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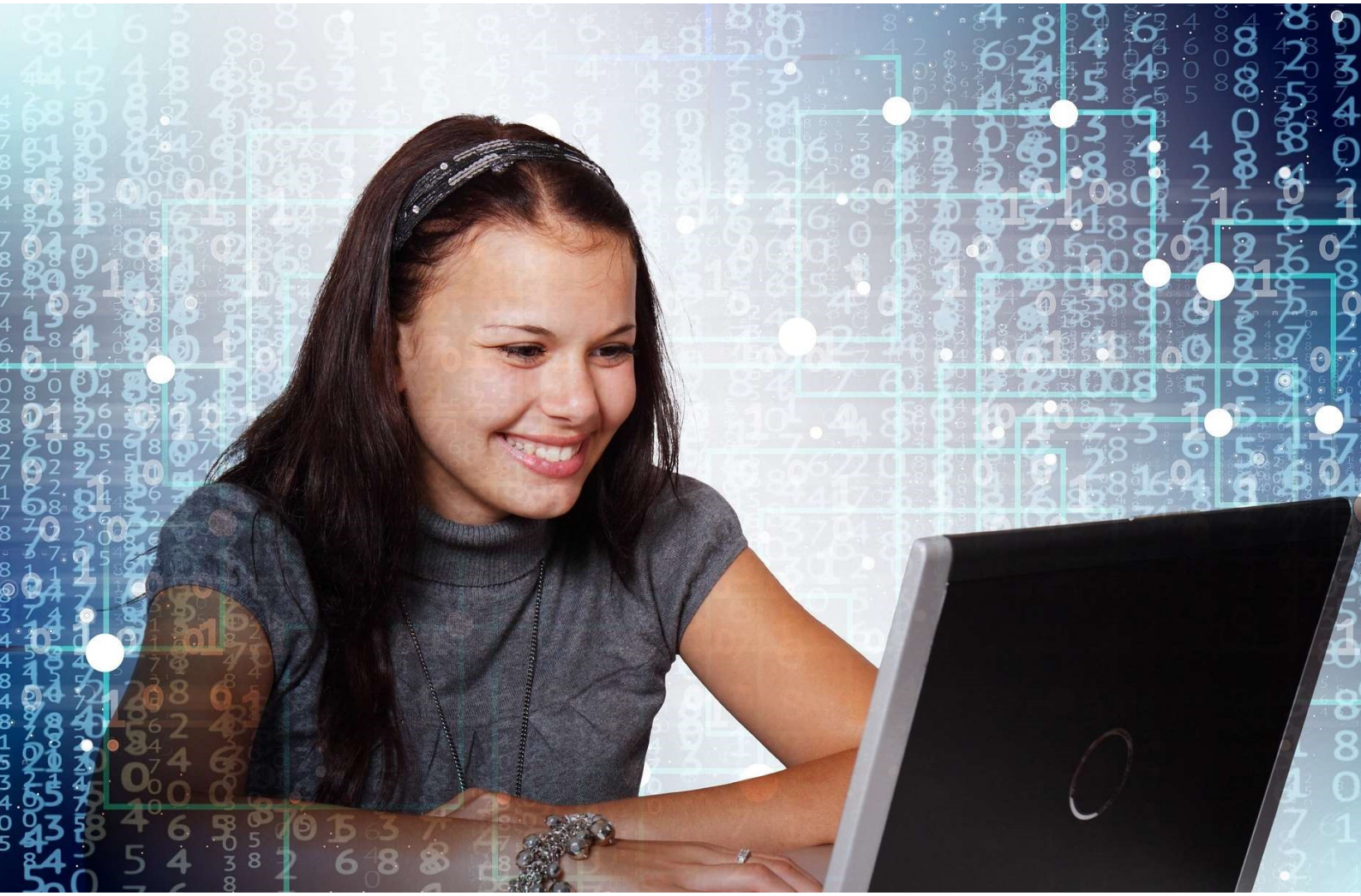
Universidad de Alcalá



Individual Partner Report on the Impact of Covid-19 on University Teaching

NOVEMBER 21

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Universidad de Alcalá

e-CLOSE

Contents

Introduction

The purpose of this report is to analize activities during the period of Covid-19 related to the mass transition to online education, taking into account all stages of distance learning process.

About Universidad de Alcalá (UAH)

Tradition and innovation are combined in the University of Alcalá / Universidad de Alcalá (UAH), which dates back to the 16th century, when it was established as a higher education college by Cardinal Cisneros. It was later founded as a new institution in 1977. UAH is one of the few universities that is a UNESCO World Heritage Site, featuring old and beautiful buildings, which have been rebuilt and are used as Faculties. It enjoys an international and cosmopolitan atmosphere with many international students (more than 6000 per year), what places Alcalá in the first position among Spanish universities in the internationalization ranking. UAH is also included in the QS ranking "100 top under 50" with a five QS star rating. Close to Madrid and to the airport, it is connected with them by a convenient transport system.

The University of Alcalá offers degrees in five branches of knowledge: Arts and Humanities, Law and Social Sciences, Sciences, Health Sciences, and Engineering and Architecture. Its approximately 30,000 students are spread across its three campuses: The Historical Campus houses humanities, architecture, social sciences and law. The Science and Technology Campus, situated on the outskirts, is home to the Sciences, including Health and Engineering. The Guadalajara Campus, 25 km to the east from Alcalá, is well-connected with both Alcalá de Henares and Madrid. Education, Nursing and Architecture are taught here. All our degrees use the European system of ECTS credits, valid in more than 45 countries.

The study fields covered are: Electronics, Computing and Telecommunications Engineering, Business and Economics, Philosophy and Letters, Biology, Environmental Sciences, Medicine, Pharmacy, Laws, Documentation, Chemistry, Tourism, Nursery and Physiotherapy, Architecture and Geodesy, Sports Sciences, Pedagogy. The University hosts annually 16,000 Undergraduate Students, 13,000 Graduate Students, 2,100 Teaching and Research Staff, 800 Administrative Staff, 450 Research Assistants, 140 Research Groups. It offers 38 Undergraduate Degrees, 46 Research Masters Programs, 25 PhD programmes. UAH is and has been involved in a wide variety of EU-funded projects. Erasmus+ projects information is available at:
https://www.uah.es/en/internacional/erasmusprojects/Erasmus-Projects-in-UAH

Online teaching in UAH

UAH has a specific Strategic Department which has been, for some time already, focused on online teaching. As a Spanish-speaking country, the University has always seen online teaching

as an opportunity to connect with American students (particularly Latin America) and has a specific Technical Department for our online teaching platform (called “Aula Virtual”). UAH has also experience in the development of MOOCs, Master degrees implemented strictly online (from before the pandemic scenario), and another Departament devoted to Teaching Innovation, and now focused on online teaching. Finally, UAH has a vast expertise in Erasmus+ projects and has worked with multiple international institutions, hence synergies among projects are always feasible and desirable to boost the obtained results.

The importance of this survey for UAH

Distance/Online learning was rarely seen at University before the COVID-19 pandemic (face to face is mandatory, by definition, for most of our courses), but some degrees were implemented in that way, particularly Master degrees. After the pandemic scenario, all courses from all degrees were suddenly reorganized as online.

In the case of some faculties (like Polytechnic School), some of the challenges in online education were evaluation and implementation of laboratories. Overall, in whole the University, the main challenge was evaluation: how to prove the evaluation is correct, how to avoid copies, how to acknowledge the identity of students, how to avoid technical problems during the evaluation (Internet connection failures, etc.). Apart from that, involving students in online learning or effective communication was also seen as a challenge.

After the beginning of the COVID-19 pandemic scenario, UAH started to provide (and still provides) a lot of courses for teachers to enhance their knowledge about online teaching (resources, tools, methodologies, etc.). Moreover, the virtual platform that acted as support to upload materials, etc., was improved with many new functionalities (virtual blackboards, class recording, video edition, etc.), and many others are still under development and expected to be running soon. Finally, UAH has also bought and installed diverse technologies for teachers (tablets, laptops, streaming classrooms, etc.). In the case of students, the University has offered technology resources (laptops, etc.) and economic help (to pay Internet connection, etc.).

General information on the survey

Objectives

The main objective is this survey is to carefully analyse the needs of students and teachers that emerged as a result of the COVID-19 pandemic scenario. This scenario implied two main challenges in Higher Education: a resource-based challenge (online teaching) and a psychological challenge (motivation). The survey also seeks to observe the evolution from the beginning of the pandemic until the current academic year 21/22, and compared it with the pre-pandemic situation. As a result, this survey intends to extract the main needs and provide action points for improvement.

Means and time

The **distribution of the survey to students** was performed in several and heterogeneous ways. First of all, in July 2021, it was sent through the **"UAH Comunica"** channel, which is an institutional communication channel to send any type of news, events or even job offers. More specifically, the announcement was sent on July 6th 2021 and officially published on July 7th 2021 as it can be seen below:

AGENDA. (07/07/2021)

UAH COMUNICA <comunica@uah.es>
Mié 07/07/2021 0:15

Actividades Científicas Investigadoras

Participación en proyecto Erasmus+ e-CLOSE
Estimados alumnos,

Estamos finalizando un curso que esperamos haya sido fructífero para todos, a pesar de las dificultades

La Universidad de Alcalá participa en un Proyecto junto a otras Universidades Europeas, denominado e-CLOSE, cuyo objetivo es llevar a cabo una investigación que ayude a conocer las principales necesidades de los estudiantes y a buscar las mejores estrategias educativas, sobre todo a raíz de la pandemia por COVID-19.

Para realizar dicha investigación necesitamos tu colaboración.

Por favor, dedica unos minutos a rellenar este cuestionario cuyos datos, completamente anónimos, servirán para que entre todos podamos mejorar la Educación Superior.

A model for Interactive (A)Synchronous Learning in Online STEM Education

¡Os prometemos que no debería llevar más de 10 minutos rellenarlo!

Sabemos que seguramente hayáis realizado ya varias encuestas al respecto... ¡y quizás ésta solo parezca una más! pero os agradeceremos muchísimo vuestra participación

Finalmente, nos gustaría comentar que el proyecto tiene planteado organizar eventos internacionales de colaboración entre alumnos, así que, si estáis interesados en participar, escribid a elisa.rojas@uah.es para información adicional.

¡Gracias!

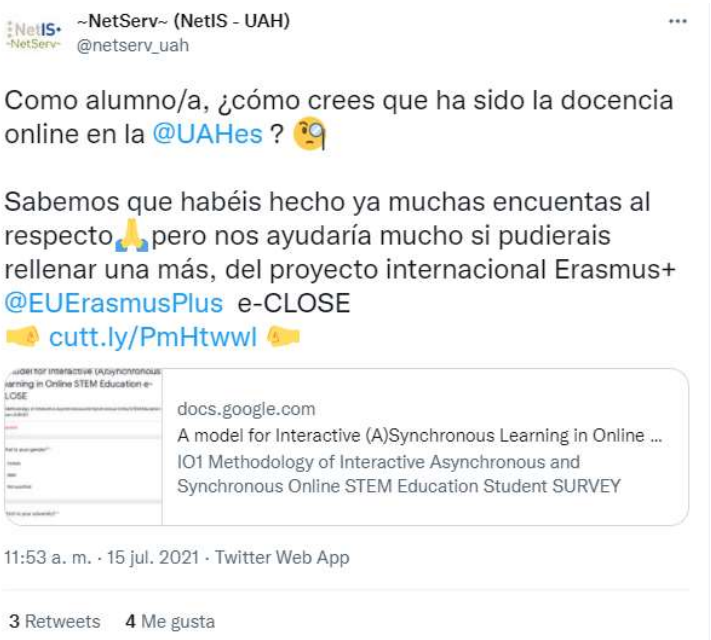
P.D: El enlace completo es: https://docs.google.com/forms/d/e/1FAIpQLScFtyxl96dw29Fzf0E6pbam3tHKTM0aEfH4C9R_ubWwPl_ZwQ/viewform (por si os diera error el anterior)

However, the problem with this channel is that it daily sends many emails and, moreover, students should be subscribed to specific channels in order to receive the associated notifications. Furthermore, at the date the survey was ready and sent, the student had already

finalised all classes, so it was hard for teachers to directly present the survey to their students and ask for participation during class. For these two reasons, we believe the number of students that participated through this channel was rather small.

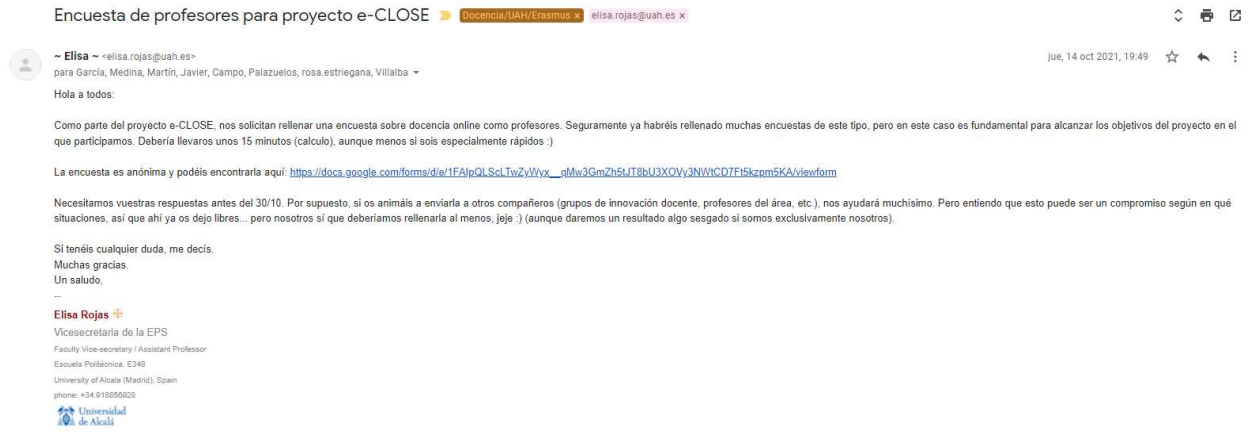
Apart from this institutional channel, each faculty implements each own effective channels to communicate strictly academic information. They are implemented via Blackboard most of times, which is the Learning Management System (LMS) of UAH, and more frequently checked by students, who only receive very precise and concrete information. However, although this channel could have been perfect, the UAH e-CLOSE team was not allowed to use them, as it was thought this project survey fell out of the scope and, additionally, with students busy and focused on exams at that time, sending this type of survey could have not so much impact as well.

The survey was also shared with the students' delegation of the different faculties involved in the project (Education, Engineering, Sciences and Modern Languages). Additionally, some teachers also share it via social media (mainly Twitter, as it can be seen in the figure below). Finally, it was also sent via personal emails by teachers to students.



The survey for students was resent several times, and the time for submitting answers was extended in September until the beginning of October, so that more students could participate, now that the new academic year had started and students were not busy with exams anymore.

In the case of the **distribution of the survey to teachers**, it was distributed by all teachers belonging to the project, who sent it to their Departments. In this regard, we believe this method was more efficient for teachers than the previous one for students. The survey was open from the second week of October until October 30th. In the following figure, we can see an email sent by Elisa Rojas to the rest of teachers of the project, to start the distribution process.



