many more senses are involved. Online teaching is different. Online teaching is, if we are talking about classic lecturing, mostly talking to video chat icons – usually the black boxes.*

Furthermore, teachers did not know whether the students really attended the classes, some of them only connected and interactivity was reduced. There was lack of ongoing feedback from the students, and emotionally discussions were much less lively.

> ***Teacher, Italy:*** *I noticed that students are not focused and do not follow the lecture when they are online (except if highly interested). Sometimes, they do not reply when you call them (due to: embarrassment? not at the PC?).*

> ***Teacher, Slovenia:*** *The problem is that if they are not motivated to follow the lesson, they are just logged in that the teachers think they are attending the lesson, but they are doing other stuff.*

> ***Teacher, Romania:*** *The disadvantage of online teaching is that if the student is not attracted, he or she will leave the room easily or will not follow. The teacher's effort is directed towards capturing attention and very often challenging discussions. I tried to provoke debate.*

Various activation methods were used, often they were successful but also many challenges were met. As a result of interactive methods students were able to express their opinions and ideas openly. Some teachers gave extra points for activity and correct answers. Other means used were examples and practice-oriented teaching, tasks of a different kind and quizzes.

> ***Teacher, Romania:*** *In (case of) very theoretical courses, we lost participants during the course.*

> ***Teacher, Romania:*** *The problem identified was that very few took responsibility for active participation in classes in the absence of the fictitious presence of a teacher who conferred a certain authority (working students).*

> ***Teacher, Romania:*** *Traditional lecturing does not work anymore, as students will get bored by your voice and many of them do not even keep their cameras open. You need to permanently keep their interest awake. Teachers need to get more training in online assessment methods.*

> ***Teacher, Poland:*** *Lecture presentations were not a static slide show with ready-made text and figures, but mainly consisted of ongoing drawing, whereby drawings, diagrams and other forms of graphic presentation of the lecture content were created in real time, accompanied by my narration. This form of presentation was livelier and more dynamic.*

> ***Teacher, Poland:*** *It is more difficult to observe team work during classes, the interactions taking place and the involvement of individuals, as well as their independence when solving credit and exam tasks.*

> ***Teacher, Poland:*** *Seminars consisting of students' presentations with discussions are possible but also limited in expression and participation, being less lively, satisfying and engaging.*

Also, teachers missed the academic life and social contacts.

> ***Teacher, Poland:*** *One thing that does not work and cannot work online in the same way as in the classic one – is the academic life per se. Nothing compares with the conviviality and atmosphere of creative teamwork and free exchange. E-platforms should be viewed as a necessary evil – obviously useful but never on a par with the real atmosphere of the academia. Social dimension, the crucial aspect of the architectural profession, is lost completely in the case of online education. Lectures - devoid of a certain suspense and dynamics.*

The interviewees noticed difference between interaction with younger, first year or basic degree students and for example Master Degree or working students who already had learning skills and are committed to learning. Furthermore, teaching different fields of science had impact, as well as group sizes.

Teacher, Slovenia: *I find it the most difficult to interact with students in basic science courses, such as biochemistry. This is probably partly because these courses are in the first year of undergraduate study when students are not yet as familiar with the study process. The situation was better in the higher electives in the final years of the bachelor's and master's programs. The engagement of the students was impressive. They enjoyed working in groups (dividing the Breakout rooms) and discussing among themselves. The senior year lectures were also interesting because I tried to link some topics to the Covid-19 pandemics.*

Teacher, Slovenia: *In general, I would say that online work is a good escape route, but the interaction is never as good as in person. This is especially true for first year undergraduates who are already a bit confused in a new environment or society and the way of working.*

Teacher, Slovenia: *It makes a big difference whether you are teaching to a small group or a large group. When 30 or more people are present, it is hard to keep track of who is listening and who is just plugged in. And some people drop a line, "freeze up," the battery dies, the dog throws up, etc. Fortunately, I teach most of my classes at MSc and PhD level, so I have had very little of that.*

5.3.1. Various methods of engagement

Teacher, Slovenia: *More adjustments in the seminar and laboratory exercises. In the biopsychology curriculum, the exercises are usually linked to the demonstration of the performance of different test materials and data processing, which posed a considerable challenge when introducing distance learning. I organized the materials in such a way that I showed the students certain fewer challenging questionnaires via Zoom (split-screen option) or replaced the more challenging ones with more simple ones.*

Teacher, Slovenia: *The main lesson is to adapt the course with the student's competence in mind and to do the best that you can to make class interesting, engaging, without reducing the content. Live demonstration is always appreciated, since students get the sense of what is going on. Explain, and talk as much as possible, engage students in the discussion.*

Teacher, Romania: *Increase the number of examples, especially during seminary hours, to have confirmation that the students understood the information I had submitted. Several examples for theoretical concepts; examples transposed into suggestive images or tutorials on social networks.*

Teacher, Poland: *Different ways of engagement: from simple quizzes with a few questions checking the understanding about the content of a given part of the lecture, to more complex problem-solving tasks allowing for the systematic use of knowledge gained during lectures. Activation in various forms was introduced*

wherever it was possible and justified by the natural transition from one topic to the next. In all cases, the aim of these activities was to reduce the share of lecturing, which is even more tedious in the absence of direct contact, in favour of independent or team work on the task.

Teacher, Poland: *Extend the scope of classes within given courses, making them interactive and enhancing debates, even on controversial issues, but in a civilised manner. In case of architecture, esp. within the context of cultural heritage it is not difficult – any development may be deemed controversial by an interested / opposing party.*

Teacher, Slovenia: *Calling by name and engaging in debate. I also made it clear to them at the first session that I would consider active participation in the assessment (which is quite possible in smaller groups, but much more difficult in larger groups). However, this depends very much on the willingness of the students. If someone is only present because they have to be, it is very difficult to get them online. Even if they do not have the right conditions to work, it is hard to expect a high level of engagement - some had kids at home, others just had to chase the signal in the car, etc.*

Teacher, Poland: *Small tasks prepared by the students themselves for their colleagues also had a very positive impact on student activation. These were rebus, riddles, etc., which were sent to me, and then presented during the lecture. Because they were substantively related to the content of the lecture, and at the same time were made by the students themselves, they had both substantive and activating value.*

