

# Metadata of the article that will be visualized in OnlineFirst

ArticleTitle	The Digital/Technological Connection with COVID-19: An Unprecedented Challenge in University Teaching	
Article Sub-Title		
Article CopyRight	Springer Nature B.V. (This will be the copyright line in the final PDF)	
Journal Name	Technology, Knowledge and Learning	
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Schedule	Received	
	Revised	
	Accepted	
Abstract	<p>In March 2020, due to the COVID19 virus that is spreading throughout the world, Spain lives an anomalous situation concerning the normal course of basic, secondary, and higher education. On March 2nd, 2020, the state authorities announced the end of face-to-face teaching in schools and universities. Then nothing suggests that a week later all classes went canceled. However, this unusual fact does not end with the teaching–learning process, forcing all educational institutions, as well as the teaching community to reinvent themselves to continue with online teaching. This is the only possible way to do it. The authors must face a specific scenario to readapt the learning-teaching process. The way of teaching of the University of La Rioja is online but it will have to face some problems. The Polytechnic University of Madrid classroom education is compulsory, so there is a big gap between what teachers are used to and</p>	

what they will have to face. This crisis makes us reflect on new technologies as necessary and essential tools in the new teaching–learning scenario presented. But it must also go beyond considering only the tools available to do it. Reflection must also consider the members of this process and those who eventually make possible education to take place.

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Keywords (separated by '-') Online learning - Teaching technologies - Information and communication technology (ICT) - COVID19 - Artistic drawing

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Footnote Information

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# 1 The Digital/Technological Connection with COVID-19: 2 An Unprecedented Challenge in University Teaching

3 Silvia Nuere<sup>1</sup> · Laura de Miguel<sup>2</sup>

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## 6 Abstract

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8 lives an anomalous situation concerning the normal course of basic, secondary, and  
9 higher education. On March 2nd, 2020, the state authorities announced the end of face-**AQ1**  
10 to-face teaching in schools and universities. Then nothing suggests that a week later all  
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22 **Keywords** Online learning · Teaching technologies · Information and communication  
23 technology (ICT) · COVID19 · Artistic drawing

## 24 1 Introduction

25 The case we are going to analyze contains two scenarios, a distance learning university  
26 such as UNIR and another, UPM, where all teaching is based on face-to-face classroom.  
27 Both universities offer bachelor's degrees, as well as master's and Doctorate studies. There  
28 are several subjects suiting the different degrees, including realizing Final Degree Work,  
29 Final Masterwork, as well as internships in companies.

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30 The University of La Rioja (UNIR), whose headquarters is in La Rioja, was born in  
31 2009 and since the beginning has been a university that has focused on online teaching.  
32 This university is a private, familiar with the new communication tools and therefore  
33 with applications that ease the teaching–learning process. It has students from different  
34 countries around the world. According to a study, in 2018, UNIR continues to keep its  
35 leadership against Spanish online universities (Proeduca 2019). At UNIR different degrees  
36 with different characteristics are taught: Design, Law, Engineering, and Education between  
37 others.

38 Meanwhile, the Polytechnic University of Madrid (UPM) emerged in 1971 by the union  
39 of different centenary schools that were founded between the eighteenth and nineteenth  
40 centuries. Each school remained independent until they merge into a single university.  
41 It is a public University and in all its Schools teaching is done in classrooms. Being a  
42 polytechnic university, the degrees offered are engineering with different specializations.  
43 We will focus on the bachelor’s degree in Engineering in Industrial Design and Product  
44 Development, which has a differentiating factor compared to the rest, by having clearly  
45 creative subjects, as for example Artistic Drawing.

46 Due to the crisis caused by the corona virus COVID19, these two universities have  
47 to take measures to avoid contact between their employees, staff of administration and  
48 services, teachers and students. Principals of both universities send communications  
49 with the appropriate procedure as soon as it comes out. This article will briefly analyze  
50 the solutions taken to adapt teaching to the current situation as well as a reflection on the  
51 agents of this scenario.