Encuesta de profesores para proyecto e-CLOSE

Docencia/UAH/Erasmus × elisa.rojas@uah.es ×

~ Elisa ~ <elisa.rojas@uah.es> jue, 14 oct 2021, 19:49

para García, Medina, Martín, Javier, Campo, Palazuelos, rosa.estriegana, Villalba

Hola a todos:

Como parte del proyecto e-CLOSE, nos solicitan rellenar una encuesta sobre docencia online como profesores. Seguramente ya habréis rellenado muchas encuestas de este tipo, pero en este caso es fundamental para alcanzar los objetivos del proyecto en el que participamos. Debería llevaros unos 15 minutos (calculo), aunque menos si sois especialmente rápidos :)

La encuesta es anónima y podéis encontrarla aquí: https://docs.google.com/forms/d/e/1FAIpQLScLTwZyWyx__qMw3GmZh5tJT8bU3XOVy3NWtCD7Ft5kzpm5KA/viewform

Necesitamos vuestras respuestas antes del 30/10. Por supuesto, si os animáis a enviarla a otros compañeros (grupos de innovación docente, profesores del área, etc.), nos ayudará muchísimo. Pero entiendo que esto puede ser un compromiso según en qué situaciones, así que ahí ya os dejo libres... pero nosotros sí que deberíamos rellenarla al menos, jeje :) (aunque daremos un resultado algo sesgado si somos exclusivamente nosotros).

Si tenéis cualquier duda, me decís.
Muchas gracias.
Un saludo,
--
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Faculty Vice-secretary / Assistant Professor
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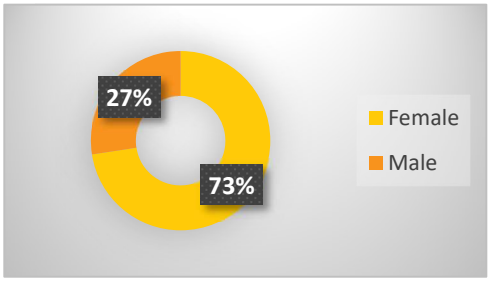
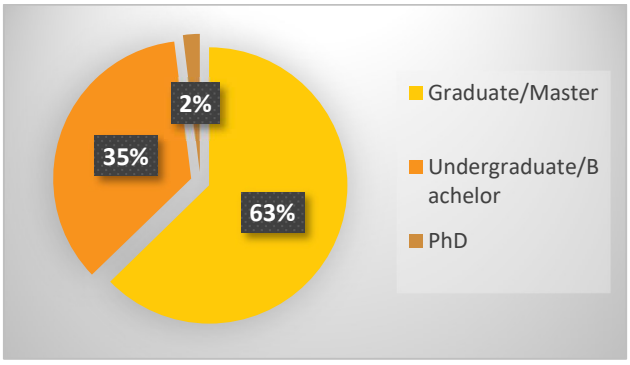
phone: +34.918856928
Universidad de Alcalá

Respondents profile

Students

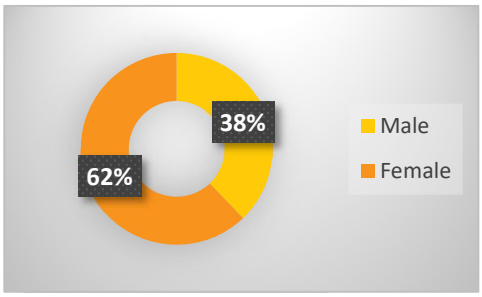
A total of **51 students** filled in the survey. The students who participated in this questionnaire were mostly postgraduate (63%) females (75%) mainly from the areas of Education, Engineering, Science and Modern Languages. The devices they used for instruction were the portable computer, the desktop, the mobile phone and tablet.

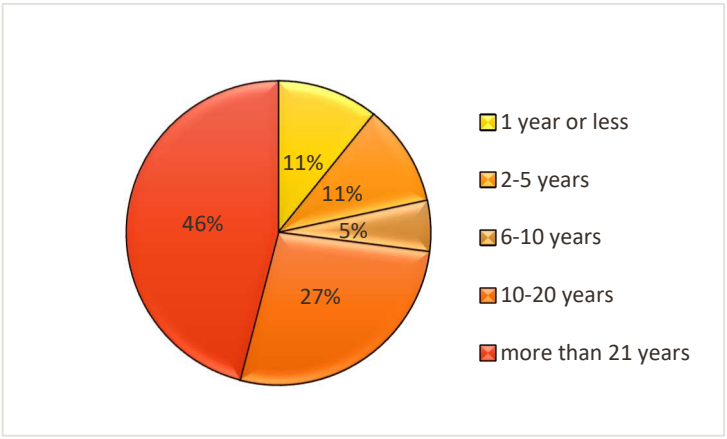




Teachers

A total of **37 professors** participated in the survey, with a higher percentage of female (62%) than male (38%) professors, and in which the majority of the respondents had more than 10 years of experience, with a 46% of professors having 21 or more years of experience, and a non-negligible 11% of professors having one year or less.


38%
62%
Male
Female


11%
11%
5%
27%
46%
1 year or less
2-5 years
6-10 years
10-20 years
more than 21 years

Covid-19 Impact on Teaching and Learning

National framework for distance education

In Spain, higher education regulation is separated from the rest (primary, secondary, etc.), with its own Ministry. At the same time, although the national government provides general regulations, the final application and particularities of each higher education institution depends on the regional government (or "comunidades" in Spain). Additionally, each University can define their own rules, although most of them are usually aligned, specially at regional level.

The COVID-19 pandemic situation significantly changed the way classes are taught. On March 14th, the Spanish government announced a "state of alarm" ("estado de alarma"), which is a particular situation defined in the Spanish constitution that allows the implementation of exceptional rules in the country. Together with that announcement, a national lockdown was defined, severely limiting mobility, which translated into 100% of classes becoming online, even including exams. More specifically, the two first week classes were canceled and, upon the continuation of the lockdown (expected to last longer), the decision was to continue classes in a strictly online format, eventually, even for exams as the lockdown continued. As a reference, the "state of alarm" had to be approved and extended every 15 days by the government, and lasted until the 21st of June 2020. From that date, additional restrictions and recommendations were implemented only at regional level, following the general guidelines from the Spanish government, but not necessarily the same in each region of Spain.

The nation government provided additional funds per region, focusing on those particularly affected by the COVID-19 crisis, like Comunidad de Madrid, to which UAH belongs. These funds were invested differently in each region, though a fraction of it was provided for education and particularly for Universities.

Internal policy development

In the case of UAH, due to a regional order, the University was closed for face-to-face activities from the 11th of March 2020 and, later on, this was confirmed by a national order from the 14th of March 2020, which also stopped many other activities. Moreover, an official announcement by the UAH rector was sent the 15th of March 2020 to cancel all classes. From that day until the end of the academic year 19/20, no particular rule was defined for the implementation of online classes and exams, although overall recommendations were provided, including the use of BBCollaborate, a virtual platform for videoconference that was presented as a new tool at that time (together with guides and courses for professors and students). Moreover, frequent updates were provided by the University to professors and to students, explaining the decision

made and implications. At regional level, some mechanisms to control online exams were studied by several Universities, but refused by both students and professors. Additionally, due to the initial cancelation of classes, the whole calendar was shifted. For this reason, the extraordinary call for exams [1] was moved to September 2020. This movement also modified the whole calendar of year 20/21, shifted around two weeks.

At the beginning of academic year 20/21, the national situation had changed and improved. For that reason, the agreed recommendation for Universities, or at least the ones in Comunidad de Madrid (and hence, UAH) was to proceed with a hybrid mode of education. UAH agreed that theory classes (usually with bigger groups of students) would be completely virtual, while practical/laboratory classes (usually with reduced groups of students) could be implemented either online or face-to-face. In any case, at least 30% of classes for reduced groups should be face-to-face on average. Moreover all online classes should be implemented in synchronous mode. As for exams, they should be all face-to-face.

A COVID-19 procedure was defined to control the maximum number of students per classroom and their location (maximum 50 students, with a minimum separation of 1,5m and numbered seats, independently of the classroom size), to implement hygienic measures (mandatory masks, air circulation, hands cleaning, etc.) and to define a protocol in case students or professor had to be in lockdown due to COVID-19 (either from a positive test or due to a close contact with a positive person). For this protocol, each faculty defined a professor in charge of notifications and daily situations about COVID-19. Additionally, UAH had already implemented a website for all questions about COVID-19 (https://www.uah.es/COVID-19/), but it was now announced as a reference for all questions and updates:

[1] **In Spain, Universities usually have one call per semester and one extraordinary call at the end of both semesters and exams, in June/July**

That website has also a particular link to notify any cases of COVID-19 or lockdowns:

Once notified, the so-called “COVID-19 responsible” professor would take care of contacting the different professors of courses in which the affected student is enrolled, to manage the situation. This protocol is still currently apply as such.

The academic year 21/22 started following exactly the same procedures and recommendations of 20/21, although with a recommendation of delivering face-to-face classes as much as possible, including theory classes when possible. Finally, at the end of October 2021, a new agreement was made by Universities to recover the “normal” functioning of classes, which implied changes like the elimination of numbered seats and the allowance of more than 50 students per classroom.

Finally, since March, UAH implemented several finantial aids for students and professors, in the form of grants or technological material to borrow (laptops, tablets, cameras, headphones and microphones, etc.). UAH also invested in new tools for online education (including BBCollaborate, Kaltura and Wooclap), and deployed several streaming frameworks in classrooms, among others.

Survey results

<u>Note:</u> In this chapter, results from the survey are shown. Some sections directly refered to the questions of each of the two developed surveys (students and teachers) as Q#, where Q means "question" and # represents the number (order) of that question.

Preparation

University perspective

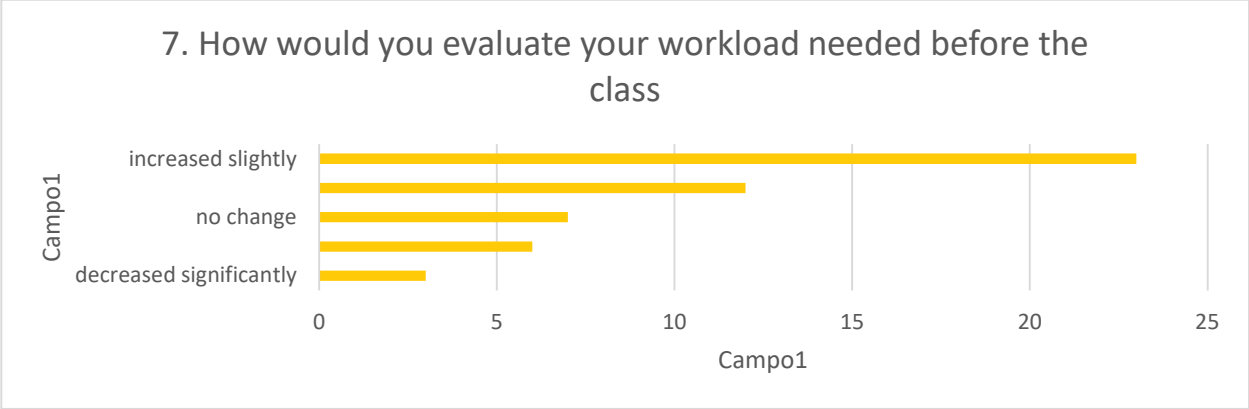
From the very beginning, technical support was provided by the UAH Learning Management System (LMS) team. In UAH, there is a particular team focused on "Aula Virtual", which is our institutional LMS, based on a customized version of Blackboard. The team of "Aula Virtual" had already already been working in diverse ICT tools for online teaching, as it was part of the UAH Strategic plan for the long-term. However, due to COVID-19, this "long-term" became "short-term", and the different available tools were rapidly release with specific guidelines and frequent ad hoc courses to train teachers as soon as possible. In fact, as the pandemic situation initiated with a two-week cancelation of classes, that time was devised and invested for training.

Additionally, UAH analysed the different needs from faculties and additional tools in the following weeks and months (Kaltura for video editing, Wooclap for intercative feedback, testing and evaluation of students, and so on), together with more training and a specific call for online teaching hardware for both teachers and students.

Finally, the department of psychopedagogy of UAH, already existing, was bolstered and promoted via different channels, and particularly focused on helping students.

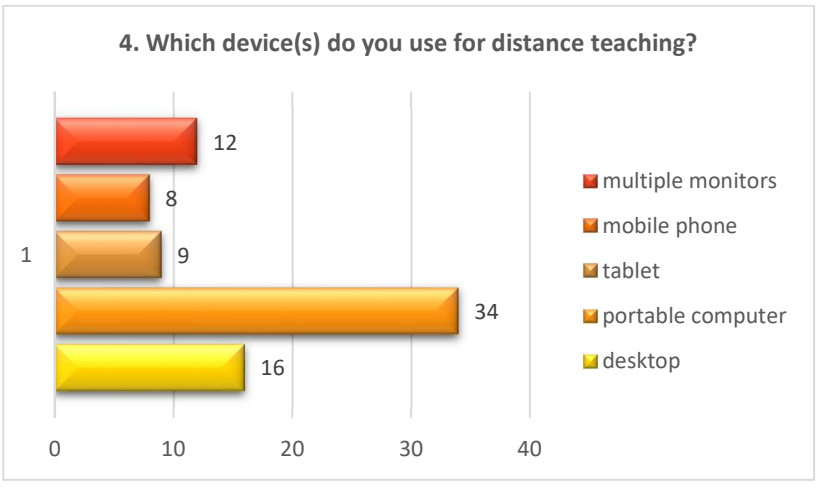
Student perspective

According to the students, UAH **provided support** (Q6) with different tools and strategies such as the ones illustrated below, which inlcuded the use of Blackboard platform –or Virtual Campus- with manuals and instructional videos for online training performed by academic staff. The most extended perception is that the **workload** (Q7) before the meeting for the online class increased slightly during the pandemic .



Teacher perspective

In the case of teachers, the most widely used device in distance learning is the laptop, more than twice as much as the second and third most used devices which are desktop and multiple monitors.



Looking at the use of **ICT tools** before the pandemic, it can be seen that their use was already quite diverse. during the pandemic (first image below). Those used for the first time during the pandemic are especially the laptop and Blackboard (in particular Blackboard Collaborate or BBCollaborate) as this is the institutional LMS of UAH (second figure). Many teachers report that they have not stopped using any ICT during the pandemic (third and final figure). Among the tools that teachers stopped using were whiteboards and also some video conferencing tools that were considered unsafe, such as Zoom or Skype.

Conclusions

Regarding preparation, we can conclude that both students and teachers were not completely prepared to this sudden change to online teaching and did not have a lot of expertise in the field. However, different tools were provided and they had to rapidly shift their teaching/learning style to fit in these new tools, which implied additional workload. Finally, even if face-to-face teaching was recovered in the meantime, they agree they do not expect to stop using the ICT tools they have learnt to use.

Delivery

University perspective

As previously mentioned in the introductory section, scheduling was affected in several ways, first in year 19/20 with a delay of around two weeks in the calendar, together with the change of the extraordinary calls for exams from July to September. This also shifted the whole 20/21 calendar two weeks, but the "normal" calendar was recovered in 21/22.