Teacher, Croatia: *Different assignments to complete by the end of the lesson and present to the others.*

Teacher, Slovenia: *The students can answer the questions using special signs and this can be also fun, making the lecture more interesting.*

Teacher, Poland: *Tasks connected with the goal to support students in achieving their learning outcomes. To do that, I try to build in individual, group, and cross-curricular tasks that force students to take initiative. It can take place in class, it can use their time outside of class. In this way, we have conducted conferences organized by students, simulations of international negotiations, and classes perfecting the art of debate and public speaking. I also teach more theoretical subjects which I always try to evaluate through written assignments which we discuss or an oral exam. In the case of soft skills classes, I focus on teamwork and I don't expect everyone to do the same thing. What counts is completing the task - as a team. In the case of theoretical subjects, I go as much as I can into the tutor approach.*

However, sometimes teachers tried different ways and methods to engage the students but there were no results, at least for part of the students:

> ***Teacher, Slovenia:*** *Despite my best efforts - asking students repeatedly, encouraging discussion, structuring seminars to require them to work together and in groups - there was no adequate response. At the beginning of the semester they were reasonably cooperative, but later they were very apathetic. During lab exercises, the same (more scientifically oriented) students were active and liked to work together, the others hid behind cameras.*

5.3.2. Using cameras

Keeping cameras open was considered important from the point of view of interaction and activation of the students. It improved significantly communication and engagement. Some interviewees were for the compulsory use of a camera, others for recommendation, in particular during group work and in the smaller groups, as well as during presentations, but not during lectures with many participants. However, there are also sensitive and legal issues in using the cameras.

> ***Teacher, Poland:*** *Teachers hoped that there would be eye contact with students during the remote classes. However, even statements were given by students rather using only the microphone.*

> ***Teacher, Finland:*** *Cameras are usually turned on while speaking. This depends, of course, on the situation. If we have many people listening to the instructions, and the questions are simply technical, then students can use chat or ask without video.*
>
> ***Teacher, Finland:*** *I strongly recommended to keep the cameras open in small groups. Teaching can be compared with theatre, you can get energy from the audience, and see the reactions, as well as notice that things are proceeding. In one of my groups, students did not understand the importance of the matter and closed their cameras. In the end, the students were recommended to attend on-site the remaining classes.*

In some courses, it is compulsory to be present. When cameras were used, teachers knew whether the student was attending or not. Another solution was that students were asked to signal their presence at a certain time.

> ***Teacher, Finland:*** *Keeping cameras on is also one way to control the students' attendance. With cameras closed you do not know if they are really attending, and sometimes you find out that they have not attended. The students do not concentrate and multitask during the lecture. University guidelines were given that you could not insist on this as it is a privacy issue, you do not have to show your own home. With the virtual background, this should not be an issue.*

Due to technical reasons and difficulties, lack of the internet signal and the quality of sound and images some teachers did even not ask to turn the cameras on, except when they were presenting.

> ***Teacher, Poland:*** *Also, giving lectures to large groups of mostly invisible students was particularly frustrating if one aims at discussion and interaction. Reasons of*

the students for not switching on their cameras were told to be the internet connection or hardware problems, which is often a real problem.

Teacher, Romania: *Delays in connection or connection errors influence the teaching activity. In some cases, the students were not able to turn on the camera and it was very hard to see if they understood the explained aspects. Also, the constant updates in the platform made difficult to the students to connect or to us to adapt.*

However, some interviewees did not consider this as an issue, and they did not mind if the cameras were closed. Sometimes keeping cameras open may even disturb concentration during a lecture, while you can see the other attendees.

Teacher, Poland: *I do not force them to turn on their cameras. I do not stigmatize people who are inactive on a given day. It is ok for me, as long as when working on the task I have a confirmation of involvement, the use of knowledge in an appropriate way and behaviour (attitude) in a manner consistent with the objectives of the subject - often at different stages of the project.*

5.3.3. Asking questions

Asking more questions was one of the most often mentioned method of activation of students, as well as a means to follow-up and evaluate. With more questions and tasks, you can follow the attendance, which without visual contact was often problematic. Students were called on by name, often randomly, also to make sure that they stay present. Asking questions may encourage reticent students to speak up.

Teacher, Slovenia: *At the beginning of the online lesson (in order to repeat the crucial things from the other lesson) I usually gave one or two questions that they could study in groups. So, I made online groups and the students had the opportunity to discuss different topics between each other and then report their thinking or answers to the whole group. Students liked these online approaches. Using all these approaches, I also exactly knew who was really present during online lesson.*

Teacher, Croatia: *I found that students got used to and accepted the teacher's style of interacting and teaching with them, so they did not mind if I called on them randomly.*

Teacher, Finland: *Questions were asked also via the chat and they were sent back simultaneously. Additional questions could be asked from the students.*

Teacher, Croatia: *Frequently asked questions require students to actively participate in processing the information. By thinking about the question asked, students focus their attention on the material, retrieve information from long-term memory, prepare it and process it for the answer in working memory. Questions could be related to the content to current events or experiences of the students. The taxono-*

my of the questions asked is very important. Each formulation of questions has its expected answers.

Teacher, Croatia: *Focus on sub-questions helps students understand the question and find the correct answer. Asking sub-questions helps students not to get frustrated and give up searching for answers. A good piece of advice is that when a lecturer asks a question, one should wait patiently for an answer. After 10 seconds of silence, some student will break the awkward silence and give an answer.*

5.3.4. Discussion and working in groups

Online discussion or in working groups during the lesson (synchronously) was one of the main tools for the activation of the students to reduce the share of lecturing and increase team work. Students were usually divided into smaller groups to discuss. However, it was noted that discussion in pairs is quicker to organize on-site than online e.g. in Zoom. 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. Sending discussion questions/topics for the students helps them to prepare in advance.

> ***Teacher, Slovenia:*** *In the Breakout rooms on Zoom students could do some analysis together in small groups, or they could discuss the topic and I circulated among groups to check up, help, answer questions etc. After the Breakout room session, they had to report their main findings, and we discussed the results with the rest of the students.*

> ***Teacher, Finland:*** *Group works were more difficult to organize, if the students did not know each other. Integration of the students is difficult online. As a solution, a discussion area was created in Moodle, where you could establish and a join group with an interesting topic.*

Teachers assigned students various shorter, smaller tasks that required more collaborative work. Instead that students would try to work individually at home they were given projects with clear deadlines. Feedback from students was good.