52 This paper is presented as follows. State of art describes the situation of two universities  
53 of Spain under the State of alarm declared under COVID19 crisis. Online learning reviews  
54 the framework where action will take part. ICT will revise the technological tools available  
55 for the purpose to continue teaching under this specific situation. “UNIR and UPM  
56 scenarios” assembles evidences around the action considered to face this new challenge.  
57 Discussion will show problems arisen to give quality teaching to students due to specific  
58 characteristics of the subject taught. Finally, in the conclusion we will sum up all this  
59 study, leaving some questions to be answered.

## 60 2 State of Art

61 The first State announcement is to the cancel classroom teaching as usual and the legal  
62 enforceability to stay-at-home for, at least, from the 11th till the 17th of March. On  
63 March 11th, the UPM’s Tele-education Cabinet (GATE), reported that “because of the  
64 extraordinary expected Moodle’s platform traffic increase, teachers are discouraged from  
65 scheduling mass exams, group reservations, or others that need big amount of people  
66 access”. They inform about the possibility of using Skype for Business, with a document as  
67 a guide, commenting that it will be expanded. There also offer the possibility of Office 365  
68 Teams and the option of recording classes in the Recording Studio owned by the UPM. But  
69 the latter is canceled by forced confinement.

70 On March 17th, the School of Engineering and Industrial Design (ETSIDI), where  
71 the Degree before mentioned is taught, closed definitively and cannot be accessed. Only  
72 those who have researches going on can access with the specific authorization of the  
73 Director’s School. The 18th of March the Director informs of the options available for  
74 online teaching and they set an online class for all the teachers on Thursday, March

75 19th through the Jitsi Meet platform ([https://meet.jit.si/Intro\\_Teams\\_ETSIDI](https://meet.jit.si/Intro_Teams_ETSIDI)) to talk  
76 about Teams platform from Windows. Unfortunately, it does not work, and we connect  
77 directly through Teams platform with any previous learning. They just give us basic  
78 advice about its use.

79 On March 19th, after 8 days of teaching stoppage, a communication was received from  
80 the principal pointing out that due to the Royal Decree 463/2020 of March 14th, face-to-  
81 face educational activity was suspended. The obligation remains in force but during the  
82 suspension period, educational activities will be maintained through distance and "online"  
83 modalities whenever possible". This means that teachers have to change their routine and  
84 start, by their own means, searching for tools that allow them to be in contact with students.

85 On March 24th, after 14 days, the UPM informs teachers of the inclusion of other as  
86 Skype for Business, Microsoft Teams (Webinar on March 24) and Blackboard Collaborate  
87 by Moodle. They also offer the possibility of using Zoom, with a maximum of 100  
88 students in each session and with the only possibility of recording 40 min of class. Another  
89 drawback with the latter application is that it is recommendable for a specific browser.

90 The UNIR situation is similar, different communications are also sent indicating the  
91 cancellation of face-to-face teaching. In the case of this university, there are people who,  
92 due to the work they carry out, must go to the UNIR offices, so they allow, on March 10th,  
93 teleworking like many other companies. This measure will be mandatory from March 13th.  
94 On March 17th, students are allowed to delay their homework. Considering that UNIR is  
95 an online university it seems that teachers will not have any problem continuing with their  
96 current activities. Nevertheless, there is a lot of staff dedicated exclusively to maintain all  
97 the technologies that will not be able to work in the specific facilities.