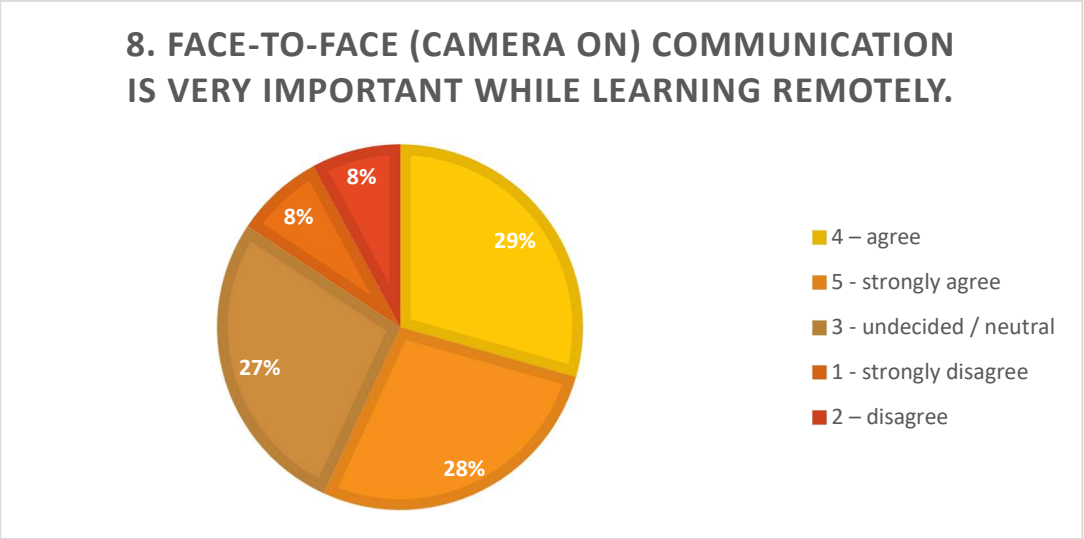
The types of online classes should be **synchronous**. Even if not strict rules generally applied, the need for synchronous teaching was always highlighted in 19/20 and made mandatory from course 20/21 and on. The decision was mandated for the whole University and agreed with other universities at regional level (although at national level, it was mainly the same approach for all).

In the case of **tools**, no mandatory tools were set, but institutional tools were always recommended, that is Aula Virtual / Blackboard as LMS, Blackboard Collaborate for videoconferences, Kaltura for video editing and publication, and so on. The UAH staff also had available tools from Microsoft, like Microsoft Teams.

Regarding teacher-student interaction, there was no particular rule, nor recommendation, about cameras being on/off, but real-time interaction was always recommended.

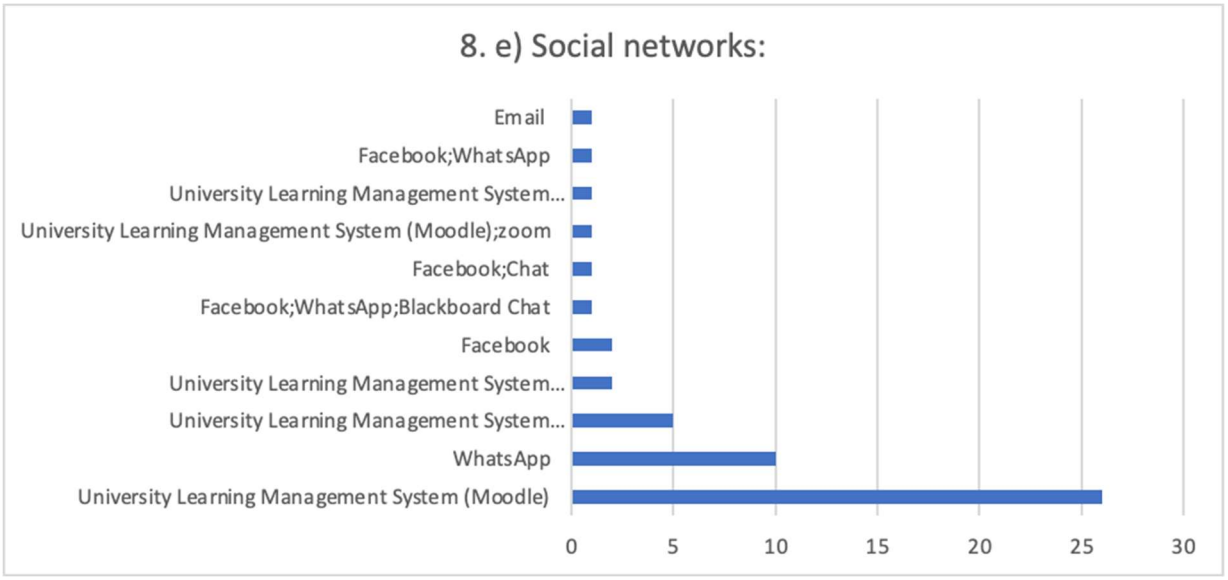
Student perspective

As agreed by more than a half of the students, **face-to-face (camera ON)** communication is very important while learning remotely (Q8).



The main **videoconferencing and communication tool (Q8a)** at UAH is Blackboard Collaborate together with other tools such as Teams, Zoom, GoToMeeting and Skype (left figure below). The main educational **apps** (Q8b) -besides Blackboard- used were Kahoot, Socrative, Wooclap, Minmapping and Canvas (right figure below).

Educational **Videos** (Q8c) were delivered mostly through the insitutional University Learning Management System (Blackboard), WhatsApp, Facebook, e-mail and Zoom. Main **Learning environments** (Q8d) were virtual labs; simulators; graphical tools and the shared whiteboard together with online .pptx presentations. The figure below illustrates the **social network**s used at UAH: the institutional University Learning Management System Blackboard Chat, Facebook; WhatsApp, Zoom and email.



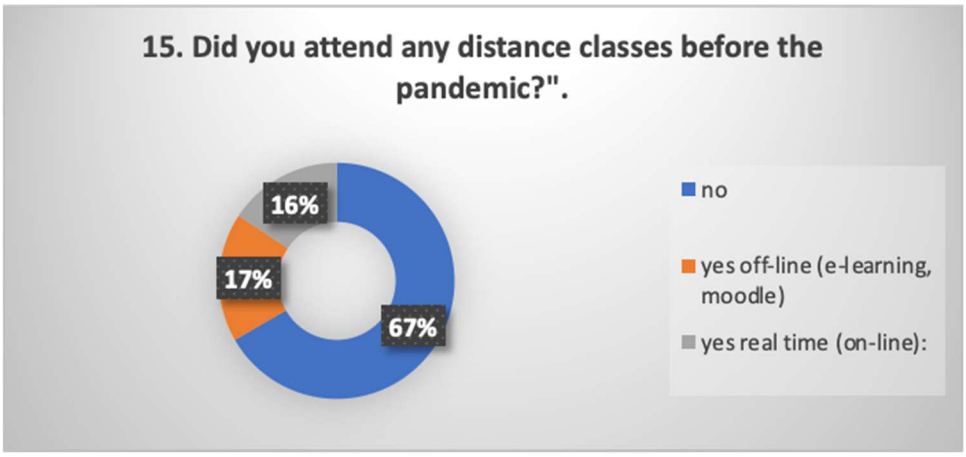
More than half of the students agree that if they had to select between distance and campus learning, they would **choose in campus learning** (Q10). As shown in the next figure , among the prefered strategies to reach a higher degree of **motivation while learning (Q11)**, participants highlited: progress self-assessment, progress monitoring; small group work; adding chat module for students to the subject space; small talks; learning plan; online support from the teacher; gratifications (earning points, badges, stars, etc.), short messages, and the incorporation of pictures, icons, animations etc., as well as educational games.

When compared to pre-pandemic period, nearly half of the students admited that their in-class activity -measured by their i**nteraction with the teacher/peer(s) or an app**- (Q12) had not changed or had not decreased significantly. The following figure shows the **types of activities** that were required in the **favourite online course**, which comprise: expository real-time writing/drawing/demonstration from the instructor; reading course-related literature; listening to recorded audio;watching videos; utilizing websites; taking quizzes; writing papers/reports;executing projects; solving exercises; creating and delivering presentations; completing group tasks (teamwork); communicating with other students; grading other students;

communicating with the instructor; utilizing social media; solving real-world problems; analyzing scenarios or case studies; completing simulations/laboratory experiments.

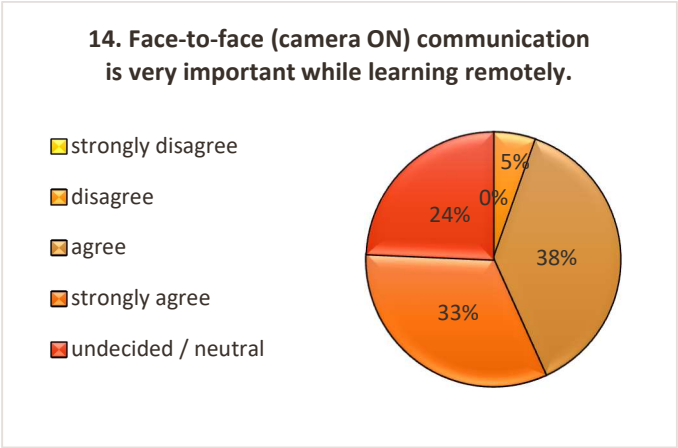
However, although some of these activities were also mentioned as part of the **least favourite course** (i.e. expository real-time writing/drawing/demonstration from the instructor; reading course-related literature; listening to recorded audio; watching videos; utilizing websites; taking quizzes; taking exams; writing papers/reports; executing projects; solving exercises; creating and delivering presentations; completing group tasks (teamwork); communicating with other students; communicating with the instructor; using special software or applications relevant to the course, the **least popular online courses required** (Q14) taking notes and exams; writing papers/reports; doing projects, reading course-related literature and listening to recorded audio as illustrated below.

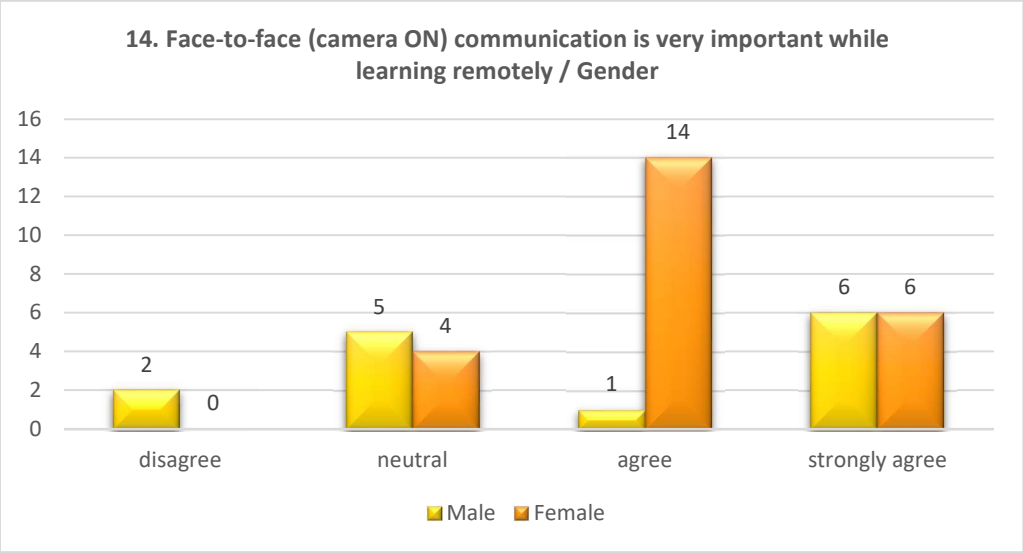
As illustrated in fig. Q15, 67% of the participants admited not having **attended any distance classes before the pandemic**; whereas 17% would have attended off-line (e-learning, ~~moodle/~~Blackboard) and 16% in real time (on-line).

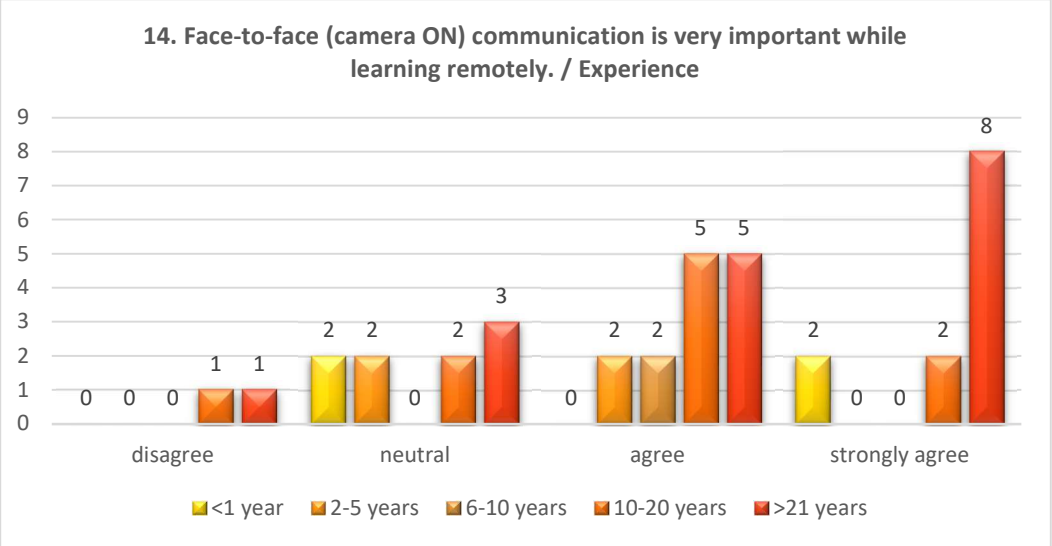


Teacher perspective

The majority of teachers (71%) considers **face-to-face (camera ON)** is very important for communication while learning remotely. Only 5% disagree. Women in particular place more emphasis on face-to-face communication. According to the years of teaching experience it is also observed that teachers with more experience (especially >21 years) consider it more important to keep the camera on while learning remotely.

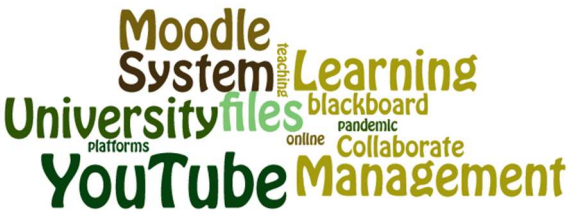


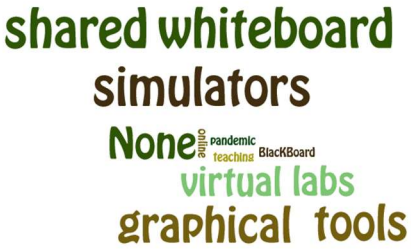




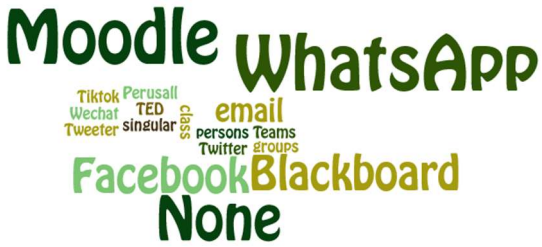
The analysis of **tools used before the pandemic**, shows the following for videoconferencing: mainly Blackboard Collaborate as Blackboard is the institutional LMS of UAH, but also Teams (left figure below). Applications: Mindmapping, Kahoots and Quizziz (right figure below).

Videos: mainly YouTube but also University LMS (left figure below). Learning environments: Shared whiteboard, graphical tools and simulators but there are also many teachers who say none (right figure below).



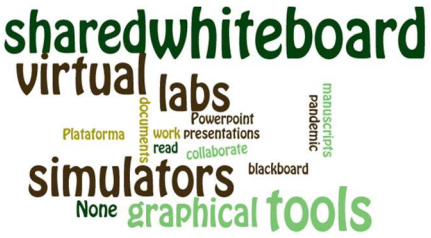


Finally, the next figure show tools used as Social Networks, in which teachers mainly mentioned Moodle and WhatsApp, and again there are also many teachers who say none.



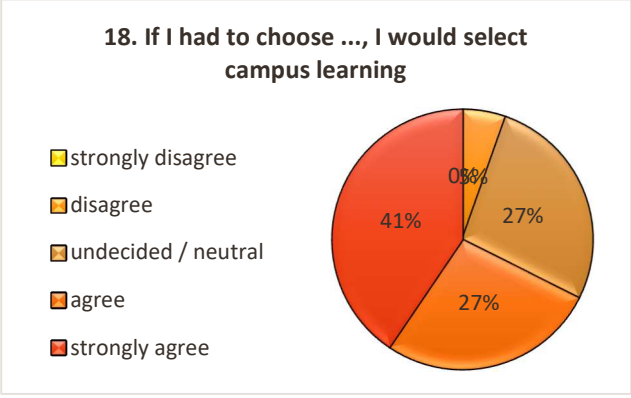
We can compare the previous five sets of tools with the **tools used during the pandemic**. To start with, for videoconferencing: mainly Teams and Blackboard Collaborate (left figure below). Applications mainly Kahoot and others such as Quizziz, Wooclap and Socrative among others (right figure below).