> ***Teacher, Poland:*** *Students created their own company using micro- and macroeconomic knowledge.*
>
> ***Teacher, Poland:*** *Previously, various forms of team-based student activity were used in exercises, with my minimal participation - more of a person organizing the work and summarizing. In smaller groups the students (perhaps emboldened by the smaller team) could have verbal and eye contact with each other (which they greatly avoided when working in large teams).*

> ***Teacher, Slovenia:*** *Students worked in groups and solved problem situations with several short breaks. They had the possibility to replace the content of the assignments with project tasks and to be actively involved in their studies already during the lectures.*

A challenge regarding working in the groups is that some students will not discuss, while some students may dominate the discussion. A different background is mentioned both as a benefit and a challenge. To activate the participation of all, responsibilities were shared and roles given to the students within the group. A World café method has proven to be successful in Zoom. The students themselves are acting as “table hosts”. In addition, students were given exercises, tasks, group work and themes for discussion which they worked with in online groups asynchronously.

Teacher, Finland: *After each lesson there is a thematic discussion in Moodle on the subject as homework, e.g. "What did you learn/what would you like to learn during the first lessons". Students have very high-level discussion between themselves on the topics, and the teacher is more like a moderator who may add something. With clear instructions, discussions work well. If the topic is more in-depth, there is less discussion than on the more general topics. In group work there is a social aspect included for students, especially with cameras on.*

Some teachers noted that group work is even more efficient online. Students were also given a possibility to evaluate each other's work.

Teacher, Finland: *Open University students are encouraged to participate and work in groups. Group work begins with a joint Zoom session of two hours, including teacher´s instructions and discussions in Breakout rooms. The groups are defined per subject, and each group will produce a report accompanied with a Power Point presentation. At the end, there will be a concluding Zoom session, where all groups present their outputs. It has clearly been shown that when the teacher instructs and encourages the groups to share responsibilities, such as group leader, presenter, supervisor of the report form etc., the group will be working more efficiently and the results are better.*

Teacher, Finland: *During the pandemic time, it has been found that not all students attend the concluding Zoom sessions. Here I have made a change that has proven successful. Instead of me as a teacher listening to and providing feedback for the groups' final presentations, I have matched two groups with different topics to present their work to each other. I am still visiting and listening to the final Zoom sessions, but the groups themselves will be in charge of providing feedback for each other. To support the groups, I have provided instructions on how to compare and evaluate, for example, how the group is functioning.*

Teacher, Finland: *In the software project course, students design a real-life customer software, according to the needs of the customer. In online mode, the phases of the project were presented with more visualization of the material. Today, software work often takes place online: students need to present ideas and products in the profession, too. There is more work for the students than in class. During the project course, teams can also discuss with each other. Today, it is easier to start discussion, which may be due to that use of social media has lowered the threshold to discuss. On the other hand, my students are already in the profession as software engineers and operate daily online. Today, students are more willing to share tips for others. Digitalization has enabled knowledge transfer and transfer of silent knowledge with each other in the webinar. Teacher enables data transfer, it cannot be planned in advance. Students' feedback has been positive, they have really learned practical issues in the project course.*

Students' presentations enabled learning new things and angles, and for the students learning of immediate feedback-giving skills.

5.3.5 Communication with students

Various means were mentioned to encourage discussion on extracurricular matters. The students have possibilities to ask questions or speak about everyday things and challenges during the pandemic. On the other hand, with a leisure working atmosphere during the classes it is possible to gain the attention and trust of students. Knowing students' names and communicate with them as much as possible was mentioned. During online courses, face-to-face sessions were organized not only to share information but to meet with each other.

> ***Teacher, Finland:*** *As a teacher, I see myself as a role model. I try to be relaxed and not too formal when teaching online. Sometimes the teacher can appear as too authoritative when online. I try to avoid that. I try to put effort in teaching and being present, and allow time and space for the students. I also keep reminding myself on the fact that some students are struggling with their well-being and studies online. I avoid burdening them too much.*

> ***Teacher, Poland:*** *Act always politely and kindly, with a profound understanding about psychological difficulties caused by the pandemic and its vicissitudes on the one hand, but with a certain resolve and discipline on the other.*

> ***Teacher, Poland:*** *Students' opinion about the online teaching experience after the period was not a particularly positive one. A teacher's motivation (or lack of it) affects the students: if the teacher can find the stamina to keep motivating the students, while expressly emphasizing that the effort put by students into the course does not go unnoticed, the negative impact of the impediments of online teaching can be minimized if not totally overcome. Telling the students repeatedly and directly that the teacher realizes the hardships on the participants' part does help. If the students feel their effort is respected it is easier for them to maintain motivation at an adequate level and minimize negative stress. A perfect combination in teaching.*

> ***Teacher, Poland:*** *Online teaching requires firstly openness and secondly understanding (empathy) on students. Remote education is a bigger problem for students than for teachers. This is because it is not only a challenge for them in terms of methodology, work organization or, ultimately, having a computer. It is also staying at home (lack of mobility - change of the environment), the necessity to study in a space, which has to be shared with other family members, or there are financial and technical problems, which do not allow to fully participate in the educational offer. A student has 8-10 hours of classes a day (at the computer), and we expect him/her to be engaged on the 9th hour. I don't know any research that proves the effectiveness of such education.*

> ***Teacher, Finland:*** *In a course involving practical exercises, the teacher wrote letters to students always explaining the work plan for the following week. This personal way to approach the students really showed good results in engaging and activating them.*

> ***Teacher, Finland:*** *Online activates communication with the students. Before communication took place at the beginning of the lecture, now information is sent immediately via Moodle or e-mail lists, with faster communication channels. Discussion forums could be strengthened. A channel for Q&A was opened in spring for one course. Students help each other, and the teacher is an enabler. Students often know much more than the teacher.*

Teachers also offered weekly one-on-one 'office hours' on Zoom for anyone who needs information or just someone to talk to, as well as a coffee break with teachers in Zoom.

> ***Teacher, Croatia:*** *At the beginning of the lectures, I used to communicate with the students and ask them how they felt, how satisfied they were with the lectures, exams and so on. Students could also contact me via email, mobile phone, MS Teams and Moodle.*

Students were also encouraged to communicate with each other. For example, an outdoor walk in the city was arranged for first year students in order to encourage the grouping of the students.

