

TEACHING SUPPORT STRATEGY DURING COVID-19 PANDEMIC AT UNIVERSITY OF PORTO

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Abstract

Although the use of digital learning environments was already recurrent in many traditional Higher Educational Institutions (HEI) as a complement to face-to-face classes, the emergence of COVID-19 forced institutions to quickly switch to fully online learning. The impulse of digital tools as well as the transformation of Teaching and Learning (T&L) methods, exposed many institutional gaps both in terms of teaching and in terms of technical and pedagogical support. It became clear that not all teachers and students were prepared for such a sudden change and many Universities were forced to define and intensify strategies to help and enhance e-learning literacy throughout their academic community.

This study aims to present the support strategy adopted by the Educational Technologies (ET) unit of the University of Porto (U.Porto) during COVID-19 pandemic. Since 2003, U.Porto, through the ET unit, has provided all teachers and students' free access to a Learning Management System (LMS) integrated with several digital solutions, training actions and audiovisual resources to support their pedagogical activities. During the lockdown, to better respond to the needs of its academic community, the ET unit has adapted many of its support methods: moved all training to webinar format, increased the number of video tutorials, made available a virtual agenda for scheduling personalized meetings for technical and pedagogical consultancy and intensified contact via Open-Source Ticket Request System (OTRS) to increase its responsiveness.

The research method applied in this study combines quantitative and qualitative approaches. The technique used for data collection was observation using an analysis grid. The construction of the analysis grid was based on the needs expressed by users through the OTRS. Data collected from the e-learning platform – Moodle U.Porto – and other digital tools were also analysed.

The analysis of the support requests through the analysis grid contributes to making the necessary adjustments to the ET unit action strategy during COVID-19 at the level of training topics to offer, production of technical materials (tutorials, documentation, online courses, etc.) and improvement of internal (between technical teams' staff) and external (teachers and students with technical staff) communication channels.

The main conclusions of this study allow to understand the importance of technical and pedagogical support teams concerning educational technologies, offer suggestions on how to qualify teachers and students to the use of e-learning systems and digital tools and raise some questions that need to be thought and defined by HEI decision-makers, policy-makers, teachers, technical and infrastructure teams if we want to be successfully acquainted for the use of digital learning environments without compromised the education process and the students learning path.

Keywords: COVID-19; digital learning environments; e-learning; online learning; technical support; educational technologies; MOODLE.

1 INTRODUCTION

Since 1998 the University of Porto (U.Porto), through the Educational Technologies (ET) unit, has in its mission the support to Teaching & Learning (T&L) processes through digital tools, fostering the sharing of good practices, training actions and support for the development of audiovisual media resources for pedagogical activities [10].

After the first lockdown in Portugal, March 12th 2020, to better respond to the needs of its academic community, the ET unit, working from home, adapted many of its support methods: moved all training to webinar format, increased the number of video tutorials and made available a virtual agenda for scheduling personalized meetings for technical and pedagogical consultancy (Calendly).

In addition to these new support strategies, the contact via the Ticket Request System (OTRS) was intensified and proven to be very valuable for a better understanding of the academic community issues and therefore increase the response efficiency of the team.

The impulse of digital tools as well as the transformation of T&L methods, exposed many institutional gaps both in terms of teaching and in terms of technical and pedagogical support. It became clear that not all teachers and students were prepared for such a sudden change and many Universities were forced to define and intensify strategies to help and enhance e-learning literacy throughout their academic community [6], [7], [12].

In this context, Higher Educational Institutions (HEI) technological staff was mobilised to support the transition to fully online teaching and provided training in e-learning literacy at an unprecedented rate [6]. The pandemic response also involved offering courses to support educators in the adoption of online teaching technologies and strategies to enable the continuation of T&L with reasonable quality [5], [2]. During the COVID-19 pandemic e-learning, seen until then, only as a teaching option, became the main solution for higher education. Teachers were immediately tasked with implemented distance learning modalities, often without sufficient assistance, training or resources.