Teaching videos: Youtube and under Blackboard support, which is the institutional LMS of the UAH (left figure below). Learning environments increase with respect to the use before the pandemic, as in the case of social networks (the two remaining figures below, respectively).

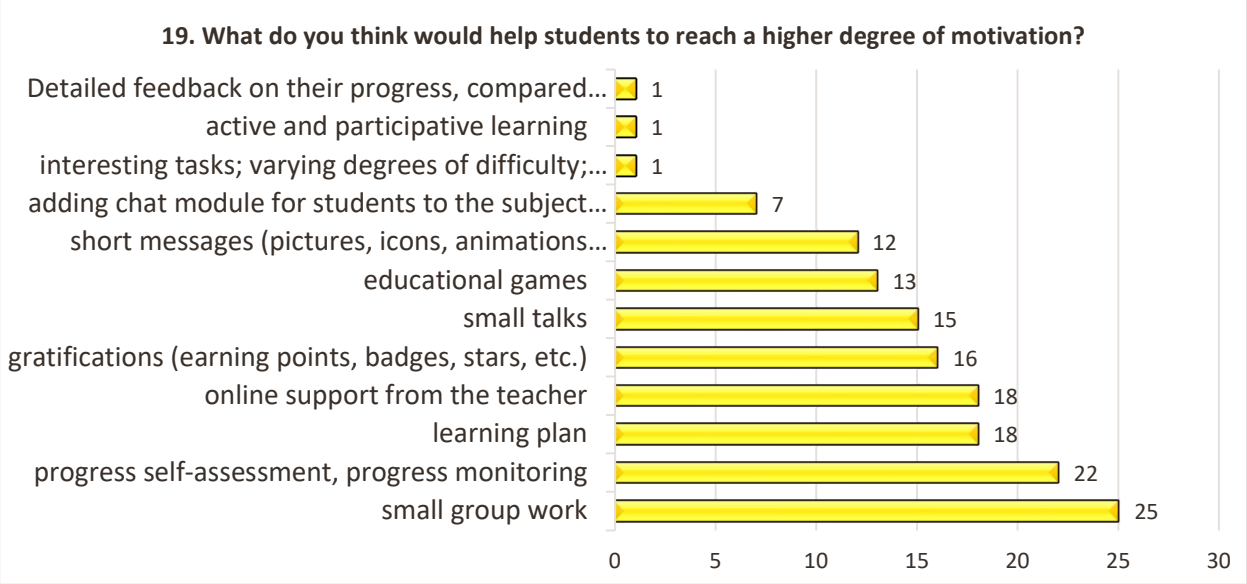


Regarding missing functionalities, there are many teachers who did not miss any functionality, as shown below. As for other responses teachers missed face-to-face or interacting with students.

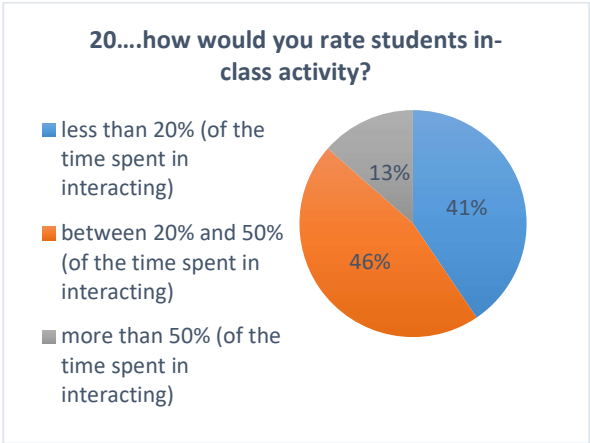
Teachers widely prefer campus learning (68%). It is also remarkable that a 27% of teachers are neutral in this regard, as presented in the following graph.

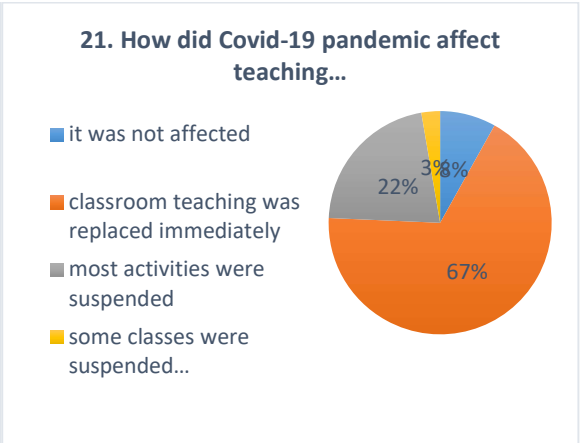


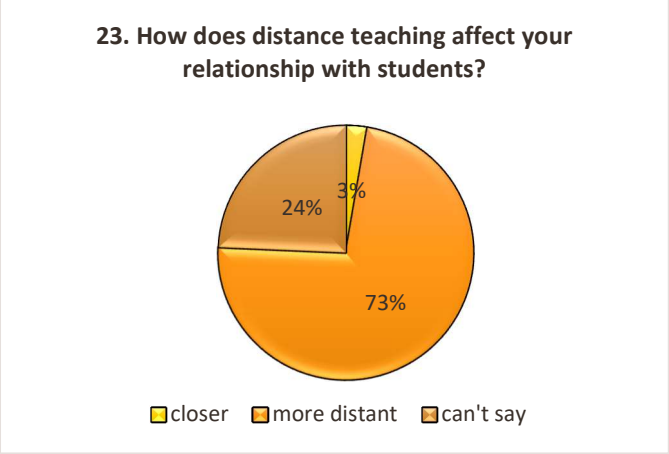
When asked about ways to improve students motivation, the answers were: small group work and progress self-assessment, progress monitoring to help students to reach a higher degree of motivation followed by learning plan or online support from the teacher, amongs others.



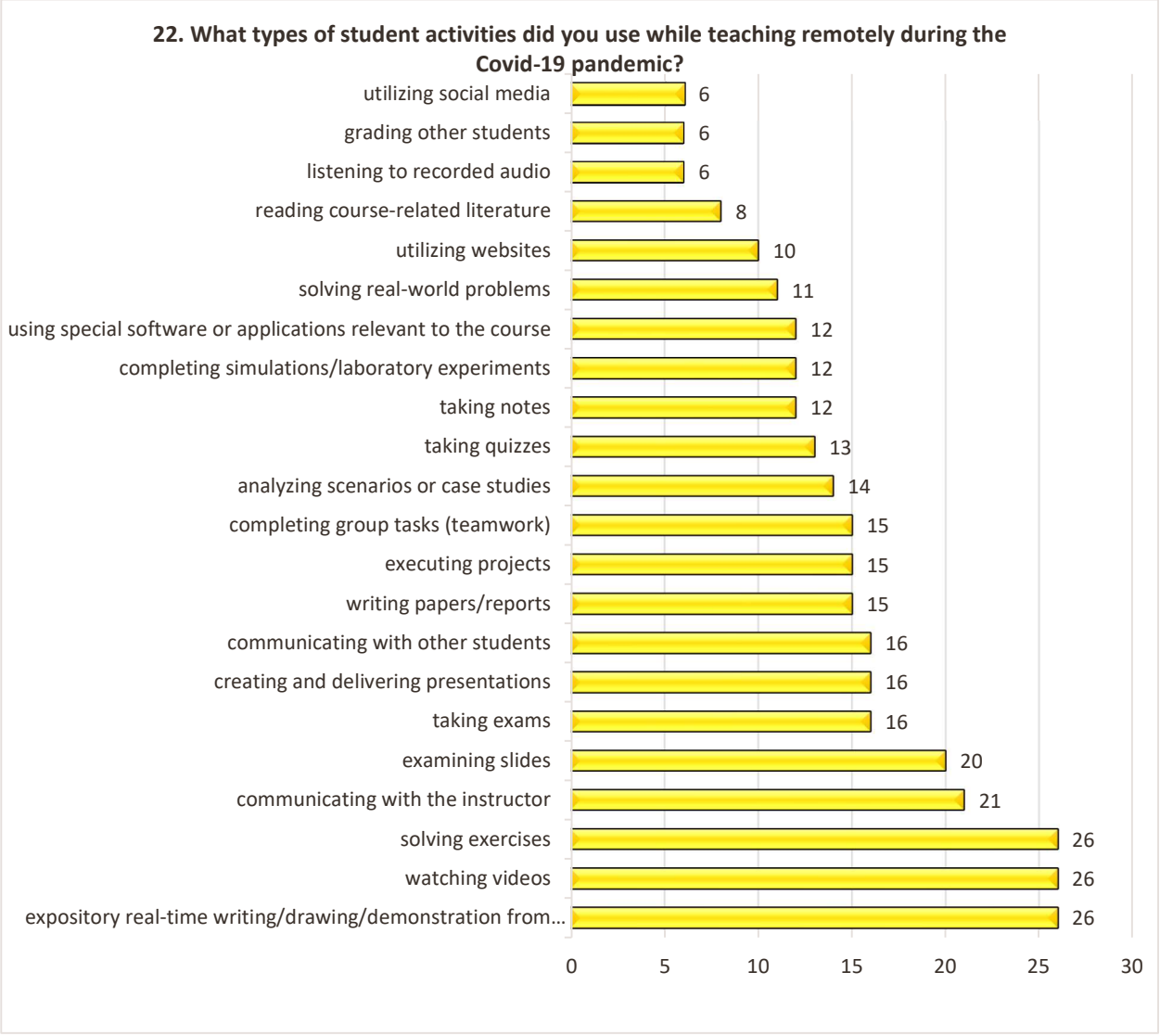
When the teachers evaluated in-class student activity, 46% rate **students in-class** activity between 20% and 50%; 41% less than 20% and 13% more than 50%. Additionally, 61% of techers say that classroom teaching was replaced immediately, 22% say that most activities were suspended, 3% some classes were suspended and 8% state that teaching was not affected. Furthermore, teachers overwhelmingly report 73% that they **felt more distant in their relationship with students**, 9% could not say and, for only 3%, it was closer. All of these results can be observed in the following graphs.







Finally, the most commonly used activities during the pandemic were: expository real-time writing/drawing/demonstration from the instructor, watching videos and solving exercises, as depicted below.



Conclusions

Both students and teachers agree that face-to-face interaction (camera ON) is crucial in online classes, although this was not mandatory, nor even recommended at University-level. In fact, both groups agree that in-campus teaching was their prefered option and that they felt more distant due to online classes, which was, by far, the most agreed answer in this regard. For interaction, there is a consensus on the importance of constant interaction with students, and the use of small groups to foster the communication and participation.

Regarding tools and the evolution of classes, they agree that the classes changed and were updated very fast, and it seems new tools appeared into place when comparing the situation before and after the COVID-19 pandemic started. We can observe how Blackboard Collaborate and Microsoft Teams were the most commonly used tools for videoconferences and classes, as they are both institutional tools provided by UAH, and regarding in-class applications we see how Wooclap appears in the list once the pandemic started, as it was one of the new tools offered by UAH. It is also interesting to see how new learning environments emerged in the form of whiteboards, lab simulators and other graphical tools, to enhance the overall online experience. Finally, we would like to remark how most of professors think there is no need for additional tools at this point (or at least they believe all needed functionalities are covered).

Assessment

University perspective

Regarding assessment, it was only online during academic year 19/20, due to the emergency situation. From 20/21 and on, all exams were mandatorily face-to-face, so they went back to "normal" with the restriction of the maximum number of students per class and social distancing, together with hygienic measures and air circulation (some faculties even had CO2 meters in their classrooms) .

To implement these online assessments in 19/20, UAH did not define any particular guidelines, even if this topic was the most important from the very first time. At different levels (national, regional, and University), there were frequent discussions on how to proceed and, in fact, several universities made an effort to implement a system to control authenticity of exams and to avoid cheating. However, this idea had serious criticism around academia (both by students and professors). Other rudimentary methods, like using a camera and open microphones were also disregarded, as it was considered not all students could be able to afford that hardware (even if most of them would have it). Internet connection was also considered a potential problem, because even if most of students had good connectivity, certain students could not, particularly those living in small villages.

For this reason, teachers were given the opportunity to create an amendment to their teaching guides, including the change of written exams by other projects or oral tests, in case that they considered online written exams could not be fairly implemented, for example.

Student perspective

Concerning assessment, most students consider fair enough (53%) or fair (25%) the **procedures implemented at university during COVID-19 (Q16)**. Half of the participants admitted that their **effort to achieve the same grades** (Q17) when compared with pre-pandemic period had increased (significantly: 33% and slightly: 25%). The other half reported no change (20%) or that their effort had decreased slighlt (20%). Results also show that **during pandemic period students were assessed (Q18)** both remotely and in person (25%), whereas 24% were assessed only remotely and 2% just in person.

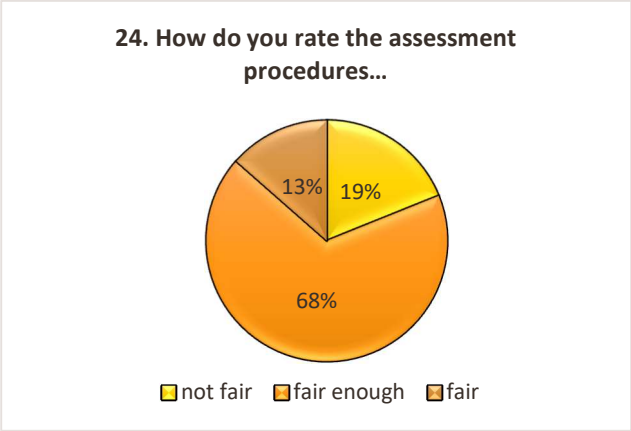
The left figure below shows the **types of online assessments before the pandemic period**, which comprised multiple choice/true-false questions; open answer questions; written assignment (e.g. a paper/report); written exam; completing individual projects and assignments; creating and delivering presentations. These types closely coincide with the types of online assessments during the pandemic period (Q20), illustrated in the right figure.