5.4. Teaching methods in online environment

5.4.1. Teaching in small groups

> ***Teacher, Croatia:*** *I divide a group of 60 students into 4 groups of 15 students each, as it is more effective to teach and manage to engage all students actively while hybrid teaching.*

> ***Teacher, Slovenia:*** *When I have a larger group, I try to plan the activities so that they either work in groups most of the time or I split them into groups and only up to 20 follow my lecture while the others work either individually or in groups. If you have the opportunity, it is really good to take the time to get to know your audience individually at the first meeting (everyone does some sort of self-presentation if the group is small enough). Since there is little face-to-face contact when teaching online, it is very important to have homework assignments where you can give individual (written) feedback (in an online application). It seems to make students feel that they are seen as a person.*

5.4.2. The flipped learning approach

The flipped learning approach can be described as a method which helps teachers focus on active learning during class time by assigning lecture material and presentations to students to watch at home or outside of class. This method can improve the 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.

Teachers connected other methods and applications with flipped learning. Characteristic of flipped learning can be noticed when the teaching materials are available online in different kinds of platforms. Also, the students could send materials: "Lift classroom", the students sent recorded lectures before and then we spend the time together talking about what they have heard and discussed their opinions.

> ***Teacher, Poland:*** *I try to use the idea of 'flipped classroom' when the students are provided with recorded lectures before classes and then we spend the time together talking about what they have heard and discuss their opinions. Sometimes I support their studying with some questionnaires that they have to do before the class.*

> ***Teacher, Poland:*** *Flipped classroom strategy: preparing materials for students in the form of short recordings of the presentations which they studied before the lecture, only to discuss more difficult issues or debate the problem during the lecture. MS Teams platform (verbal and chat-based discussion) and other applications offering anonymous speaking opportunities, are used during the exercises.*

> ***Teacher, Poland:*** *Exercises: redesigning the forms of individual or group work, in particular as regards laboratory methods. This required the preparation of a number of new materials (e.g. videos in laboratories, work cards, instructions) and lesson scenarios. I used, among others, the flipped classroom method, students were introduced to videos showing the analysis process, then during class they constructed instructions using the decision tree method. Collaborative applications facilitated the use of methods such as the mind map.*

> ***Teacher, Italy:*** *Pros and cons of the flipped classroom approach include the requirement of preparing in advance a lot of asynchronous material e.g. with short recording, survey, exercise that you will provide the students in advance. Once the students will come to the class (theoretically) they have already studied the introduction to the topic and you can go more in deep in analysing the topic. The main problem for this activity is to understand correctly the background and the skills of the students in order to prepare materials that they can understand and use. If you decide to use a flipped classroom the final mark of the student may be linked also to the activities done before the lecture because the platform allows you to track the students and so you have to create an incentive in using the platform.*

5.4.3. Functional teaching methods

> ***Teacher, Finland:*** *Functional teaching methods with different tools, for example, a triangle as voice mark; hand dolls. These tools work well with the students who study to become teachers, and better online because you are closer to the students. When you are in a large lecture room, tools are not clearly visible from far.*

5.4.4. The ERR framework

Teacher, Croatia: *The use of the ERR framework (evocation, realization of meaning, and reflection) in the (virtual) classroom, creates appropriate conditions for active learning to foster critical thinking and deep information processing. The application of this three-phase framework in teaching has enabled students to integrate new knowledge with existing knowledge, to actively engage in new learning experiences and to consider how this knowledge informs their understanding. To achieve this, training and education are needed to properly design and apply various forms of cooperative learning. The application of the ERR framework requires good preparation and is time-consuming, as the whole process (from initiation to completion) needs to be anticipated. Nevertheless, such a teaching method contributes to the development of students' critical thinking in a hybrid way and is well- received by students.*

Teacher, Croatia: *Basic techniques aimed at getting students to think about what they already know or what they have learned in the new lesson: "Think, Pair, Share", "Terms in advance", "Clustering", "Ven Diagram", "Charts", "Anticipation Guides", "Scrambled sentences", "Enhanced lecture", "Clubing", "KWL - Know/ Want to Know/ Learn(ed)". These techniques are able to engage all students in online and on-site teaching by dividing them into small groups and Breakout rooms. All students are indirectly encouraged to contribute to the task, with one student presenting the group's thoughts and conclusions to the other groups.*

Teacher, Croatia: *ERR cooperative learning framework helps students remember better while their knowledge is activated, combined with short lectures with more breaks, involving them in the lectures by solving individual and group tasks, and repeating known knowledge. I do not use PowerPoint presentations in teaching because I believe that students do not listen to their lecturer when they share the screen. It is very important to speak in simple language when doing so, so that the students can familiarize themselves with the subject.*

5.4.5. Problem-based learning -method

Teacher, Finland: *In problem-based learning-method, the students themselves create the learning task and identify what they want to learn about an issue. Students have different roles which change: chairman, secretary, observer. They allocate the tasks among themselves, write a paper on their task and upload it in Moodle. Each student presents the key issues from the intermediate task. Students cannot be passive, usually they need to participate actively. Flinga and Sway were used as assisting tools. Key issues were written in Sway and each one presented the key points. In Finland, the method was introduced in medical studies in the 1990's.*

5.4.6. Linking theory and practice

The interviewees told that they had used more practical examples to keep the student engaged in online teaching.

Teacher, Romania: *We tried to mobilize students with practical case studies, they were able to react to real situations that they may encounter in their daily activities.*

Teacher, Poland: *More exercises, practical examples, from presentations to tasks, exercises, exams which have to be focused more on practice. The most important is 1) to analyse case studies which combine theoretical knowledge that students have to learn with practical experience they have already obtained or observed. One important advantage: it is not too easy to find the ready solution in Internet, you need to think, analyse, work by your own. 2) tasks and exercises concerned with the topics you are already studying. For instance, I suggest we should provide more oral exams based for example on the projects prepared by students', case studies etc.*

Teacher, Italy: *Students were engaged in two different ways: during the theoretical lessons trying to find solutions and opening discussion on the real case in order to move from reality to the theoretical aspects; during the practical lessons, asking them solutions for solving real case issues and discussing with the other colleagues on the solutions provided. The real case studies were developed jointly with students.*

Teacher, Romania: *I focused on practical examples and cases during the seminaries. We discussed practical situations, how to improve different aspects regarding the companies' activities in this pandemic situation. I gave them exercises in which the students played different roles and we discussed the solution found during the classes. I gave them exercises regarding the theoretical part discussed in the courses and that helped better understand the theoretical aspects discussed.*

5.4.7. Games in online teaching (gamification)

Games were used for the engagement and activation of students, but also in assessment and evaluation. Teachers planned to use them in the future, too, connected with on-site lessons.