98 Let us analyze the frame of reference where teaching is going to take place: online  
99 learning.

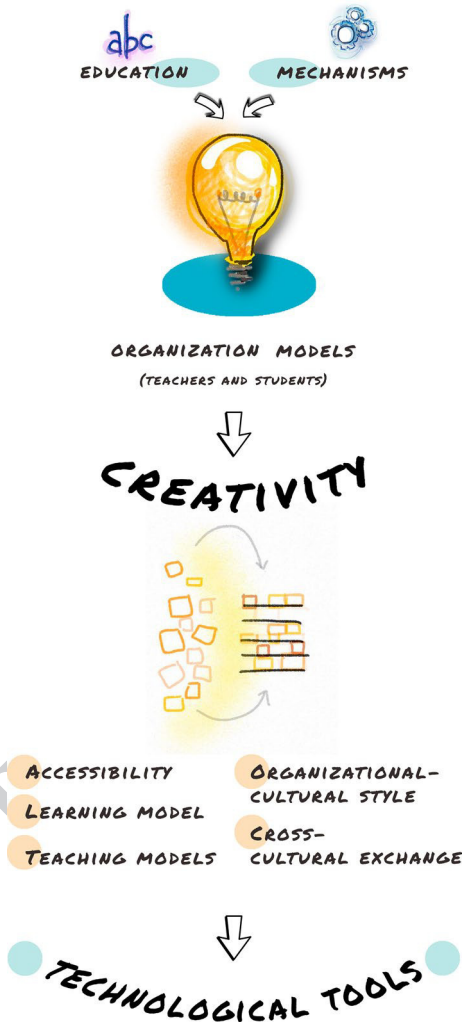
### 100 **3 Online Learning**

101 This new paradigm of virtuality is not presented as something new. Its value lies in the  
102 possibility offered by the means to reinterpret, rethink education and its mechanisms.  
103 The theories of learning, methods, didactics, communication, must be placed into a  
104 virtual space which is presented with all kinds of creation possibilities. A new path to  
105 explore appears. We must keep in mind that we will need creativity to face new training  
106 challenges arisen from extreme situations (Fig. 1).

107 According to Sangrà (2002), there are two models on which this new paradigm must  
108 be based, such as the educational model and the one related to the way of organizing  
109 it. It is important to focus the educational model on the educational needs of the  
110 students. As for the organization, it depends on the higher training and on the interest in  
111 investing in the technological tools you need to face a good quality. For Sangrà (2002)  
112 fundamental factors of the process of teaching are based on the following axes:

- 113 • Accessibility: To guarantee access for all people who want to train and do so through as  
114 many means as possible. This involves carefully following the evolution of technology.
- 115 • Learning model: To work on improving educational models focused on the way  
116 of learning. The learning strategies in the scenario of a virtual and global training  
117 space are not the same as those used by students from classroom model universities.

**Fig. 1** Visual thinking about factors of the process of teaching.  
 Laura de Miguel



- 118 • Teaching models: The profile of teaching professionals should change their goal to
- 119 facilitate the process of learning instead of instructing. This change must be made
- 120 from the integration in the shared learning model based on new technologies.
- 121 • Organizational-cultural style: One of the great challenges of globalism is to try not
- 122 to lose the identity, not only cultural, but traditional and historical of the educational
- 123 organizations. These organizations must keep the prestige they have gained among
- 124 years. A framework in which there are no own styles of teaching performance is a
- 125 gray and unattractive space. We will have to work to put the style of our current
- 126 educational organizations online as well.
- 127 • Cross-cultural exchange: The possibility of relating different cultures online is
- 128 already a working reality. The only problem could be linguistic problems. Not for
- 129 well-known languages, but for minority languages.

130 Among the different theories related to distance education, Sangrà affirms that the  
131 student is the essential element in any educational system (2006). The analysis of their **AQ2**  
132 specific needs and characteristics are the elements that make condition on the technology  
133 to be used in the distance education model to be implemented. The teacher is another  
134 fundamental element and, finally, the resources available to make easy the learning model,  
135 both based on autonomy or based on communication.

136 UNIR is constantly evolving with new implementations to improve online teaching.  
137 In online education, the use of the latest communication technologies is essential.  
138 The educational community in this area can access the virtual campus and launch  
139 communications to colleagues and teachers at any time. This is the means of the digital  
140 connection is 24hours/7 days a week accessible for all involved people. It is true that this  
141 teaching format, favors teacher's family conciliation, avoiding unnecessary travel with the  
142 expense of time and money involved. It is also true for students who can combine this type  
143 of training with their families, professions or any other personal project they embark on.

144 However, the UPM has only teaching support tools, such as Moodle platform, but  
145 teachers are not prepared for online teaching.

#### 146 **4 Information and Communication Technology (ICT)**

147 For Punie, Zinnbauer and Cabrera (2006) there is a widespread belief that ICTs have an  
148 important role to play in changing and modernizing educational systems and ways of  
149 learning. They consider that ICT can be approached in different ways and that there is no  
150 single concept of learning through it.