Types of online assessments **before** the pandemic

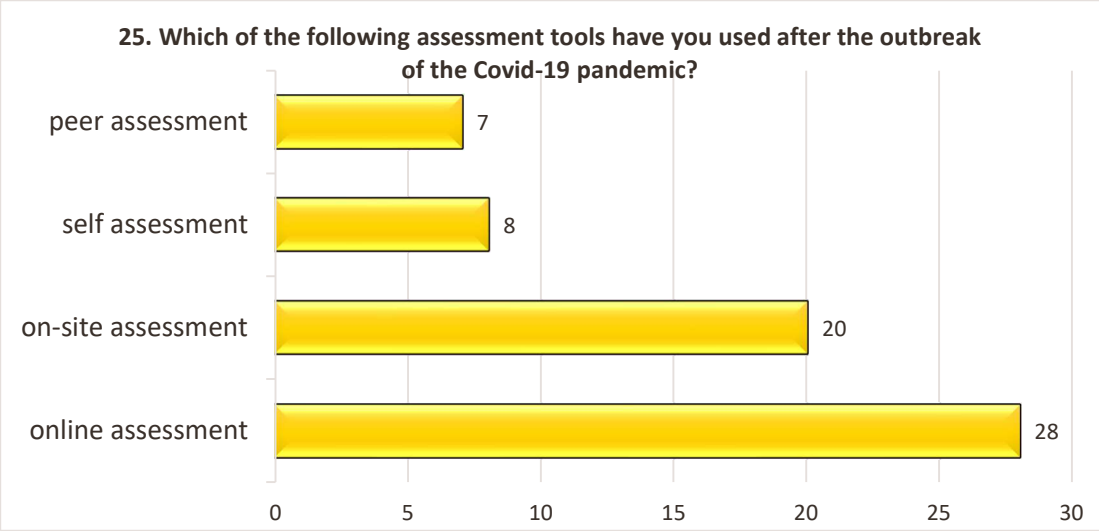
Types of online assessments **after** the pandemic

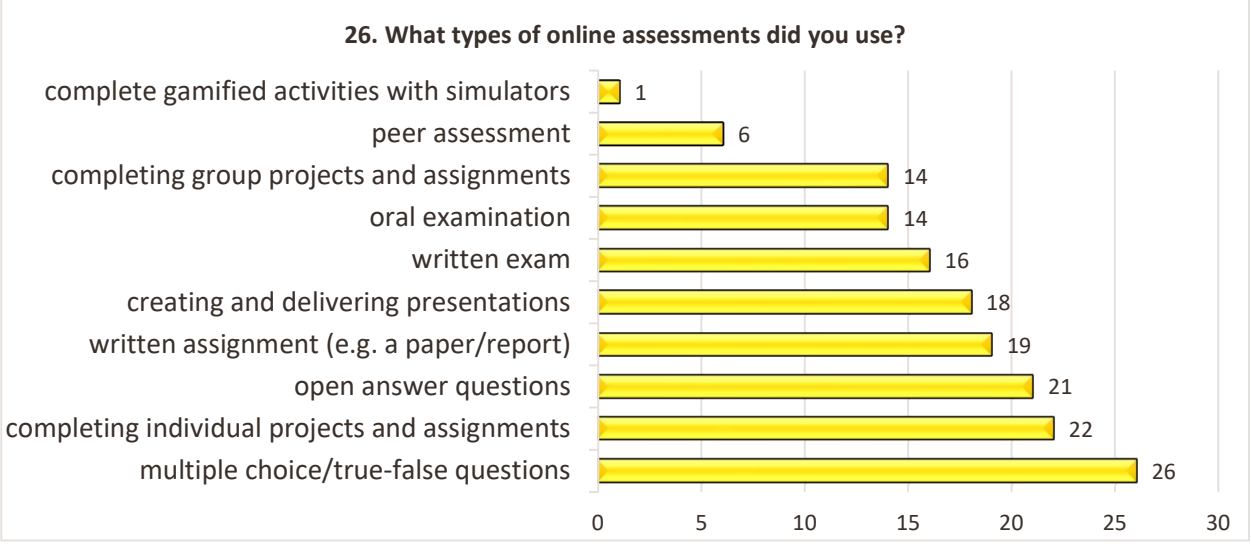
Teacher perspective

On the other hand, 68% of the professors surveyed rated the evaluation procedures applied at their university during the COVID-19 pandemic as fair enough.



The most commonly used assessment tools have been online and on-site assessment while self and peer assessment has been used much less. Regarding the types of online assessments used, the response is quite distributed, being multiple choice questions the most used one. This is illustrated in the next two figures.





Conclusions

The main conclusion is that, even when assessment was considered the most critical part of online teaching, and no consensus was clearly reached, most of students and professors agree that the procedures were fair enough. Furthermore, as no mandatory or strict recommendations were given, the types of assessments were quite diverse among teachers and students, as seen in the different graphs.

Evaluation

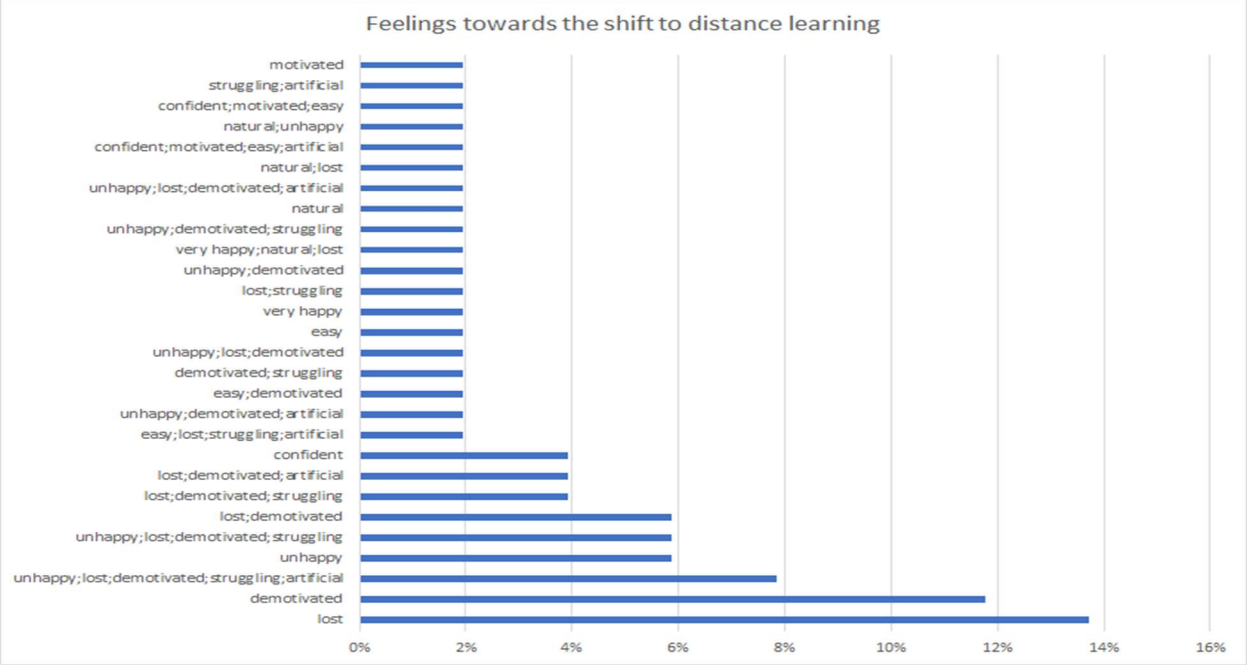
University perspective

At University level, teaching is always monitored via surveys for students and teachers. Apart from that, there was a direct communication among faculty deans and departments to acknowledge necessities and good practices. However, this mainly depended on the faculty deans initiative. Additionally, the student council was also checked in this regard, creating specific channels for direct communication between deans and students' councils, and between these councils and students. In fact, at some point in the beginning of the pandemic situation, important misgivings were acknowledged via social media (particularly via Twitter), which were handled accordingly.

No particular surveys were implemented to evaluate online teaching, although some initiatives (from research groups and teaching innovation groups) were shared for all staff to participate in. Moreover, UAH surveyed its professors to check their current needs in terms of tools and courses to develop their online teaching skills. In fact, we could say the addition of Wooclap as part of the LMS was due to this analysis, in which some professor missed an institutional tool for obtaining feedback from students in a more dynamic and visual way.

Student perspective

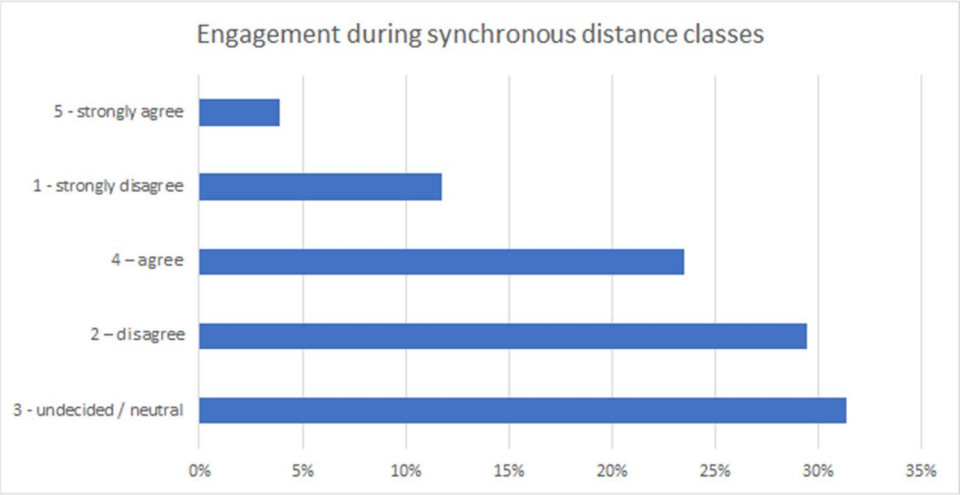
In March 2020 the shift to distance learning made students feel lost (14%), demotivated (12%) unhappy (8%) or all these feelings together while struggling to cope with the situation as illustraded in the figure below.



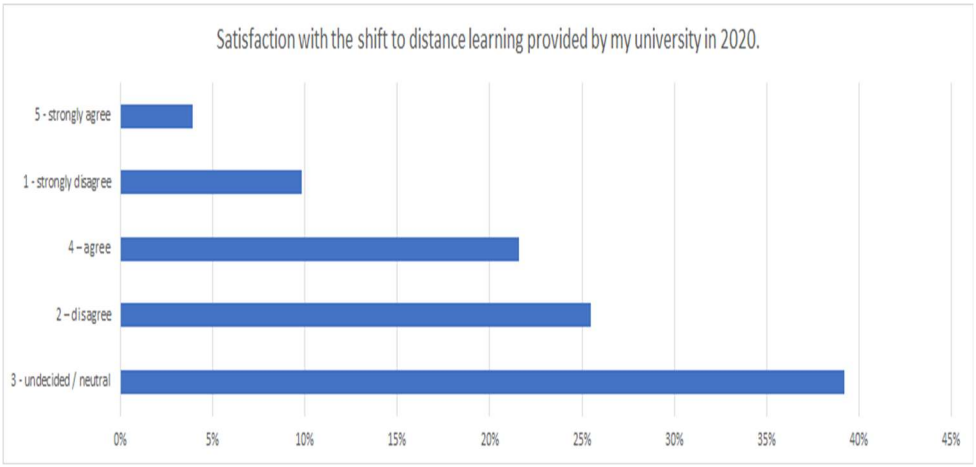
The **events or interactions that created most stress/anxiety** (Q22) for students were mainly: reading course-related literature; taking notes; taking exams; writing papers/reports; solving exercises; creating and delivering presentations; completing group tasks (teamwork); communicating with other students; grading other students; communicating with the instructor; solving real-world problems; analyzing scenarios or case studies; completing simulations/laboratory experiments as illustrated below.

Results show that 31% of the participants were **undecided or neutral** when asked whether their **peers/classmates were generally engaged during synchronous distance classes (Q23)**. While

29% disagree with this idea, 24% agree that they were really engaged during synchronous distance classes (see figure below).

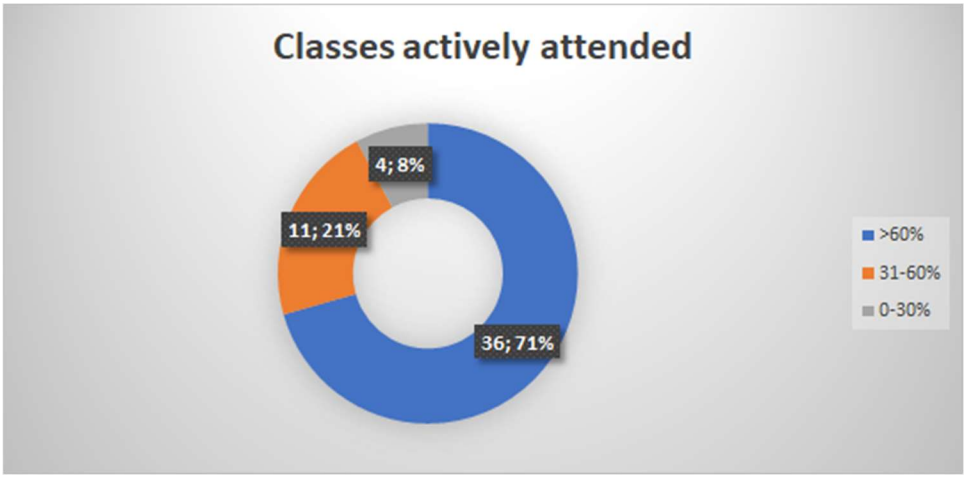


Regarding **satisfaction with the shift to distance learning provided by Alcala University in 2020 (Q24)**, results show that whereas 39% of the participants were neutral, 22% agreed with the shift and 22% disagreed or strongly disagree (22%) as shown in fig. Q24.



According to the students, the **most effective activities for their online learning** (Q25) were: examining slides; taking quizzes; executing projects; solving exercises; creating and delivering presentations; completing group tasks (teamwork); communicating with other students; communicating with the instructor; utilizing social media;solving real-world problems; analyzing scenarios or case studies; completing simulations/laboratory experiments; using special software or applications relevant to the course, as illustrated in the following figure.

The (Q27) l**ack of personal on-campus contact with peers and teachers affected the motivation** of 75% of the students, despite it did not affect to 18% and 8% remained the same. Results shows that >60% of the participants **attended actively** (Q28) to 71% of the classes. The 22% of the participants attended between 31-60% as illustrated in the following figure.

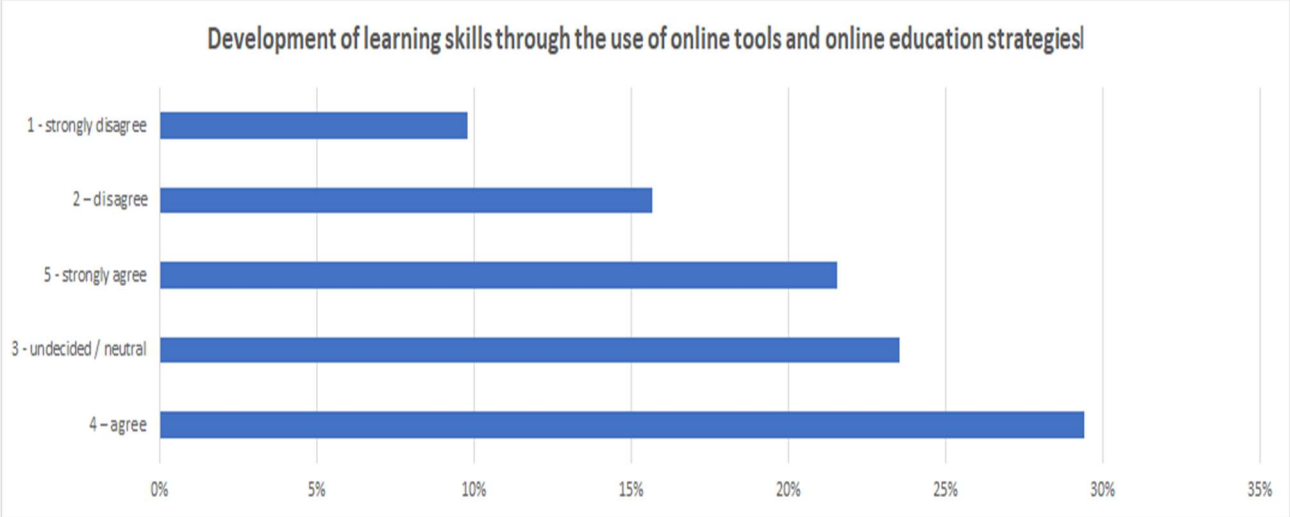


The main reason for **low attendance below 60%** (Q28) was the lack of motivation and the lack of time, as admitted by 63% of the participants. Other pedagoical reasons such as teacher performance and choice of tools and materials (6%) or technical difficulties (2%) seem to be insignificant.