The lack of digital competencies of teachers and students has been demonstrated both in empirical studies and in practice [1], [6], [8]. This results in a weak capacity to explore new educational tools and apply new methods and technologies in education. On other hand, limited digital skills, resources, and experiences foster creativity, innovation and flexibility in developing effective online learning processes [8]. Studies also suggest that there is a gap in the quality training provided to teachers embarking on online teaching and that quality training provision should be strengthened to prepare to transition to the online [7]. The COVID-19 crisis underlined that both, experienced as well as early career teachers, need to receive training in order to provide them with new teaching methods [12].

It seems clear that academic communities need to be better prepared and supported in an effective transition to distance learning. Educational tools alone cannot guarantee good learning outcomes, it is also important to help teachers to improve their digital skills and those who have the technical knowledge to do this are the support teams in the universities.

2 METHODOLOGY

The research method applied in this study combines quantitative and qualitative approaches. The technique used for data collection was observation using an analysis grid. The construction of the analysis grid was based on the needs expressed by users through the OTRS.

A typology of problems was drawn on the analysis grid – login difficulties; users management; user profile; platform performance; platform operation; forums set up; groups set up; assessment tools; creation of courses; visualizing content; recording videos; integration of Moodle and Panopto; insertion of subtitles; Zoom time limit; insertion of podcast; need of audiovisual resources; similarity report; loading files; others.

The analysis grid allowed the systematic identification of the main difficulties demonstrated by teachers in the use of the tools (Moodle, Panopto, Zoom, Turnitin and others) provided and supported by U.Porto.

Data for this study were collected between March 12th 2020 (first lockdown in Portugal) and March 31st 2021. Other data collected from the e-learning platform (Moodle U.Porto) and other digital tools (Panopto) were also subject to statistical and comparative analysis.

3 RESULTS

The data collected through the analysis grid helped to make some adjustments to the ET unit's action strategy during the COVID-19 period. In this way, the webinars and the production of materials such as tutorials, documentation, and others, reflected the teachers' needs at that moment. The data we present below are the results of these adjustments and the strategy adopted.

3.1 Results of teacher's support during COVID-19

The results are presented first by tool separately, then followed by a comparison of the support requests of all the tools and finally the totals of the support requests. The 6 categories with the highest number of tickets out of a total of 14 categories were selected for Moodle. For Panopto the 4th with the highest number of support requests out of 14 categories were selected. For the remaining tools the data presented is monthly.

3.1.1 Results of Ticket Request System analysis per tool

★ Moodle

Since 1999 U.Porto has a Learning Management System (LMS) available to the academic community. From 2007 till now Moodle is the LMS available to all teachers who wish to introduce an online component to complement their face-to-face courses.

The number of courses registered on Moodle U.Porto (Table 1) increased 62,2% from 2018/2019 until the current academic year (2020/2021). The biggest impact is in the post-lockdown period where the number of new courses has more than doubled. From the 1371 new courses in 2019/2020, 942 were created after the lockdown (March 12th 2020).

Table 1. Courses in Moodle U.Porto.

	2018/2019	2019/2020	2020/2021*
New courses**	597	1371	1090
Total courses	2655	3835	4347

*Data retrieved on March 31st 2021.

**New courses may not be equal to the difference of Total courses from two consecutive years because plans and course codes may vary between years.

From a total of 2558 support requests (tickets) related to Moodle, the main typologies were assessment tools (AT), user's management (UM), integration with Panopto (IP), forums set up (FO), platform operation (PO) and login difficulties (LD).