151 Models available for distance learning can be synchronous, those in which teaching  
152 must be carried out in a real time. Teachers and students coincide, despite not being in the  
153 same physical space. They can be asynchronous, where the interaction activity between  
154 teachers and students take place at different times and locations (Juárez-Varón et al. 2013).  
155 These authors list the technologies available for synchronous teaching:

- 156 • Videoconference: a two-way simultaneous audio and video communication process that
- 157 allows communication between groups of people located in different physical spaces.
- 158 • Teleteaching, where only audio and voice exist. Rani and Surana (2015) also include
- 159 various technologies such as Computer-mediated communication, interactive TV,
- 160 telephone, software and multimedia network.
- 161 • Own television channels.
- 162 • Chat services.

163 As for the asynchronous, we must point out the educational e-learning platforms,  
164 teleteaching classrooms that allow recording sessions or classes with an audio and video  
165 system. Teachers can also use channels such as YouTube or Vimeo and finally Forums or  
166 Blogs (Juárez-Varón et al. 2013).

167 Obviously, these tools can be accompanied by a guide for the student, a calendar to  
168 indicate for example homework deadlines, the possibility of including announcements or  
169 specific news. In addition, there are also repositories where the student will find documents  
170 related to the subject in addition to the tasks that must be carried out. Finally, there is the  
171 possibility, through teleteaching platforms, to carry out exams and subsequently to include  
172 the qualifications.

173 For both online-based and non-online based universities, e-learning educational  
174 platforms are always a support resource for teaching.

175 To sum up, technological advances in general influence our society and obviously,  
176 education cannot be apart from them.

177 We have already mentioned that in a way or another both universities have some kind of  
178 technology to support the teaching–learning process. But let analyze the scenario in each  
179 university once the State of Alarm has been set up in Spain.

180 For years, the so-called online training spaces MOOC (Massive Open Online Course)  
181 and OCW (Open Course Ware) have been used by different entities to establish their  
182 teaching strategy. In MOOCs, participants get involved as students or as teachers in a  
183 massive and freeway, offering a dynamic and participatory experience for both. The  
184 OCWs focus on providing content and mechanisms for their public availability (Cormier  
185 & Siemens 2010). These spaces were used quite a few years ago in various professional  
186 contexts for permanent professional recycling. Over time, public and private universities  
187 have created their own virtual spaces to establish their teaching–learning scenarios. These  
188 are virtual spaces that favor the dynamic interaction of teachers and students through their  
189 cloud access. For UNIR the interest is focus on the courses done by students when they  
190 are doing their internship in companies. Companies offer a specific course to the student  
191 and then the university recognize it as European Credit Transfer and Accumulation System  
192 (ECTS credits) for their university record. The name of this project is Virtual Mobility  
193 Passport (VM-Pass). They also have the eMundus program, with open learning resources  
194 (OER Open Educational Resources). The question is to regulate everything so students can  
195 benefit from them (UNIR 2020). For UNIR, MOOCs or OCW do not offer good quality to  
196 consider them for recognize them as ECTS.

197 For the UPM, the university joined the MiriadaX platform to host their MOOCs. A  
198 lot of different Spanish institutions have joined this way of spreading culture, as Prado  
199 Museum, Telefonica Institute of Technology, Cervantes Institute, or other universities  
200 from Spanish based language. UPM just offer different courses, done by their teachers, for  
201 different people, no matter if they are students from the university. University students do  
202 not benefit from them in their degree record.

## 203 **5 UNIR and UPM Scenarios**

204 What happens then concerning the UNIR? Even though this university is used to manage  
205 many essential digital tools that serve the educational community, the presence and work  
206 of other nonteaching professionals is needed to ensure the online educational community  
207 can develop their work without setbacks. These are the Teaching Organization Technicians  
208 (TOT), the Support Technicians (ST), the Class Support Technicians (CST) and the  
209 General Administration Personnel (GAP), among others. All of them ensure that the  
210 educational community can develop in a normal scenario. Every day, these people carry  
211 out their work in specific work centers, offices with a defined schedule and / or shifts to  
212 cover a greater time slot to ensure the perfect performance.