Among the **most challenging aspect of online learning (Q30)** students claimed the lack of concentration, attention, motivation, communication and feedback. Some other aspects reported were technical issues (i.e. WiFi, microphone) as illustrated below.

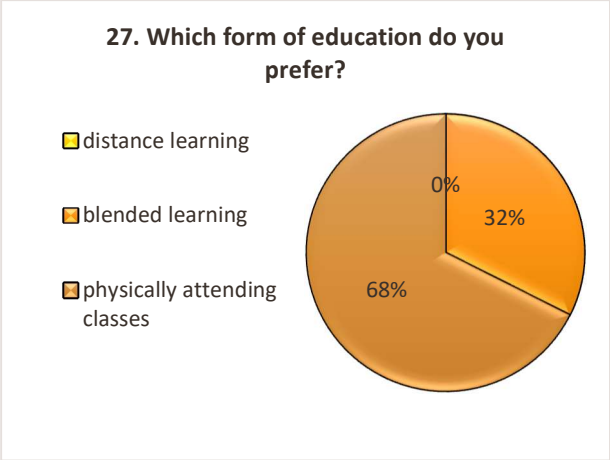
Some of the aspects suggested **to improve distance learn**ing (Q31) are to consider including more engaging, dynamic, participative and motivating activities, to promote communication with interactive resources, thus, avoiding boring exercises that did not even work in face to face classes, as summarized in the following figure.

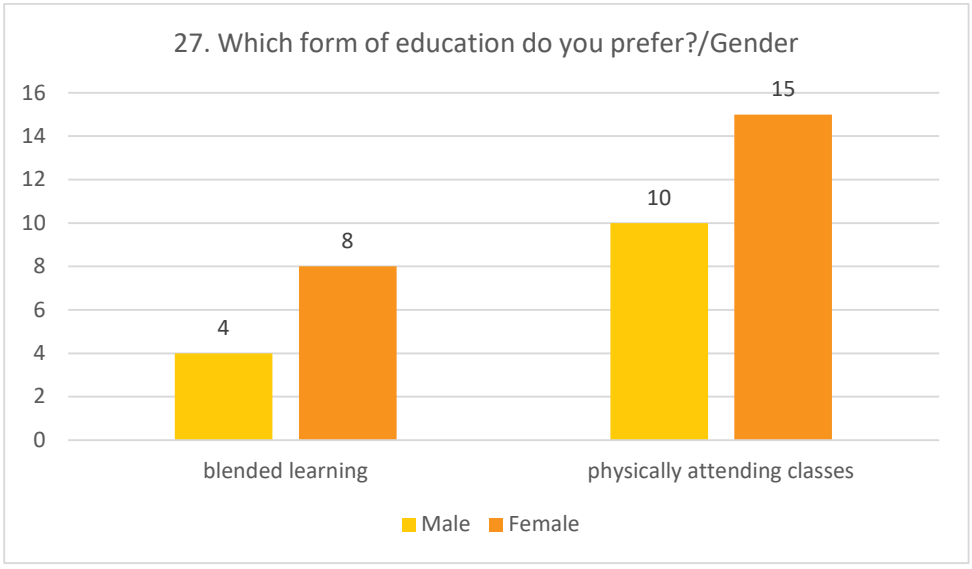
Nonetheless, 29% of the students admitted having **developed their learning skills through the use of online tools and online education strategies (Q32)**; despite 24% remained neutral as shown below.

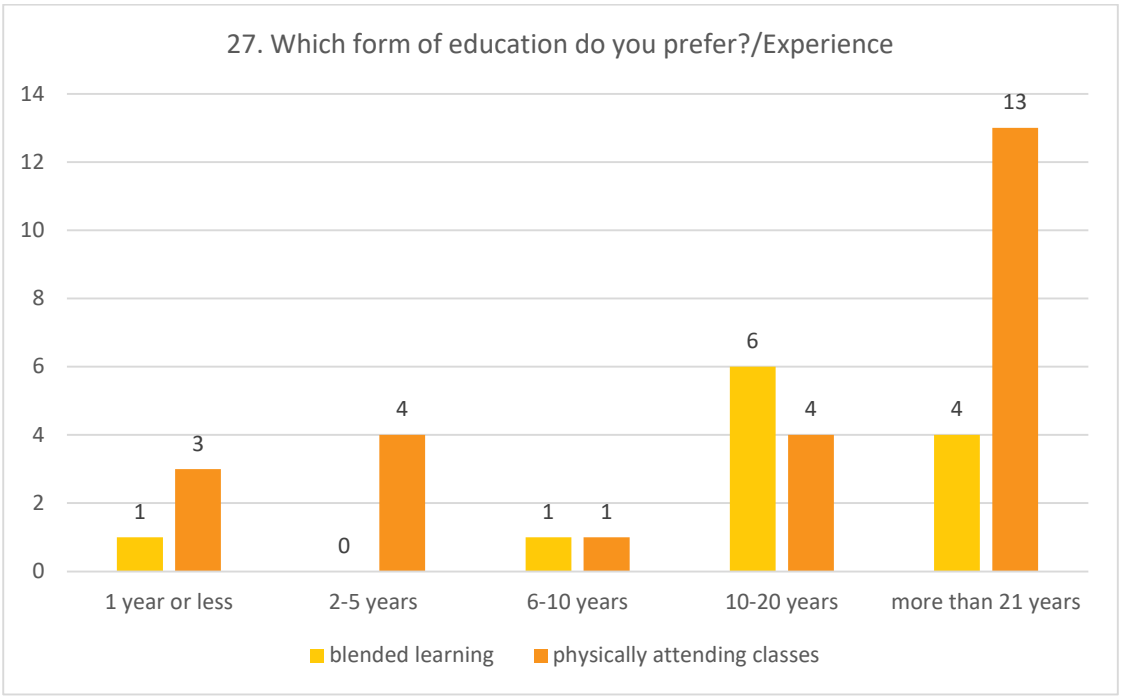


Teacher perspective

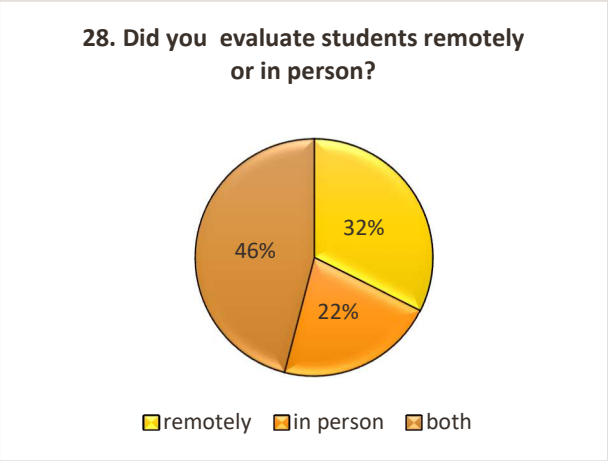
The majority of teachers prefer to **attend classes physically** (68%). 32% of them choose blended learning and 0% distance learning. This choice is similar by gender. In terms of experience, it is curious that especially those who have been teaching for more than 21 years clearly prefer physical classes, while teachers who have been teaching for between 10 and 20 years seem to prefer blended learning. No teacher selected “distance learning” as their prefered method.



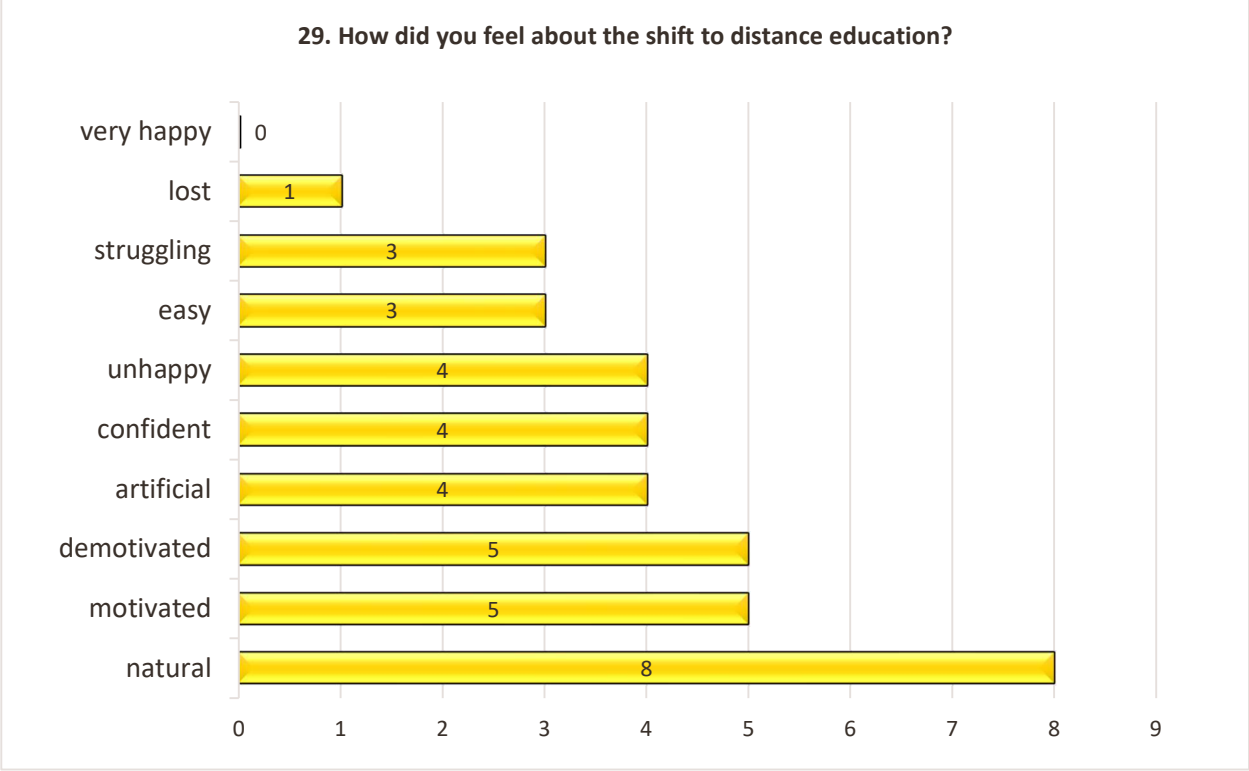




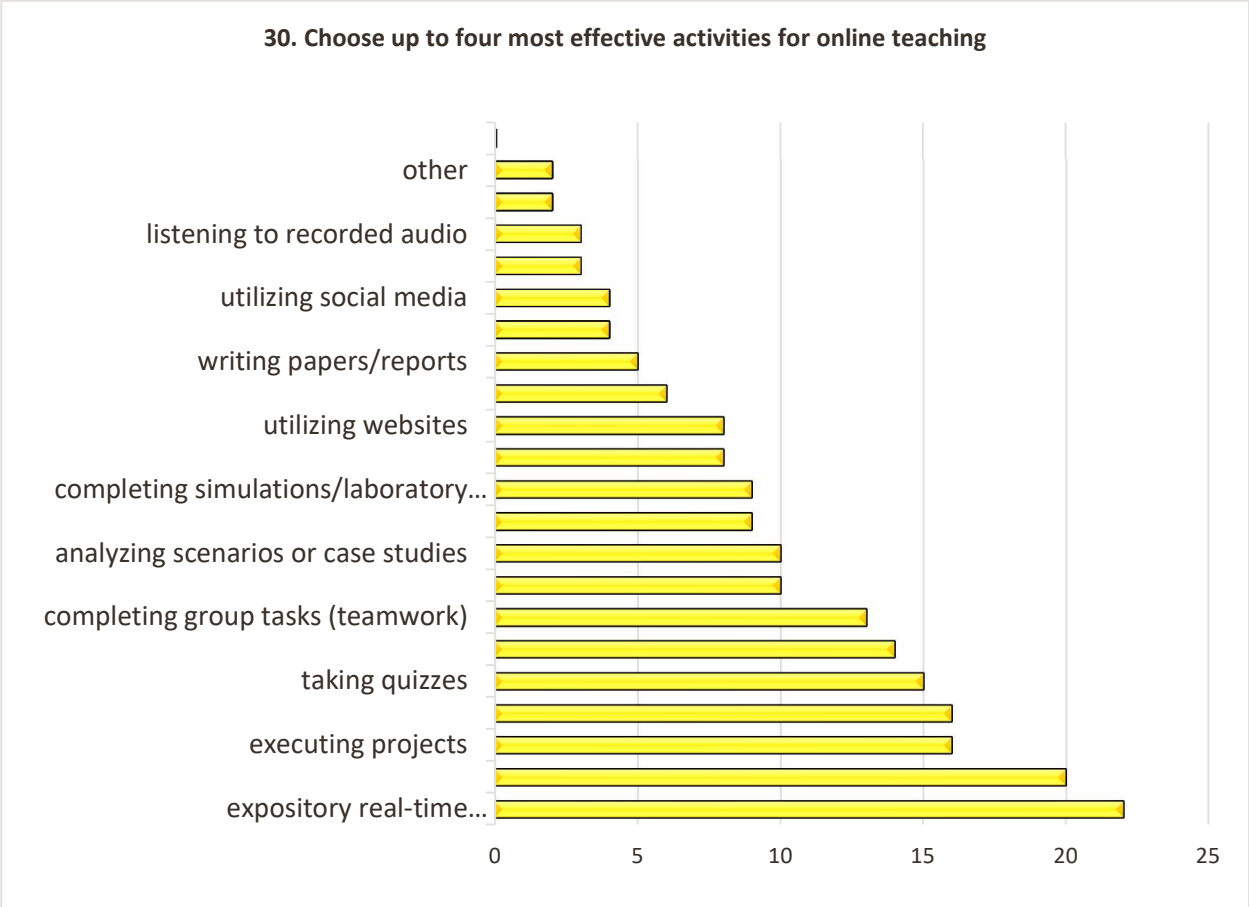
About the type of evaluations, 32% assessed students remotely, 22% in person and 46% used both.



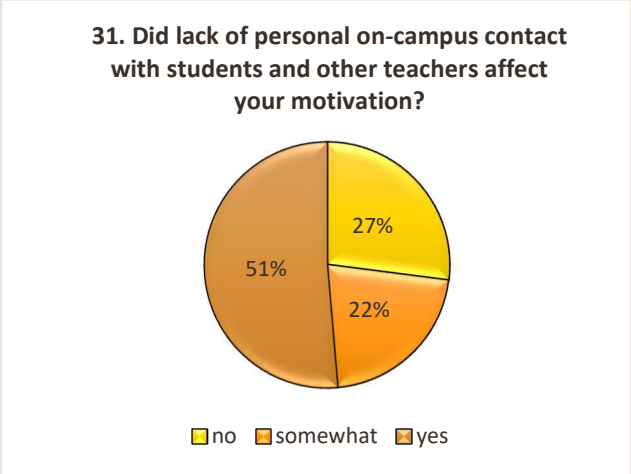
On how teachers **felt about the change to distance learning** the most chosen option is **natural**. Nobody felt very happy, and motivated and demotivated tied, as depicted in the followin graph.



Expository real-time writing/drawing/demonstration from the instructor and watching videos are the **activities** more selected as **effective** for online teaching. All answers and votes are shown in the next figure.