As we can see in Fig. 1 the months of May (205 tickets, 61% of total (336) Moodle tickets for this month) and June (218 tickets, 78% of total (279) Moodle tickets for this month) were the months with the highest number of support requests for online assessment tools preparation. The months of April 20th and January 21st show similar values (82 tickets, 33% of total (249) Moodle tickets and 81 tickets, 48% of total (170) Moodle tickets, respectively). These two months mark the beginning of the assessment periods of the 2nd semester of the academic year 2019/2020 (April) and the 1st semester of 2020/2021 (January) both during lockdown. In March, when the first lockdown began, there were also significant requests (30 tickets, 12% of total Moodle tickets (248) for this month) for support concerning Panopto integration with Moodle U.Porto and forums (24 tickets, 10% of total Moodle tickets).

In April the number of tickets for help concerning forums (14 tickets, 6% of total Moodle tickets (249) for this month) continued and requests for help relating to the Moodle platform operation (15 tickets, 6% of total Moodle tickets). The requests' support relating to user's management (418 tickets, 16% of total Moodle tickets (2558) for all period under analysis) showed little variation throughout the period under review, although still significant. Difficulties in accessing the platform were also consistently reported almost all the analysis period (205 tickets, 8% of total Moodle tickets for all period).

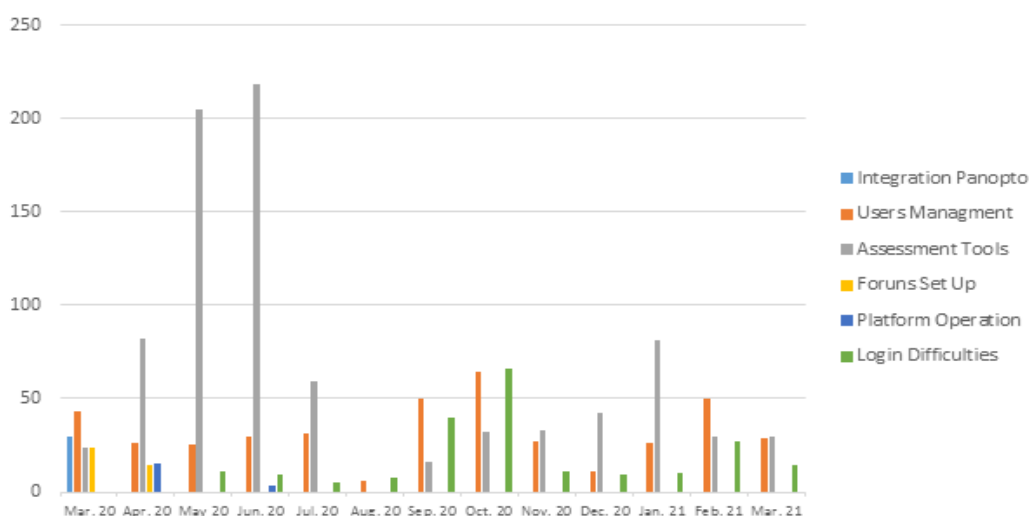


Figure 1. Main teacher's requests for Moodle support.

★ Panopto

Panopto is the tool in use at U.Porto for recording and disseminating videos. Integrated with Moodle U.Porto it can be used to record classes, presentations, screen record and deliver video assignments.

As shown in the Table 2 there has been a marked increase in the use of Panopto between September 1st 2018 and March 11th 2020 (pre-lockdown); and March 12th 2020 and March 31st 2021 (post-lockdown). The number of videos increased from around 1831 to 24059 and the number of hours recorded increased from 1914 to 15419.

Table 2. Evolution of Panopto use.

	September 1 st 2018 to March 11 th 2020 (pre-lockdown)	March 12 th 2020 to March 31 st 2021 (post-lockdown)
Videos	1831	24059
Recorded hours	1 914,45	15 419,62
Views	183 874	1 957
Hours viewed	32 506,47	526 024,28

From a total of 304 support requests (tickets) related to Panopto, the main teacher's support requests (Fig. 2) were related to login difficulties (LD), recording videos (RV), platform operation (PO) and visualizing content (VC). The first three post-lockdown months (March, April and May 2020) are the months with the highest number of support requests. In March 2020 there were 12 requests (15% of Panopto requests (82) for this month) for support related Panopto access, 13 requests (16%) related to recording videos, 10 requests (12%) related to functionality and 7 (9%) related to visualizing contents.