213 In circumstances such as those experienced in the declaration of a national State  
214 of Alarm such as the one currently established in Spain by the health emergency  
215 authorities of COVID-19, they are deprived of being able to attend these centers. They  
216 are force to telework from their homes. For teachers, it is ordinary, as most members  
217 of the UNIR educational community, to do it this way. To be able to do this, you must

218 have the technological resources that allow remote access to your usual jobs, with the  
219 deployment of systems that are necessary in a certain record time. Well, while that  
220 is happening the wheel of an online university keeps turning. Classes continue to be  
221 taught, students continue to write on their forums, teachers continue to serve them, and  
222 so on. Due to the current situation where there are no guarantees of an adequate support,  
223 technical problems and needs appear. There is no guarantee to solve them, at least, until  
224 the technicians are properly installed in their new workplace, their homes.

225 These are days, weeks, in which the stability of a given teaching task faces dealing  
226 with various fronts beyond its control. They will end assuming that they have front  
227 faced it as a superman (Lario 2005) with the idea that things "worked on their own".  
228 Suddenly, you become aware that behind the entire virtual network on which you work  
229 every day, there is a resource management that, in turn, depends on people. Yes, people.  
230 People are the technicians, the students and also the teachers.

231 Some changes have been done, as for example online meeting instead of face-to-  
232 face in the office, but as they have the means, it seems that some days after, everything  
233 continues as before the crisis. The internet information traffic of information has  
234 increased; the online connections suffer a peak of demand, fact that produces in several  
235 occasions' slowdown or even network collapse.

236 What happens when the university, like UPM, is not ready to teach online? In this  
237 case, this situation affects the organization model as Albert Sangrà differentiated. From  
238 the first communications in which face-to-face teaching is suspended, there is a period  
239 of approximately one week until the university itself begins to send platform options  
240 and tools to teach online classes.

241 As Bonni Stachowiak, columnist for EdSurge (2020), comments, "reading to a  
242 webcam instead of an in-person class is not the best way to teach online, but it is the  
243 easiest way to switch. Under the circumstances, it is better than nothing. This page was  
244 created by teachers, experts and storytellers in 2011 to connect the emerging community  
245 of education technology entrepreneurs and educators,

246 Analyzing the UPM, the scenario is quite difficult. As mentioned before, this  
247 university does not have means to teach online, it has only a platform, Moodle which use  
248 is not mandatory its use. This is the only Information and Communication Technology  
249 (ICT) available for all the community, including emails that the UPM has until then. So,  
250 due to the emergency, because of the COVID19 coronavirus, teachers have to use their  
251 own means in terms of devices to give their classes. They also must learn from scratch  
252 technologies and online software available for this purpose.

253 Quality may depend on personal equipment needed to teach properly, as well as  
254 assuming that students will also be able to easily access any type of teaching tool that is  
255 implemented from that moment.

256 In the end, the teacher becomes the "lone ranger" (Lone Ranger), a concept coined  
257 by Bates (2000). He must train from the base; he does not have time to test the tools  
258 at his disposal. Furthermore, models called "solitary ranchers" are essential to foster  
259 innovation, demonstrate the potential of technology in education, and ensure the use of  
260 technology even when there is no systematic support from the institution. Usually, these **AQ3**  
261 are teachers who invest much time and effort experimenting with the use of technology  
262 in teaching (Bates 2004, p. 40) the quality in the use of new technologies in education  
263 requires prior knowledge, not only in content, but with regard to planning, design, and  
264 production of the media.

265 This crisis should push university institutions to the “technological imperative” named  
266 after Bates (2000). They should be updated, not only putting in better tools, but also  
267 searching for new tools for subjects with a clearly practical component.

## 268 6 Discussion

269 The most important difference between face-to-face and virtuality education lies in the  
270 change of medium in the educational potential derived from optimizing the use of each  
271 mean. The same cannot be done, but the educational purposes must be the same, and the  
272 results must also be the same (Sangrà 2002). The educational system, the rhythm, the  
273 evaluation systems must be made more flexible.

274 In the International University of La Rioja, teachers have continued to teach as always,  
275 just some small changes have been done, as online meeting instead of face-to-face ones  
276 (Fig. 2). Agility on the system is not always the best, but they manage to continue forward  
277 with good results.

278 The most important changes arise in the Polytechnic University of Madrid, as it is not  
279 prepared to online teaching. We are going to expose the challenge lived to teach specific  
280 activities to students in a creative subject as Artistic Drawing. It is intended to continue  
281 with the teaching requirements, based on the student building their own learning, always  
282 from a critical work and acquiring the necessary skills and competencies required for this  
283 subject.