Teacher, Slovenia: *Quizzes, escape room activities and role-play to engage students while testing their understanding and to identify aspects that need to be addressed again. These activities were also meant to help them to acquire the necessary knowledge to successfully meet the course requirements and, in some cases, to help them flex their critical thinking.*

Teacher, Finland: *Before the Covid-19, I used different kinds of educational games, in different platforms, e.g. Socrative and Quizzes for small groups. Due to the pandemic, a paid licence is required for them, thus now I use mainly Kahoot. Games work well online or on-site but in hybrid mode they are impossible to use. Exam of the research method course was realized as an escape room, which tests if you have understood the basic concepts. Genially platform has escape room cases, but I designed an escape room myself. In it, the university is closed due to the pandemic, someone has stolen the research results and you need to find out how this*

has been done, who has done the theft. You need to find out which research method you would need to use. It was great to do this and follow the students in this task.

Teacher, Romania: *For the Communication classes, different games that could be played online, or after presenting the theoretical part of the course I made a small poll using Kahoot platform and the winner got some extra points for the exam. If you do not engage them in your course, after 10 minutes they will get bored and leave the computer. So, in order to make them more active, I used Kahoot to evaluate the information they've accumulated, but followed by some rewards for the winner and sometimes even for the second and third place as well.*

Teacher, Poland: *During exercises and sometimes during lectures, students played games that I had prepared for them using Internet applications and Excel. The games made it possible to test their knowledge or skills in the form of fun - to improve their mood in difficult times. Classic board games (with a virtual board), but also virtual escape rooms (as team task), in each case the player's progress in the game depended on their knowledge, and only minimally on fate. The form of a game show also worked very well, e.g. in the form of the millionaire game show, with a qualifying stage and then a final involving the best of the students, who were cheered on and helped by other students in activities such as halves, a question to the audience or a phone call to a friend.*

Teacher, Poland: *In order to motivate students to both attend and actively participate in the assignments, the classes were gamified and, in some cases, seemed to be of exceptional value, filling the gap resulting from the lack of possibility of direct contact with the instructor. Gamification was in the form of a fabricated game, in which the storyline included factual tasks creating in-game missions, the completion of which, leading to the collection of certain virtual goods, led to the achievement of the storyline goal of the game, thus allowing to pass the course. Gamification, as a method motivating to systematic work, in my opinion works better than the traditional form of testing the acquired knowledge and skills in the form of, for example, a single act such as an exam. In the case of remote classes, it was an additional incentive to engage in classes and actively process the acquired content, especially in the case of lecture subjects.*

5.5. Verification of knowledge, evaluation

One of the main challenges during lockdown was the evaluation and assessment of the students, as the exams could not be held on-site. It was not possible to check whether students are writing their work independently. Many teachers changed emphasis to ongoing evaluation and assessment during the whole course. Students were given opportunities to replace an exam with a project assignment or self-assessment. Instead of written works there were more projects, and gamification was used in the assessment of students, to test the acquired knowledge and skills. Aside written exams, oral exams were used in the online environment. Shortened time for online exams was one of the solutions, for example short questionnaires, or short assignments with limited response time in the virtual classroom. However, some teachers found it better to ask for permission to organize the exams on-site to better assess students' knowledge.

Teacher, Finland: *Although there are different possibilities available, without face-to-face contact it is difficult to objectively assess what is certainly a student's own output, esp. numerically. Because of this, I have often simply used "approved" / "not approved".*

Teacher, Poland: *In my point of view during online teaching the written exams do not work. Especially tests, open questions etc. It is not only the problem with trust if students work by their own. The problem is the circumstances. During the exams at the University the students work alone, more focused and they think independently. During the exams online, they often work less focused, distracted, I have a feeling that they do not believe in their knowledge and abilities, but rely on some help to use different sources which unfortunately cause many mistakes (for example they rewrite definitions from unauthorized sources like Wikipedia etc.).*

Teacher, Croatia: *Change of the structure and type of questions, using more short answer questions, multiple-choice questions and filler questions instead of open questions; oral exams were not completely excluded. The combination of written and oral exams in an online environment is a good way to assess students' knowledge.*

Also, random questions were used from large databases of questions and assignments, to easily create individual assignments for each student to prevent cheating in exams.

Teacher, Poland: *I use the examination platform offered by my university. When I create an exam, I enter a number of questions, both open and closed, and each student is randomly selected to answer. In addition, the questions are displayed in a random order.*

Teacher, Slovenia: *The questions on the exams were slightly changed in the way that it was less possible to cheat. In my opinion, the best practise in giving exams online were oral exams or even better written exams with the help of special programs for giving exams and that the students should use two cameras. Online exams could be as good and relevant as in the classroom (in live), when they are properly performed.*

One size does not fit all, different kind of evaluation is needed. Alternative ways (flexibility) should be offered to take an exam, for example a Learning diary. Students are activated more if they use a learning diary. However, it is not suitable for all, for some it is more natural to use bullet points and difficult to write longer stories and texts.

Teacher, Finland: *I developed a new assessment matrix for the learning diary, which can be implemented in Moodle. This is based to Bloom's taxonomy with five levels. The assessor can click on the levels and give brief feedback. The criteria are transparent for the student and teacher, and feedback is given to student based on standard feedback sentences. The learning diary is half-structured so that the student reflects on his/her experiences.*

Digitalization allows other forms of progress, for example the automatic checking and text analysis of exams. A Finnish teacher recorded his verbal assessment and uploaded for the students in Moodle.

> ***Teacher, Finland:*** *For example, in database courses a platform has been created for exercises and online exams. Using this speed up with courses with many students. The online tool helps when the exam rooms are not available. The students have learned to use this platform during the course.*

Universities or teachers themselves tried to find different kinds of tools to hinder cheating. For example, a Safe Exam Browser (SEB) was used. The secure conduction of remote exams was considered important, as part of development of quality assurance mechanisms for remote learning.