In May there were 11 requests (17% of Panopto requests (64) for this month) related to access 8 (13%) related to recording videos; 12 (19%) related to functionality and 12 (19%) related to visualizing contents. In May there was a decrease in requests for support of almost 50%, with a more or less constant decrease during the remaining months.

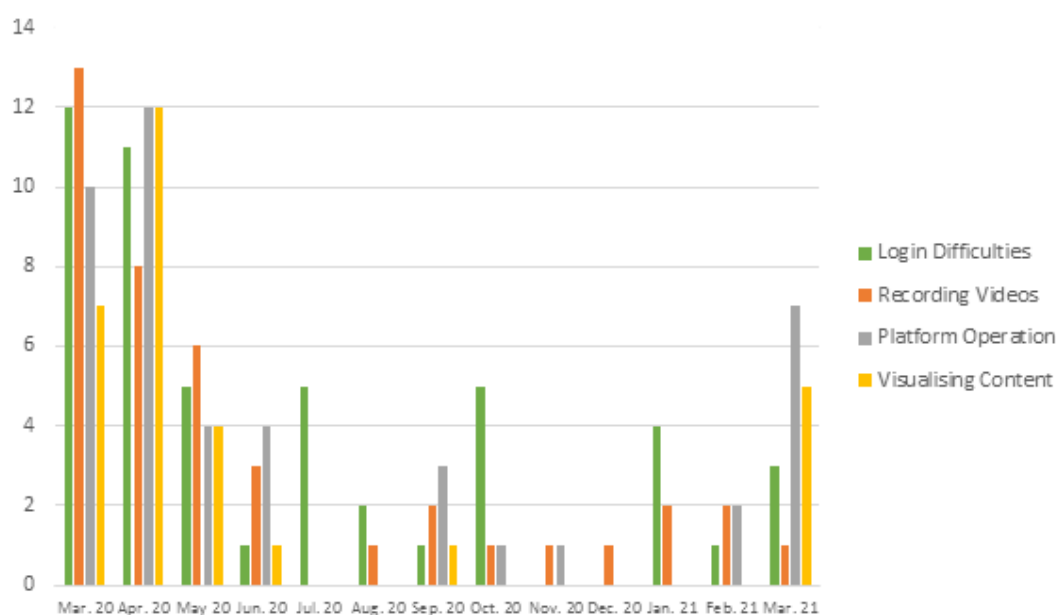


Figure 2. Main teachers' requests for Panopto support.

★ Zoom

Zoom is provided free of charge by *Fundação para a Ciência e a Tecnologia - Fundação para a Computação Científica Nacional (FCT-FCCN)* to public HEI in Portugal and is currently one of the most used videoconferencing tools in the country.

The months with most requests for support (Table 3) were the ones following the lockdown, March (68), April (46), May (28) of 2020 and the months of February (47) and March (18) of 2021.

Table 3. Support requests for Zoom.

	Mar. 2020	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar. 2021
Tickets	69	46	28	11	6	1	11	22	8	2	5	47	18

★ Turnitin

Turnitin is the tool in use at U.Porto for checking the originality of scientific articles and papers based on text comparison and it is integrated with Moodle U.Porto but still can be used stand-alone. The submitted documents are compared with several existing references in Turnitin database (web pages, student articles, magazines, newspapers, publications) and based on the correspondence found a similarity report is generated.

For Turnitin the items under analysis were platform operation (PO) and similarity reports (SR). As for Turnitin tool, there was a greater request for support (Table 4) in the months of April (11), May (18), June (25) of 2020 and March (10) of 2021.

Table 4. Support requests for Turnitin.