284 In this subject the intention is to learn how to hand sketch so lately they will be able  
285 to visually show their design ideas. It is a practical subject with 5 h a week. Normally the  
286 teacher exposes the exercise they have to carry out and they will be drawing and drawing  
287 for hours, with personal corrections from the teacher.

288 For the first week we managed to upload material and videos on the Moodle platform.  
289 Nevertheless, "uploading materials online" does not imply online teaching, and it is  
290 essential interactivity between student teachers and students with students (Sangrà 2002).

291 For the theoretical part, the ICT TEAMS tool is suitable (Fig. 2), but maybe does  
292 not always apply for practical subjects. The first online connection was with 76% of

AQ4

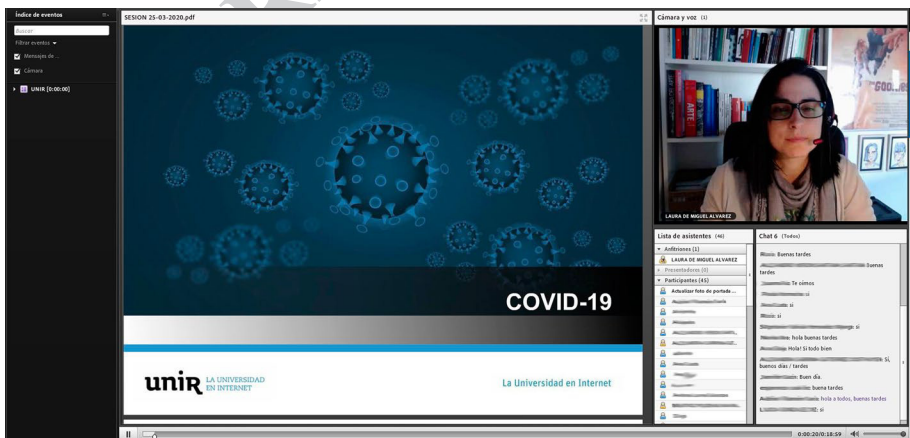


Fig. 2 Teacher having an online meeting with other teachers

Author Proof

293 students. We need to record online sessions for those who cannot tune life, because as  
294 some students choose the subject as optional, maybe they have some time overlap. Even  
295 though students can connect their camera so you can see their face, they do not use it. It  
296 is right for transmitting information, but you feel alone teaching as you do not even have  
297 virtual eye contact (Fig. 3).

298 For the practical part of the subject, that requires most of the time, the teacher has  
299 made a device to be able to connect the camera to show the table so she can draw, and  
300 students can see it. This structure was made from PVC pipe, and the piece that holds  
301 the camera printed in a 3D printer (Fig. 4). Obviously, all this work has been possible  
302 because of the ability of the teacher, and because she had the means to do it.

303 While speaking, the teacher is drawing explaining visually main points of the topic.  
304 Students profit from the teaching drawing, but they need to put it in practice at the same  
305 time. This is almost impossible, they can do it, but the teacher cannot see it even if they  
306 connect their cameras, because there are almost 40 students at once. Learning artistic  
307 drawing is something you need to experience and cannot learn in other hands.

308 Classes must be taught in their normal schedule and because Spain has two different  
309 time zone, students from the Canary Island will have to connect one hour before the  
310 others. Also, as they have to upload their drawings and works related to image files, it  
311 is a handicap that UPM has limited the capacity from 50 to 20 Mb. This forces them  
312 to send their homework via email, because visual works are heavy files, so the Moodle  
313 platform is not useful anymore.

314 In other cases, the teacher sends a document to work on. They need to print it to  
315 complete their homework, and all at once you are noticed that some of them have not a  
316 printer at home. Social network WhatsApp has become a fast way to get in touch with  
317 students.