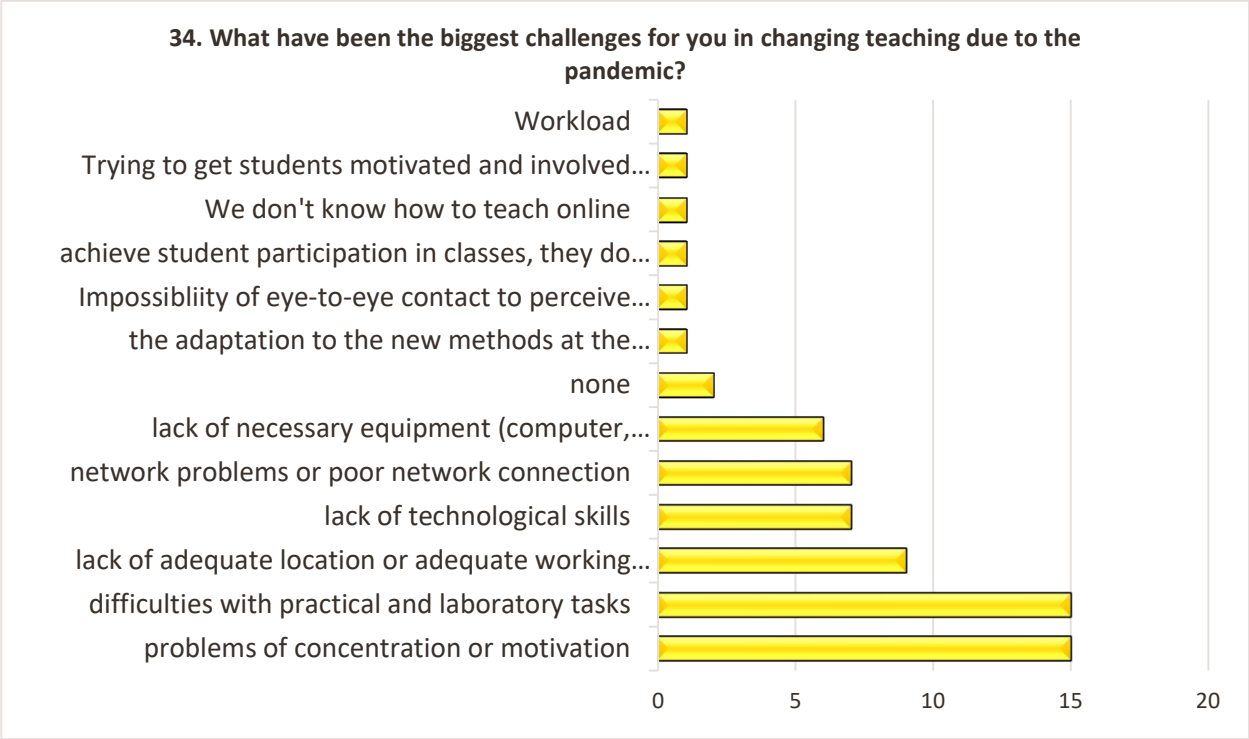
The 51% of the surveyed teachers think that the **lack of personal contact** on campus with students and other teachers affected their **motivation**.



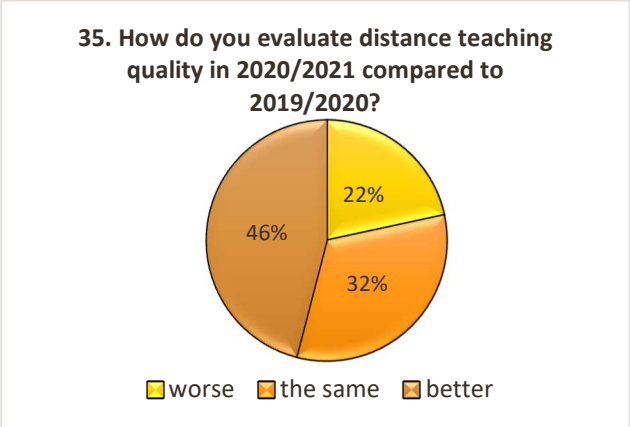
Among the most difficult aspects of distance teaching and learning are **student contact, motivation, attention, student participation** and so on, as illustrated in the following figure.

Among the main recommendations to improve the quality of distance learning are: greater **interaction**, smaller groups of students, greater use of cameras, and improving the way of evaluating.

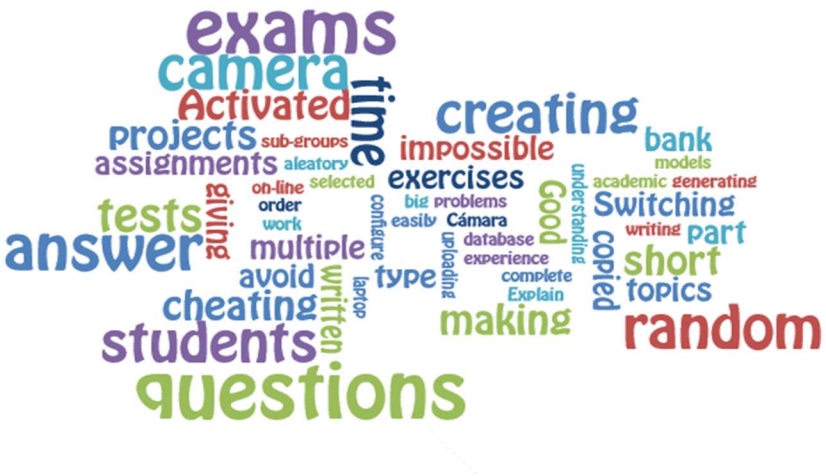
The biggest challenges in changing teaching due to the pandemic include problems of concentration or motivation and difficulties with practical and laboratory tasks.



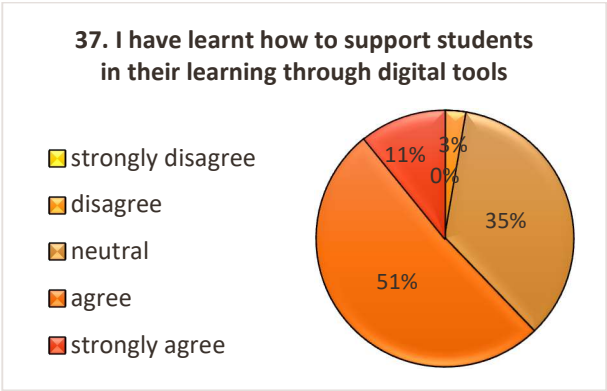
Additionally, the 46% consider that the quality of **distance learning in 2020/2021 was better than in the 2019/2020 academic year**, 32% say that it was similar and 22% that it was worse.

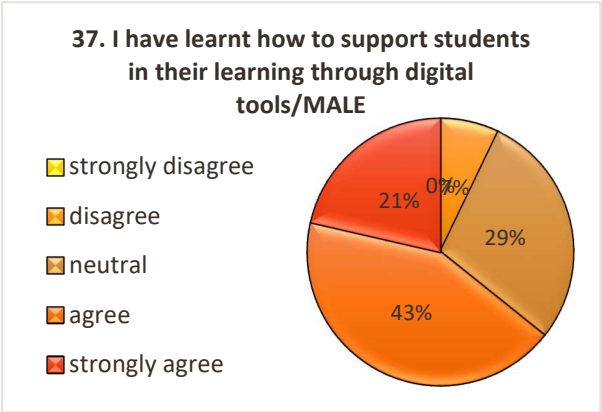


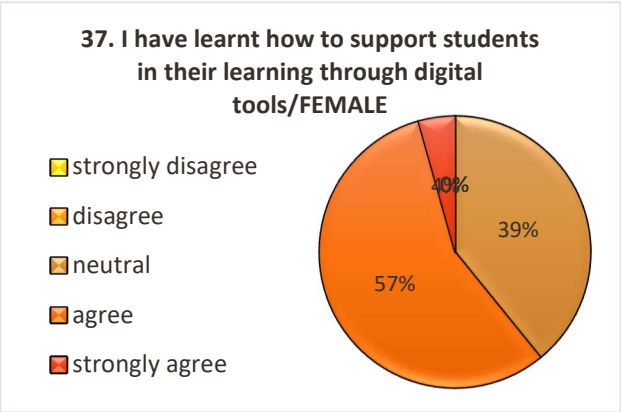
Among the methods most chosen to prevent students from cheating during tests and exams are camera on, random questions, oral exams, time-limited test, different exercises…

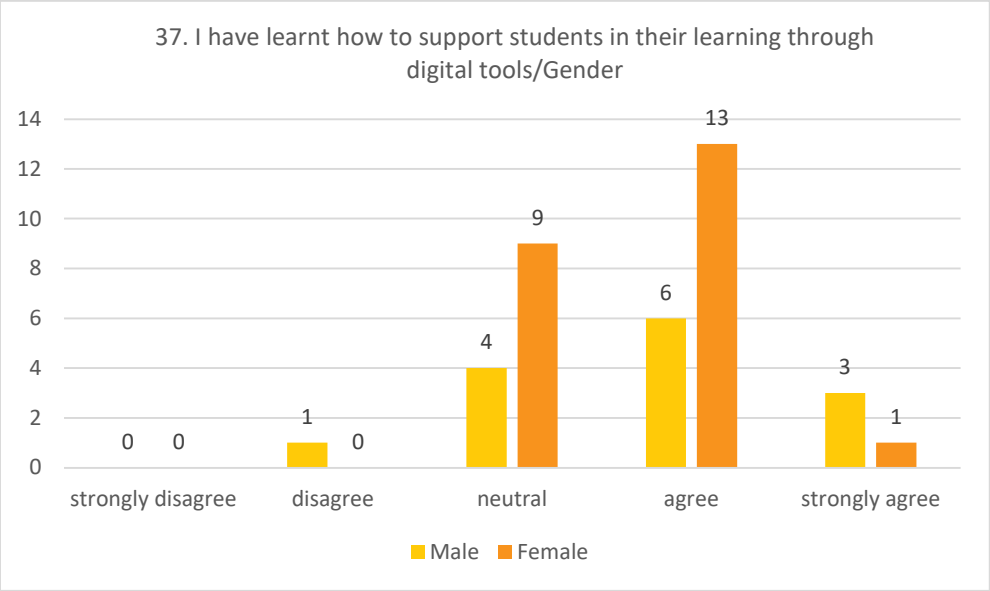


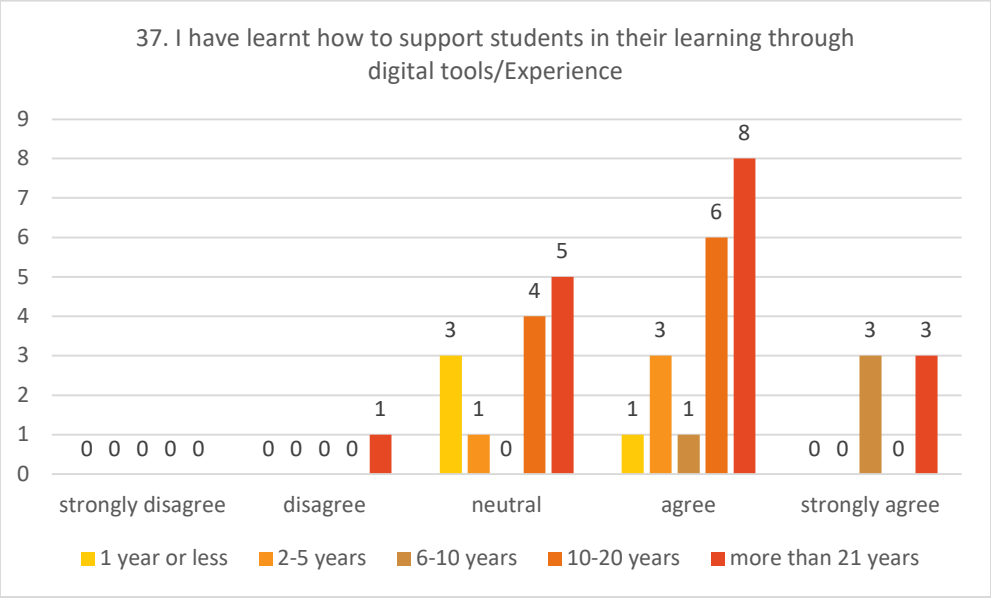
The 62% of teachers believe that they have learned to **support students in their learning** through digital tools, 35% are neutral and only 3% disagree. By gender, the sum of a agree and strongly agree is similar, although in the percentage of women there are fewer that selected strongly agree. On the other hand, in the case of women, neutrality increases and there is no disagreement. From experience, it seems to be more distributed and the sample in some ranges is not very significant. All of these results are depicted in the following five figures.



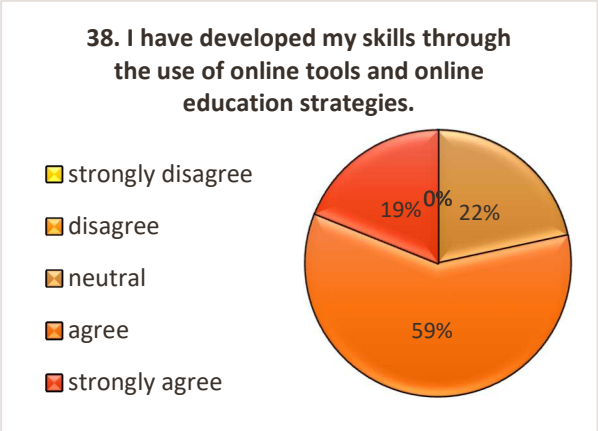


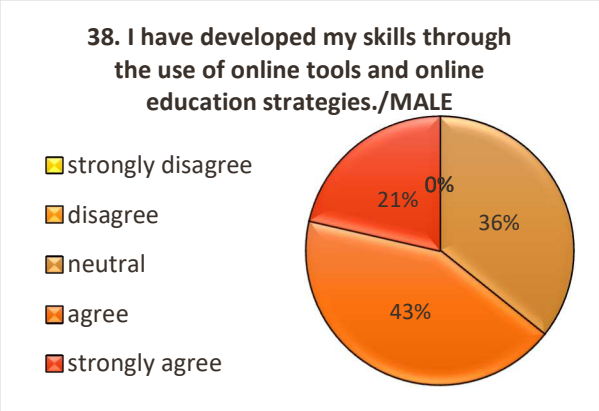


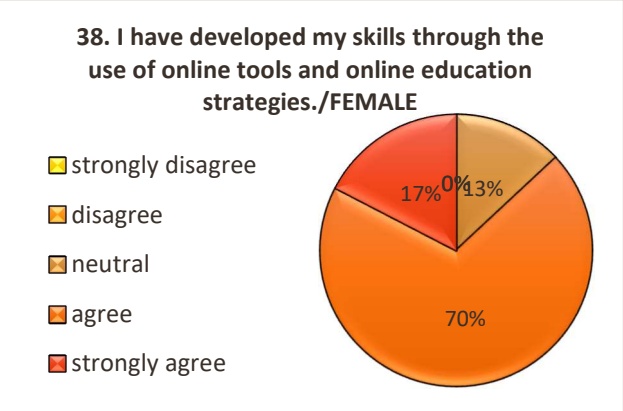


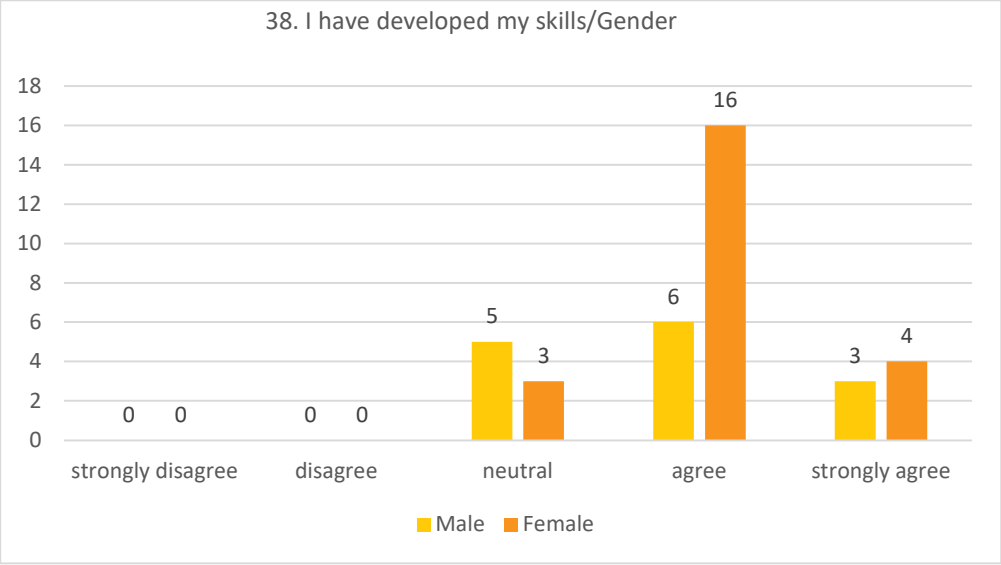


A vast majority of 78% of teachers believe that they have **developed their skills through the use of online tools and online education** and 22% are neutral. No one disagrees. By gender, women are less neutral and are more in agreement with that statement. According to experience, it also seems that the greater the experience, the more agree that they have developed their skills. Once again, all of these results are depicted in the following five figures.