	Mar. 2020	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar. 2021
Tickets	2	11	18	25	4	3	4	4	5	5	8	4	10

3.1.2 Comparison of support requests by tool

When comparing the support requests from teachers by tool (Fig. 3), Moodle stands out from other tools as it is the LMS at U.Porto and therefore all the main pedagogical activities are grounded in it. In 2020, the peaks of support requests were in May, during lockdown and assessment period, with 336 tickets, followed by the start of academic year in October with 275 tickets. In 2021, there was a small peak related with the start of 2nd semester, February 2021, with 241 tickets.

Panopto also stands out mainly in March 2020, beginning of lockdown, with 82 tickets, and in August 2020 with 23 tickets. The latter may be related to teachers taking advantage of this holiday month to prepare video lectures for the next academic year.

Zoom support requests were more expressive during lockdown periods, from March 2020, with 68 tickets, followed by the start of academic year in October with 30 tickets. In 2021, there was a small peak related with the start of 2nd semester, February 2021, with 47 tickets.

The peak of support requests concerning Turnitin were in June 2020, with 25 tickets, during the assessment period.

ET unit has also received support requests related to another platform with observed peaks in October 2020 with 30 tickets, January 2021 with 27 tickets, and in March 2021 with 45 tickets.

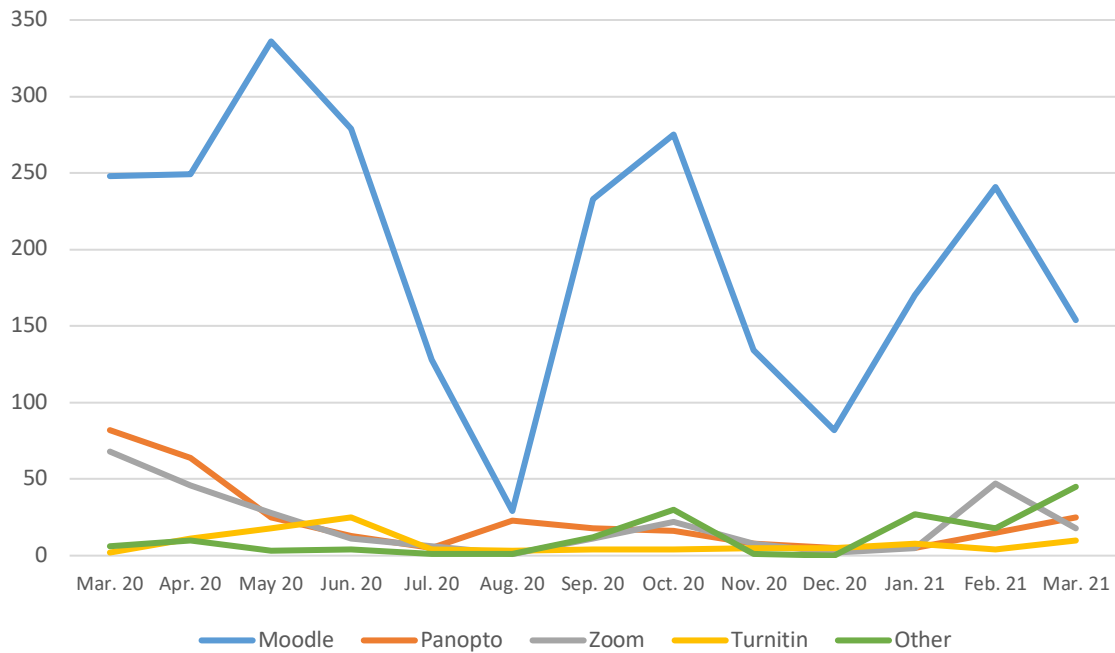


Figure 3. Teachers' support requests by tool.

From the analysis of the total support requests (4561) from March 12th 2020 to March 31st 2021 (Fig. 4), we can conclude that the months that peaked with the highest number of tickets were March, April, May and October 2020 (478, 511, 457 and 497 tickets respectively) and February 2020 and March 2021 (419 and 346 tickets respectively). These totals also include requests regarding other services embraced by the ET unit such as audiovisual resources (321 requests) and some not included in the defined categories (844 requests) such as advice on tools.