> ***Teacher, Italy:*** *At the beginning, our university invested a lot of time and resources for developing Safe Exam Browser (SEB) or other solutions for avoiding cheating. The solution did not work at all and we had many problems in managing the exams. Currently, we are back at the exams in presence and we will test in advance if the SEB is working at the University's computer. During the course student may do exam simulations online, and they self-evaluate their exam. On the basis of the experience of the last years this solution is mainly used near to the exam day and it cannot be managed without an automatic evaluation tool like the one in a Moodle platform.*

> ***Teacher, Croatia:*** *Recording the online written exam via Google Meet. Students use various methods and techniques to cheat on exams. As it is not possible to properly evaluate students' knowledge online, I conducted oral exams on-site (Covid certificate needed to be shown).*

Different ways to the assessment of exercises and homework were used, too. Assessment (peer evaluation) took place within and between groups. In addition, online games, quizzes and tests were used.

> ***Teacher, Croatia:*** *Correction of few examples of written homework on Merlin and sharing them with other students. Discussing students' work has proven to be a good exercise and is very important for students as they can learn from each other. The aim is to teach students how to study, because studying is more than just getting a good degree.*

> ***Teacher, Croatia:*** *For exercises and exams online in the field of musical studies, students would send recordings for assessment, some assessments were changed to the written mode.*

> ***Teacher, Poland:*** *Assigned individual tasks (and projects) were presented in front of the group and the instructor evaluated with additional points. Traditional dis-*

cussion was turned into an online forum (questions developed by the students subjected to group discussion assessed by the instructor), various types of online games, quizzes, tests requiring not only "completion" but "direct response and commentary" by the students during the class.

Teacher, Finland: *Instant surveys, e.g. Mentimeter (1-3 for each lecture) that allow to get feedback and test if the students are following or not and you can slow down and you can discover if your pace is unsustainable for the audience. Normally these short surveys are not evaluated and they will not contribute to the final grade. Especially for large classes, the effectiveness of this instrument for the survey is significantly higher than what you can do in presence without any computer because the students are more comfortable in answering when they know that the survey is anonymous.*

On the other hand, students' workload has increased, and more is required from the students to accomplish a course. Some students preferred an exam instead of another kind of task, as there are so many of them from other courses already. A solution found was to ask 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.

6.

Lessons learned

"As soon as the pandemic situation allowed, teaching returned to the premises of the university. Often students were allowed to attend from remote, too. Many interviewees noticed that organization of hybrid teaching was more complicated than teaching entirely online."

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6. Lessons learned

As soon as the pandemic situation allowed, teaching returned to the premises of the university. Often students were allowed to attend from remote, too. Many interviewees noticed that organization of hybrid teaching was more complicated than teaching entirely online. Teachers had to create plans to simultaneously consider both students on-site and online. Preparing both the classes and the materials that work well in the online format takes time. Possibility of using an assistant or teach with a colleague helped in this situation. Sometimes there was lack of equipment and devices, too.

Many teachers decided that instead of hybrid teaching, they will practice either online or on-site teaching. However, students have enjoyed the hybrid option with more flexibility and less travelling. It was noticed that student absences had decreased when teaching is online.

Teacher, Italy: *It is important to adapt one's own teaching to the remote and physical class in order to not loss the attention from the remote one. With online students, it is not easy to capture their attention for long time which is a strong challenge for e-teachers.*

Teacher, Slovenia: *Hybrid lectures did not work for me. Better equipment (moving cameras, small remote microphones, etc.) could have improved the experience to some extent. But besides the technology, you would also need an IT support to take care of all this all the time, as you often have to adjust settings and solve on-going problems.*

Teacher, Finland: *Starting the lesson with "warming up" questions activated especially the quiet students in online mode. However, in the hybrid mode it could result as a "cold call" even with quite basic questions. Those attending online did not want to answer or participate at all, they said that they just wanted to listen and did not have their cameras on. All the students were never simultaneously present on-site. Some students want to stay quiet, not to participate.*

Teacher, Finland: *Different kinds of activation methods e.g. Breakout rooms do not work in hybrid mode. It is demanding to move between the Breakout rooms and simultaneously moderate the discussion on-site. Much more effort is needed to teach, the workload increases constantly. Those who attend remotely miss things, if they do not themselves understand to be active. Some students understand this, others do not.*

Teacher, Finland: *To increase the interaction of those online in hybrid mode, during the breaks, in hybrid mode the students online could be shared to Breakout rooms to discuss while those on-site are on coffee break.*

Another challenge in online teaching may be that the traditional structure and length of the lesson are strictly followed in the online mode. While the interviewees told about several activation methods and more breaks in between, only one of them mentioned that she had shortened a bit the overall length of the lesson to the maximum of 2 hours. A proposal by a Polish teacher was the need to look for other forms of assessing teachers' workload. Instead of operating in the paradigm of the number of contact hours included in the study plan, time to contact and support students could be counted in, too. Methods of achieving the learning outcomes would be worth to think.

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Present,
Engage,
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7.

Conclusions

"It was challenging to move suddenly to online teaching in the spring of 2020, and it took time to adjust to the new situation and find solutions to the challenges. On the other hand, those who did not have previous experience about online teaching noticed its benefits, too."

7.1. Benefits and challenges of online teaching

It was challenging to move suddenly to online teaching in the spring of 2020, and it took time to adjust to the new situation and find solutions to the challenges. On the other hand, those who did not have previous experience about online teaching noticed its benefits, too. One interviewee considered that the effort put into the development of the online courses started to pay back during the second year of pandemic and does so currently, since the online resources serve as a dynamic textbook dedicated to the course which can be used as an aid to standard teaching. Many interviewees, as well as most of those who responded to the questionnaire planned to practice online teaching also in future combined with on-site teaching, especially with (mass) lectures. It allows for great savings and better organization of time.