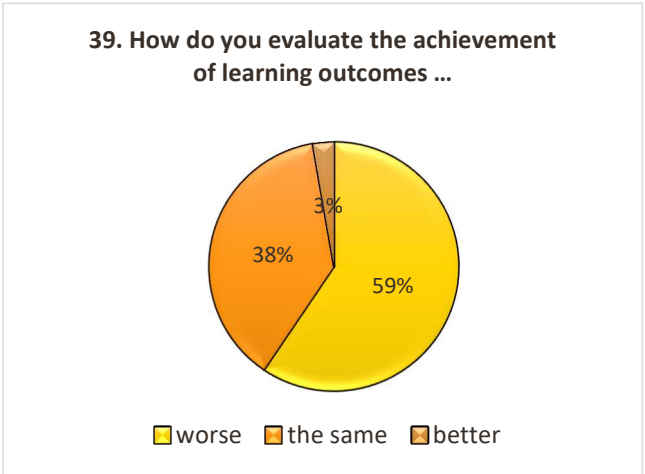

38. I have developed my skills through the use of online tools and online education strategies.
strongly disagree
disagree
neutral
agree
strongly agree
19%
0%
22%
59%

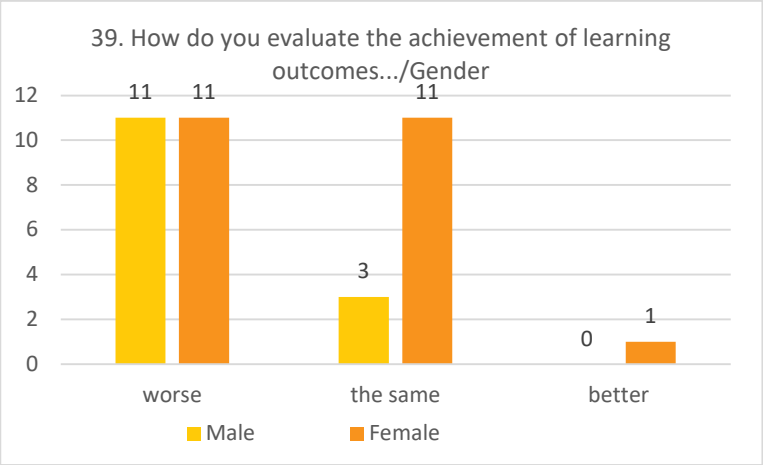

38. I have developed my skills through the use of online tools and online education strategies./MALE
strongly disagree
disagree
neutral
agree
strongly agree
21%
0%
36%
43%

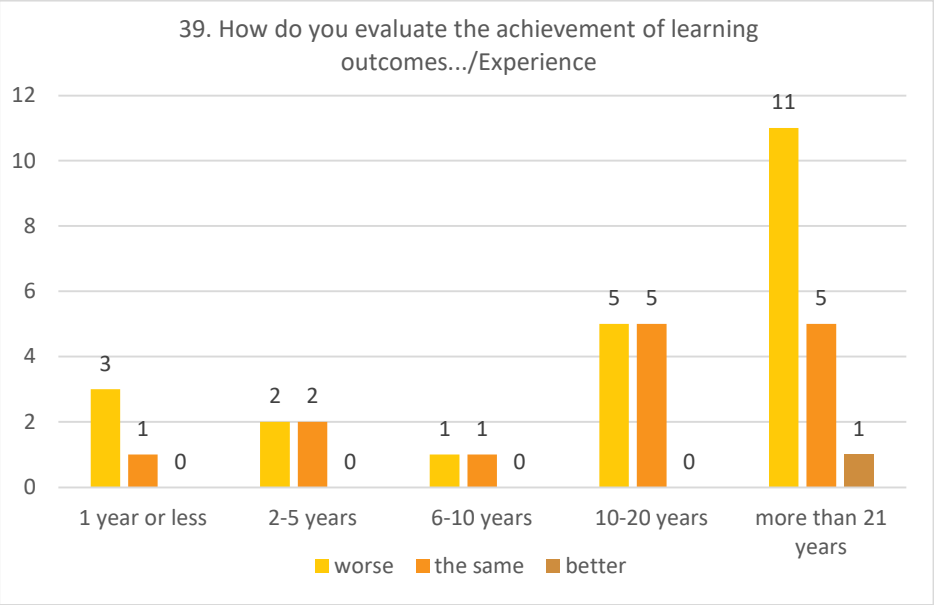

38. I have developed my skills through the use of online tools and online education strategies./FEMALE
strongly disagree
disagree
neutral
agree
strongly agree
17%
0%
13%
70%


38. I have developed my skills/Gender
18
16
14
12
10
8
6
4
2
0
0
0
0
0
5
3
6
16
3
4
strongly disagree
disagree
neutral
agree
strongly agree
Male
Female

A percentage of 59% consider that the achievement of **learning outcomes by their students** was worse after switching to distance learning, 38% the same and only 3% better. Men are more clearly of the opinion that the achievement of learning outcomes was worse. The teachers ranking in 2-5, 6-10 and 10-20 years of experience split their decision in half, considering that the achievement of learning outcomes was worse in 50% of the cases and the same in the other 50% of cases. However, for teachers with more than 21 years of experience, they clearly consider that the achivement of learning outcomes was worse. These results can be sketched in the following three figures.







Finally, when asked about “anecdotes” during online teaching, these were the most frequently mentioned words:

To recap some of the answers, it is somehow demotivating how almost all anecdotes seems to be negative, as only one mentions a funny fact about his/her cat appearing on camera. As for the rest, we have selected a few as a reference:

- *Students don't have cameras on.*
- *As a teacher it was hard engaging with the youngest students.*
- *They don't usually want to be seen, but they had more to say via chat than they would normally say in the classroom. I loved being able to invite persons to interview who wouldn't have come personally (cost, time), show them objects I had at home, and using colours to analyze texts on the whiteboard.*
- *Some technical problems such as forgetting to activate microphone.*
- *During my activities involving interactions with students during the online classes (by polling, posing questions to be replied using chat or voice, etc.), I got only replies from half of the students (in average), so that I was never sure how many of them were actually "attending".*
- *It seems to be a "spiritism" session. The teacher never knows whether there is someone behind the screen, all the cameras are off. Discouraging!*

Conclusions

The main conclusion raised is the lack of motivation by students, acknowledged by both students and teachers. Motivation severely affected attendance and participation of students. It is also important to note that there are two factors to take into account, one of them was the online classes, but the other was the psychological situation due to COVID-19. Both, students and teachers, also agree that they prefer on-site teaching, proving social interaction is a cornerstone of education.

As positive aspects, it seems that teachers felt natural about online classes and they believe they have learned new resources and methodologies for online teaching.

Recommendations

University perspective

Among the main strengths pointed by UAH some are the adaption of professors to online teaching, even if the pandemic situation was psychologically challenging. The majority of teachers accepted to attend to extraordinary training and invested time in improving their

teaching techniques. In the case of students, it seems the majority of them adapted very easily to online teaching, even if unmotivated.

As weaknesses, online exams are still a challenge with no straightforward solution. However, once exams were set face-to-face, the most challenging aspect of online teaching was participation and motivation of students. Those two aspects still need ideas and effort for improvement.

Student perspective

Generally, the students´ outcomes show that most of them have and undecided or neutral opinion about the issues surveyed concerning activities done during the period of COVID-19 related to the transition to online education. As specified below, perspectives were balanced between those participants who agree or disagree about the procedures adopted. However, most students claim that more dynamic, communicative and motivating activities are needed both in online and face to face education.

Practices noticed by the students: strengths and weaknesses

Students claim that lessons can be boring if engaging, practical and/or participative methods that promote student-teacher interaction are not adopted. Teachers need to prepare better the lessons and provide feedback and solved exercises bearing in mind that what does not work in face to face classes, will not even success in online education. This would involve improving the resources used by the teaching staff so that online lessons can be delivered as similar as possible to a face-to-face class.

Concerning technology, there must be considered that not everyone has the same means and technological devices (e.g., webcams), nor feel confident enough using them. This fact impedes creating friendly environments where everyone can use devices comfortably. Students have reported that many teachers are not well-versed on the use of modern devices or innovative teaching strategies and that it gets boring having someone blandly speaking or explaining through a screen for hours on end. Thus, a call has been made to motivation. This can be assured providing communicative lessons and asking students to participate actively in class avoiding long teacher-centered masterclasses, solving more exam's exercises and inlcuding virtual simulators.

Some urgent actions

One of the main weaknesses that has been pinpointed is the time spent reading power point presentations. An urgent action seems the need to deliver more dynamic lessons and promote student engagement. This would involve including practical, interesting or curious examples and other activities in between to keep the motivation of the students. Lessons should be less expository or theoretical and more interactive with projects and written assignments,

groupwork, peer discussions, etc.. By providing the necessary resources and strategies, all will be able to work comfortably.

Some specific ideas mentioned for improvement are:

- Uploading appealling videos and using gamification (e.g., Kahoot)
- Providing classes prepared to be taught online as a face-to-face class in which the teacher is seen for instance writing on the blackboard
- Adapting online lessons so that they resemble to a face-to-face class recorded with acceptably good video and audio quality.
- Delivering lessons face to face using Artificial Intelligence and making sure the students really commit to the sessions
- Turning on cameras and deliver online activities which involve students´ interaction.
- Promoting small group work with classmates and teacher to foster collaborative classes.
- Not focusing in scheduled classes and implementing more projects elongated in time.

Finally, according to the students' survey, exams should be substituted by written-papers or presentations, etc. and include dynamic ativities –such as regular quizzes or taking surprise tests in the middle of a conference, as some suggested-. A revision of the evaluation methods and the class programme trying to be comprehensive with each student situation should be also taken into account. This would involve rethinking the syllabus.

Teacher perspective

The new situation brought by COVID-19 has meant a sudden change in higher education. Face-to-face universities had to rapidly transform their study programs to be delivered blended or fully online to keep lecturers and students safe. This transformation has been less difficult for those who had already experimented with educational technology and with mixed educational formulas. While many teachers managed to continue their courses quite well, some others were completely lost and felt that they were not accomplishing student expectations.

Practices noticed by teachers: strengths and weaknesses

The majority of teachers consider that the University of Alcalá has provided the necessary equipment and has offered support with tools and innovative methodologies to be effective during distance learning.

The most widely used tools used for teaching during the COVID-19 pandemic in distance learning is Blackboard, as this is the institutional LMS (Learning Management System) of UAH. Many teachers had not used Blackboard before COVID-19, and those who had used it had been for content sharing and internal email communication. However, since the emergence of the pandemic, most teachers have used Blackboard Collaborate video conferencing, as well as other options such as Teams, as their main tool for teaching, either synchronously or asynchronously.

As for the software tools used during the COVID-19 pandemic, many teachers have used applications such as Kahoot, mindmapping or Socrative, Youtube videos or social networks such as Whatsapp, and in most cases they had already used them before.

However, although the teachers had the tools and, in most case,s knew the applications, they confess that it was not easy to motivate the students and that the relationship with students has been more distant. One of the reasons for this is because most teachers have done the same activities in class, using long teacher-centered masterclasses but via video conferencing, using synchronous lectures or videos, but this can be much more difficult for the students than in the face-to-face class. For all these reasons, the majority of teachers prefer to teach face-to-face rather than online.

But without a doubt, one of the things that has caused the most stress for teachers has been the online assessment, which have been new to almost everyone. For many teachers, online assessment is not as reliable and accurate as paper-based assessment due to security issues such as incapability to guarantee students' identity and authentication. That is why, although the classes were online, many have tried to take the face-to-face exams. Thus, half of the teachers have combined online and face-to-face exams and the other half is divided between online and face-to-face exams more or less equally. Finally, and after this varied way of carrying out the evaluation at the University of Alcalá, there are few teachers who describe the evaluation procedures used as unfair. In any case, well over half of the teachers consider students learning outcomes to be worse with distance education.

Some specific ideas mentioned for improvement are:

In the opinion of surveyed teachers of Alcalá Univerity, one the biggest challenges in changing teaching due to the pandemic have been problems of concentration or motivation. The COVID-19 pandemic has been challenging both for teachers and students. Teachers have felt overwhelmed by the circumstances and also distressed, frustrated and overloaded with work or even anxiety about the use of educational technology. Also many students have experienced a variety of negative emotions such as loneliness, anxiety or frustration.

Furthermore, the feeling of isolation is one of the biggest problems of online learning. In that sense, among the main recommendations to mitigate this problem and to improve the quality of

distance learning are greater interaction, smaller groups of students, greater use of cameras, and improving the way of evaluating. In addition, the use of active and participatory methodologies that motivate and engage learners are especially necessary in online learning.

Another important problem pointed out by teachers is the difficulty of performing the practical and laboratory tasks, which are crucial in technological areas such as engineering. Students are required to do exercises and practical work, yet it is not so easy to design online environments for practical work. In order to solve the limitations regarding the practical side of the technical areas, it is proposed the creation of virtual laboratories, simulators, and interactive tools to provide students with virtual practical work.

Other difficulties reported by teachers include lack of necessary equipament or adequate working space, network problems or poor network connections. In this sense, it is crucial that institutions get involved and provide the necessary infrastructure, tools and training to facilitate the transition to technological education, including greater use of online learning.

Some urgent actions

The pandemic has forced us to adapt in a sudden and unforeseen way. Although this has meant an abrupt change and an increase in workload, most of the teachers surveyed felt that they have greatly improved their skills and strategies as teachers and that they have learned to support their students through digital tools. This could be an opportunity for institutions and teachers to get closer to the needs, preferences and expectations of the students of this digital generation. In addition, this would bring other benefits such as making education more flexible, being able to study from anywhere and eliminating unnecessary travel.

To that end, appropriate strategic plans should be developed including, on the one hand, the adaptation of educational resources and learning strategies that make use of the advantages of technology, and, on the other hand, the adaptation of teachers and students. Thus, the new role of the lecturer must be adapted to create the necessary conditions for the student to learn and desire to learn and to transform all that unlimited information into knowledge. To do this, lecturers must be trained, equipped with new skills in the appropriate use of technology and digital learning strategies. An adaptation of the students is also required, while we often refer to them as digital natives, this is not an absolute truth. Although they have high level of training and ease of adaptation to technological tools, there is a need for students to develop essential learning competences and autonomy.

Last but not least, it is essential to improve evaluation mechanisms and to introduce secure and efficient models for supervising online evaluation. It is also necessary to take into account legal aspects relating to data protection, recordings, etc. One approach to improving these problems is to involve the students in the evaluation, using evaluation shared between the lecturer and

the student, where the concerted effort between the different sides stands as a guarantee of the clearest objectivity.