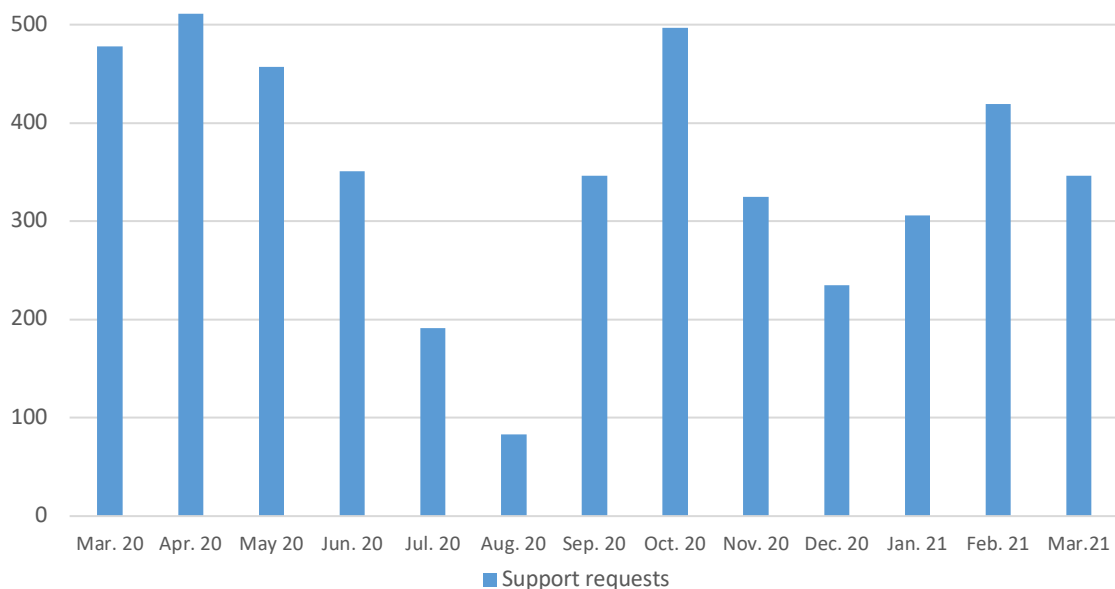


Figure 4. Total support requests between March 12th 2020 and March 31st 2021.

3.2 Results of the support strategy adopted

The strategy implemented by the ET unit to respond to the COVID-19 pandemic consequences on the educational model at U.Porto came as a continuity of the diverse communication channels that already existed in the pre-lockdown moment. In a first instance the main concern was to help those who had never used an online environment, answered with the instant production of a PDF guide that

systematized the tools that were available. This information was sent to all teachers on March 12th 2020 along with information on how to access them. Another concern was that remote work and assistance wouldn't become a barrier in the support processes. For that purpose, some actions took place: production of video tutorials, training actions and individual virtual agenda for personalized meetings with each of the e-learning experts of the team.

First, we will see the results per month of the video tutorials, then the results of the webinars and finally the meetings.

3.2.1 Video tutorials

Anticipating that with the cancellation of face-to-face classes many teachers who did not use digital tools to support T&L would have several difficulties in the transition to an online model, a set of tutorials covering the main tools offered by the University were produced.

The tutorials were produced mainly in the first months of the pandemic crisis in Portugal (Table 5) and addressed different features and actions with respect to the available and recommended tools (Moodle, Panopto, Zoom and Turnitin). There was a total of 65 video tutorials produced to directly respond to the needs identified in the Ticket Request System analysis. These tutorials are publicly available at U.Porto's e-learning portal (<https://elearning.up.pt/ajuda>).

Table 5. Tutorials per month.