> ***Teacher, Slovenia:*** *The beginning was very stressful for me and the students because we were not familiar with the technology. Once we got used to it, everything was much easier and I find that sometimes the students interact with each other even more than in the classroom. On the other hand, I missed the interactive discussions with students that are only possible in face-to-face lectures.*

However, opportunities to meet with the students were organized as soon as it was possible. In addition, some interviewees did not consider online teaching to be a long-term solution. Some students were not mature enough to take responsibility for active participation and there was lack of concentration and multitasking. Also, the preferences of some interviewees were for on-site teaching: "I do not miss any kind of online teaching".

Online tools offered a possibility to enhanced communication, easy access to a chat or video connection and different kinds of platforms, which could be useful in the future connected with the face-to-face interaction and academic life. The online environment allowed the use of several animations, video resources, pictures, simulation-modelling programs, tutorials related to the equipment used in the laboratories. It was easier to reach the teachers online, and for example, the consultations online became more popular. Via the platforms it was also possible to standardize information exchange between students and teachers. Even though there was lack of face-to-face contact, anonymity was mentioned as a benefit, too.

> ***Teacher, Poland:*** *Students can use Avatars or they can be "hidden" behind their nicknames, and then they willingly participated in such forms of activity such as quizzes, question and answer sessions, and surveys. Students could also give anonymous feedback about the courses.*

> ***Teacher, Poland:*** *Return to the real academic life was hoped, but with some elements retaining the admittedly useful and accessible media – platforms – drives – clouds for the data necessary during the process of education.*

> ***Teacher, Italy:*** *All the assignments that we originally received by e-mail during the course are now submitted through the platform by using a submission form. This solution allows to standardize the information requested for each submission and allow to save a lot of time managing the interaction with the students.*

> ***Teacher, Slovenia:*** *Some approaches and methods of online teaching to engage the students may not be possible to be applied in the classroom; for example, it is possible to anonymously write on the online board. In this way, students who are too shy to participate, may give their opinion or ask questions, and they could be more active online than in live in the classroom. Chat is good for students who have great ideas but are usually quiet during discussions or debates.*

> ***Teacher, Slovenia:*** *A synchronous lectures must be used in moderation. While videos can help for particularly challenging topics since students can review them multiple times, it is too easy to postpone them or students can get disengaged. Interaction, both with the teacher and peer to peer, is needed to stimulate students' engagement and learning, even for introverted students so this aspect should not be neglected.*

Online suited better for certain fields of study such as economics and marketing. However, sometimes there were unexpected positive results even from those fields which were challenging.

> ***Teacher, Poland:*** *It is paradoxical that in spite of the lack of personal contact, the quality of designs made during lockdowns and limited life in public spaces, emerged as good (at least the aesthetic one). Architecture requires a lot of effort and time spent on conceptual work and drawing. Therefore, periods of no distractions served better the preparation of design projects and analyses.*

Teachers had good experiences about discussions and online classes in particular with the Master/Diploma students and on guiding their thesis online.

> ***Teacher, Poland:*** *Remote work has also changed my form of cooperation with diploma students. Apart from meetings with diploma students during the diploma seminar, I very often arrange individual online consultations with them at a convenient time. This type of collaboration works well mainly for part-time students, who are often able to discuss their progress on the dissertation in the evening.*

To online classes it was easier to attract external speakers, it enabled e.g. easier participation of representatives of business or experts in the field of study concerned. There was no travel cost which would need to be compensated, and timewise it is easier to attend.

> ***Teacher, Italy:*** *If the course requires to have some guest speakers from the industry or from other countries the option of the online is the only solution to having outstanding speakers without incurring in excessive costs to the university. The guest speaker will accept to join even for free for an online lecture while the standard visiting requires budget for covering at least the travel and accommodation cost. Online tools may be also useful for having roundtables with experts from the industry that provide the point of view of the industry. If you are authorized to record the speech, it can be used also for creating short promotion of your course for the social media channel.*

> ***Teacher, Slovenia:*** *It was easier to get different experts in the field online, because in live they would need more time and expenses to come in the classroom, and therefore they would probably not come. I composed questions to them relevant to their work in the field and to the subject I teach, and they were answering the questions. In addition, the students also had the opportunity to ask questions to them. It was only a short 10 minutes' interview that made the lecture more interesting.*

Furthermore, online teaching is flexible, and it is suitable especially for working students or those already in a profession, as well as for continuing education. There is more equality and attending is possible from around the world. It was also noted that working students are valuable in teaching as they provide insights from companies, e.g on the technological and economic aspects of certain applications. Working students challenge the quality of teaching as they study for the contents. All that you offer, substance and materials need to be in shape. The student group is heterogenous, and there are students of different ages. Students like this combination. Also, there are different kinds of learners and some of them may benefit about online.

> ***Teacher, Croatia:*** *"Every cloud has a silver lining". The pandemic has put us in a position where we have had to develop skills that we hardly used before, such as adaptability. We learned to make the best of the challenges we faced and found new ways to connect with students and colleagues and work together. It is very important to have a lot of patience with oneself and the students to take advantage of the opportunity that the pandemic has brought. All the decisions and attempts we made to do the best for our students, which did not turn out to be the best, have given us a rich experience.*

Online teaching had positive impacts on the well-being of teachers. Combining work with family life was easier. Furthermore, it was more convenient not need to commute to work every day especially for those who have longer distance to the university or if you teach in different campuses or universities. Students can avoid travelling, too. Also, there was less travelling to international events. An interviewee mentioned that Finland with longer distance to other European countries is more equal with other countries while everything is online. Many events are now organized online, which saves time; this trend may continue. Still, there is a need to meet colleagues face-to-face in conferences, to network with other people.