318 Maybe for assessment we will need to appeal to an e-portfolio as explain by Punie,  
319 Zinnbauer and Cabrera (2006):

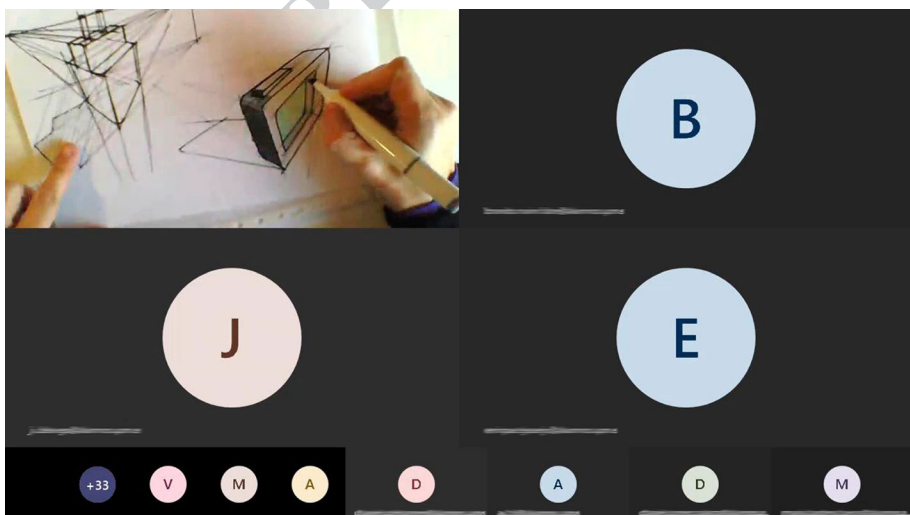
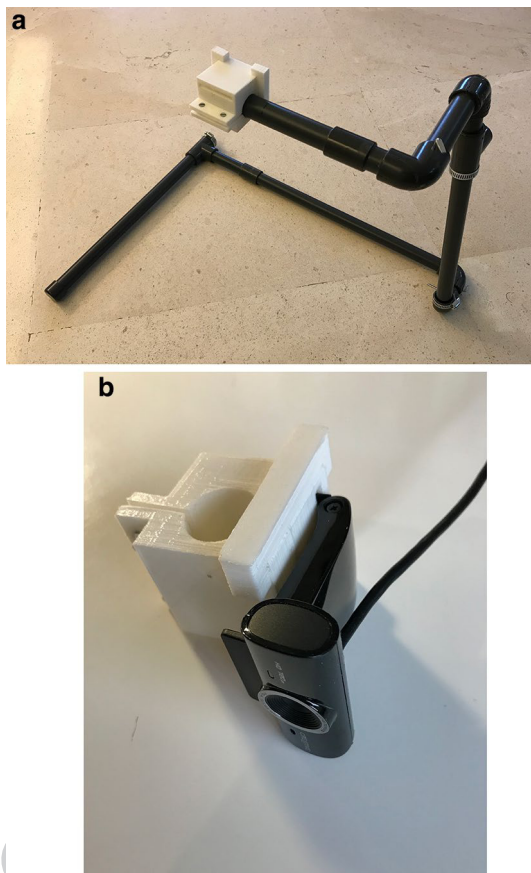


Fig. 3 Teacher having an online class with students

Fig. 4 a and b Camera support



320 An e-portfolio or electronic portfolio is a digitalized record of a person's learning  
321 achievements including skills, experiences and other achievements. It offers a means of  
322 encompassing the full spectrum of student competences in several school subjects and  
323 of avoiding assessing only traditional academic competences.

324 But this is something that we cannot anticipate.

325 To sum up, if the different steps carried out to teach online are analyzed, the  
326 following points can be concluded:

- 327 • Universities that are used to online teaching have minimal problems to continue  
328 working.
- 329 • For the one that does not have good resources to teach online, it is maybe compulsory  
330 to think about getting a good online platform for unforeseen circumstances.
- 331 • Tools available for the teaching–learning process must be learned by teachers and  
332 students in record time.
- 333 • Maybe due to the situation, in every house there is only a computer and several  
334 members of a family. They maybe have to share the computer as the parents are  
335 teleworking, and maybe a brother also needs it.

- 336 • The different characteristics that are taught are not considered (artistic drawing,  
337 chemistry, physics or electronics laboratories).  
338 • WIFI connections can be weak.  
339 • For the subject “Artistic Drawing”, you realize that previous class work has increased  
340 more than double. For example it is not the same telling a student what has to be  
341 corrected while they are drawing, than writing one by one (52 students) each personal  
342 comment. Also, when you are teaching while drawing on the blackboard, you do it life.  
343 For this kind of teaching, you need a specific support to your camera to draw and record  
344 everything, at once.

## 345 7 Conclusion

346 We have analyzed the different reactions carried out by two universities, one used to  
347 teach online and the other with no experience in it. Maybe we can sum up that the use of  
348 teaching technologies is essential for an online learning process. Although a University is  
349 not prepared for the new technologies of online teaching, should it investigate and invest in  
350 tools that facilitate this modality?.

351 Some problems can also be reflected on Spanish educational budget cuts on public  
352 universities. They are not prepared to face such a situation. On the 7th of April, the UPM  
353 offered the possibility of borrowing laptops, so teachers could continue with their classes,  
354 but this option arrived almost 1 month after confinement. We must also tell that, nowadays,  
355 MOOCs or OCV are not a possible solution for UNIR nor UPM online teaching.

356 Because of the subjects that are difficult to teach within this modality, research should  
357 be carried out on suitable technical tools to bring this modality closer to the reality of  
358 everyday life in normal times. In these subjects, students have an essential role in the  
359 teaching–learning process, and it must be possible a better interaction. Artistic Drawing  
360 is a practical subject where students must carry out work from their own experience but  
361 based on a theory explained previously by the teacher. This theory can be carried out  
362 without problems with the TEAMS tool, but not the personal drawing process. You cannot  
363 confirm that the draws they are going to send you lately are made 100% by them.

364 And finally, and perhaps most important, the solution lies in the willingness of teachers  
365 to innovate without suitable tools. They to keep the wheel turning without losing its  
366 rhythm. Teachers, indirect contact with students, report the situation and know that  
367 everything will return to normal when technicians are adapted to teleworking. But even  
368 though the problem seems controlled because they manage to do it from home, you realize  
369 the situation still weird and things go different.

370 Some teachers and/or technicians become ill, some classes or meetings are suspended  
371 until further notice (in the best case) and the wheel keeps turning. This causes that the  
372 postponed classes are crowded, and the students are affected by the lack of classes that  
373 are not supplemented by other resources. And so on until the situation calms down and an  
374 atypical everyday life is rebuilt but normalized by the crisis.

375 In short, online training, seemingly does not suffer the outcomes of a state of alarm  
376 that forces confining its citizens. But being part of those working citizens of mentioned  
377 universities who can get sick; this training can be affected by other issues that exceed the  
378 border of the walls of a face-to-face university.

379 As days are passing by, things are getting set up, but differently in each university.  
380 UNIR is returning to its normal stage, and even though UPM is giving online classes, this

381 university is still missing some specific aspects of some subjects that cannot be taught that  
382 way, as for example artistic drawing, chemistry or electronic laboratories.

383 The 30th of March, by the Real Decree 10/2020 from 29th of March, the situation is  
384 getting more restrictive from the Spanish government, but online classes continue with our  
385 personal technology means. But we still do not know, on the 13th of April, what is going to  
386 happen related to the exams if the scenario extends overtime.

387 Obviously, this paper is two teachers' reflection and the conclusion is that maybe all  
388 universities should need a structure to teach online but with good technology at home for  
389 every worker to face possible problems. Flexibility is compulsory. Teachers become more  
390 than ever the principal actors in the teaching–learning process, readapting their way of  
391 teaching. And we do not forget all the people that make necessary that online technology  
392 continues to go on and on.

393 Maybe, after facing such a complicate situation, we realize that people (teachers,  
394 technicians, students) are the most important actors. Without their collaboration, even if  
395 they have the necessary teaching technology or not, teachers make possible to keep the  
396 wheel rolling.

397 We finish with the quote of an anonymous lighting teacher from the nineteenth century:  
398 'We learn better in contact with people than by their lessons'. We cannot forget that even if  
399 we have all means, contact is essential, and those means must ease, if not physical contact,  
400 at least eye contact, something difficult with 40, 50 or more students. But every subject, as  
401 for example artistic drawing, is different and has specific characteristics so maybe, online  
402 teaching should take this issue into account in the future. The interaction between teacher  
403 while students are drawing is essential.

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