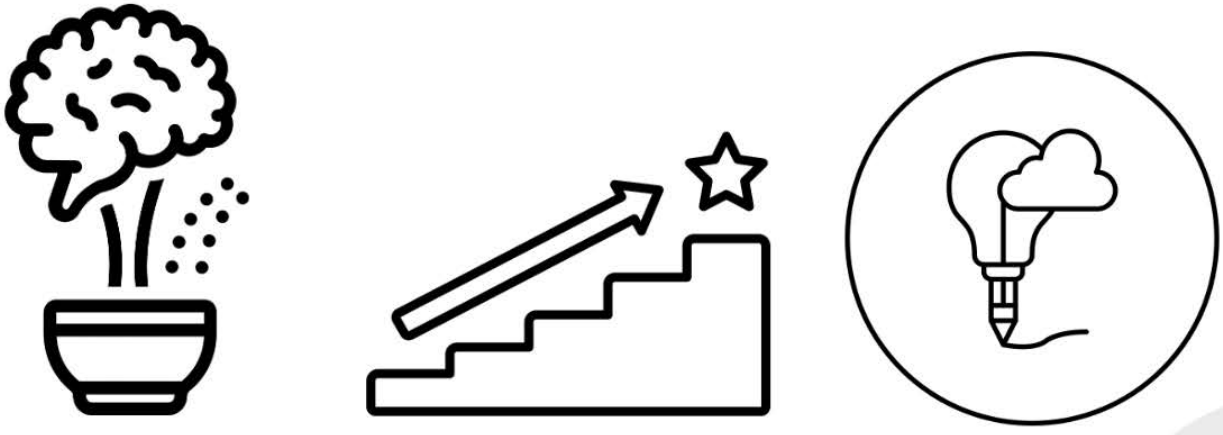
Improving online learning

For future development, teachers would need training and education in the new methods and techniques of remote teaching, mainly in order to improve methodological and didactic competence. Raising status of online teaching is important, one example proposed was checklists what you should offer in Moodle. In addition, rules and regulations were called for attending online teaching, including exams.

Sharing experiences and good practices were also considered important, not only with the teachers but with students. This may take place in one's own academic community, but also in between the universities and different kinds of networks, including international. All networking events (conferences, reports, etc.) among faculty members from different schools may help in understanding how to improve our approach to virtual and blended teaching.

> ***Teacher, Croatia:*** *It is a good idea to ask the students what could be done better, because they are the generation that is more familiar with the technologies and they will surely have some good advice.*

> ***Teacher, Poland:*** *Sharing experiences and good practices. We often look for them in foreign publications or best-rated universities in the country. Good practices and innovative solutions are often non-multipliable in all settings. This means that the people who analyse the problem in similar conditions as we do are our colleagues. It is also the students themselves who, when invited to talk (and not to fill out another survey), turn out to be willing not only to criticize but also to take a constructive approach to problem solving. Teaching seminars, meetings with students, participatory evaluation, building a culture of quality through conversation rather than impersonal procedures is something that, in my experience, allows us to better cope with the challenges of online education. The best way to deal with education problems is to educate each other and draw on each other's experience and perspective (including students).*



7.2. Brief summaries by country

"Teacher stories" - Inspiring good practices

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7.2.1 Croatia

Croatian interviewees had previous experience on using online platforms and sharing materials via them. Interviewees told about various kinds of activation and teaching methods which they used during the pandemic, including specific methods (such as ERR, teaching in small groups, methodologies in asking questions). Techniques to evaluate students and carry out exams were explained, incl. how to monitor students during the exam. Teachers prepared both oral and written exams online, however, exams were also organized on-site by agreement. Some technical difficulties were met in the beginning of the online teaching, for example, due to a poor internet connection, some teachers recorded their lessons in advance.

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7.2.2. Finland

The Finnish interviewees had previous experiences on online teaching, especially on sharing teaching materials via online platforms and on the streaming of the lessons. Also, hybrid teaching was previously known for some of them. Digitalization of teaching had started at least ten years before, and the technologies and applications in online teaching were familiar with most of them. Exam rooms were available in the premises of the universities. Teaching methods included problem-based methods and functional teaching methods, as well as the use of games. The Finnish teachers also organized group work and discussions online. The workload increased during the pandemic, in particular with hybrid teaching. Online teaching will be an essential part of teaching of the Finnish interviewees. However, the interviewees missed the face-to-face contact with students, and some of them will organize at least one gathering on-site during a course. Although the merits of online teaching have now been shown, it is clear that in-person teaching is rapidly becoming the norm again.

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7.2.3. Italy

Half of the interviewees presented a field of studies which require laboratory work and practices. They considered that it is not possible to teach or learn the skills fully with online methods such as videos and explaining of the actions. Communication with students was facilitated with online tools but access to internet in the classrooms was sometimes limited. In the other fields of study, e.g. engineering or finance, interaction was organized with working with practical cases and with focusing to connect theory with practice. Instant surveys were used to assess and get feedback from the students. As a benefit of the online course, it was easier to get guest speakers from industry to attend and give brief presentations. Online solutions and platforms presented benefits, such as standardization in assignments. Exams were organized with Safe online Browser (SEB), but the tool did not work properly. Interviewees also called for further training on online teaching, incl. the digital platforms. Networking would be a key issue here, to exchange experiences and best practices.

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7.2.4. Poland

The Polish interviewees did not have previous experience on online teaching, thus the sudden shift was a challenging and difficult task. The workload of both teachers and students increased much. During the online teaching period, variety of tools for student activation were used, incl. different kind of games, quizzes, asking questions and case studies. Flipped learning was used as a method. Teachers who had more lectures, did not change their methods that much, sharing of the screen was sufficient. Use of online platforms became more common and benefits were found on using them, such as content sharing and easier information exchange. Focusing more to practice was found beneficial, also related to exams, oral exams were recommended.

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7.2.5. Romania

The interviewees from Romania did not have previous experience related to online teaching. Benefits of online were mentioned by the interviewees, e.g. in online platforms students and teachers have an easier access to materials. In online, it is easier to share audio-visual materials during the classes. Student activation was challenging, often they had lack of a proper internet connection or laptops and had to attend via mobile phones, which lowered the interaction. Need for rules and regulations to attend the classes online, as well as for exams was mentioned. Interviewees had looked for different methods for the activation of students, usually discussion and debates were used. Practical cases were emphasized. A couple of interviewees presented more in-depth best practices.

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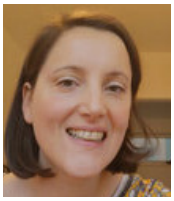
7.2.6. Slovenia

Almost all the Slovenian teachers started the sudden shift with no previous experience of online teaching and learning to use new technologies was challenging. Guidance to teach online was provided by the university, and new tools were introduced. Group work, project assignments and asking more questions to activate the students were used. Teaching in small groups and individual contact with students helped to engage students. The flipped classroom method was used, too. The level of interaction was sometimes even better than in the classroom. Difference was noticed between students at basic level courses and older students who already were familiar with the practice of studying. Practical, laboratory exercises were challenging; online tools were used but the learning results were not satisfactory.

Slovenia



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