	Mar. 2020	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar. 2021
Tutorials	17	28	8	2	0	0	0	6	0	0	2	2	0

3.2.2 Training actions

A training calendar of webinars was designed each month - the first webinars were scheduled as soon as the ET team started remote work - to respond to the immediate and long-term needs of teachers. The webinars were open to the entire U.Porto teaching community and had no limit of participants neither pre-registration.

As can be observed in Table 6, 21 webinars were organized in March 2020, starting March 12th, reflecting the ET's unit rapid and effective response to the lockdown consequences. From March 2020 to March 2021, 6 members of the ET unit conducted 107 webinars, resulting in more than 130 hours of training and 3969 participants.

Table 6. Webinars per month.

	Mar.2020	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar. 2021
Webinars	21	19	25	2	0	0	0	14	7	3	0	16	0

The topics covered in the webinars were diverse but focused on the demonstration of the tools available at U.Porto, trying to always create a connection between the technology (tool) and pedagogy (teaching/learning objectives). Some of the topics covered were:

- Moodle - environment; manage student's groups, communication, assignment tools, assessments tools, students feedback tools, attendance tools and medals.
- Panopto - lecture capture, stream a lecture, manage videos and delivery of student's video assignments.

- Zoom - create and manage synchronous online classes and strategies to engage students in learning during an online synchronous class.
- Turnitin - create and manage assignments, analyze a similarity report and provide feedback.
- Others: flip the classroom, guidelines for recording video from home, online assessment with close and open questions and the use of Microsoft Teams for videoconference.

3.2.3 Virtual agenda for one-to-one meetings (Calendly)

Personalized service through scheduling individual meetings has always been a service provided by the ET unit. With the pandemic and the risks associated with face-to-face contact, followed by the beginning of confinement policies, an immediate decision was made so that the four ET unit staff members responsible for the instructional design and technical knowledge on the digital tools available had an online calendar available for teachers to schedule a virtual meeting.

The support through virtual meetings aimed at helping teachers who were taking their first steps in online environments and to solve specific issues not possible to do or with certain specifications that would make it more complex to clarify by other means such as e-mail (ticket), tutorials or webinars.

By the number of meetings scheduled per month (Table 7), a total of 494 meetings from March 12th 2020 to March 31st 2021, it became instantly clear that this strategy was important and well received by teachers.

Table 7. Virtual meetings per month.

	Mar. 2020	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar. 2021
Meetings	14	77	71	66	22	3	34	42	23	31	25	46	40

4 CONCLUSIONS

The support strategy adopted by the ET unit was elaborated in a concerted way with the needs showed by the users through the Ticket Request System analysis and the team's previous knowledge and experience obtained from the contact with the teaching community. The answer to the academic community was complemented by an instant set of actions - virtual meetings and webinars - and resources production - video tutorials and other documentation, including an online course with guidelines for recording educational videos at home - to mitigate the lack of digital literacy that the COVID-19 crisis has exposed, even in the HEI where digital tools have long been available.

From the data collected we can assume that some phases, the first lockdown when teachers were forced to make the transition from face-to-face classes to online classes, the beginning of the academic year 2020/2021, the 2nd semester of 2020/2021 and all the assessment periods, were the most critical with teachers requesting more support from the ET unit but also the periods when the team intensified the supporting actions.

Regarding the acquisition of competencies to teach in an online environment and use digital tools in distance education context, although some data suggest that teachers are more comfortable using the platform and using the tools more autonomously in the 1st and beginning of the 2nd semester of 2021, more data and further studies are necessary to fully understand if this is the case. Some factors may influence the decrease in numbers of requests for support in this period, such as the partial return to face-to-face classes and the possibility in some U.Porto Faculties of being able to assess students in-site.

The efficiency of the teaching support strategy adopted, whether or not in COVID-19, is closely related with top-down decisions taken by HEI decision-makers and policy-makers. The University of Porto has 14 different Faculties with autonomy in the implementation of central guidelines which can be very challenging from the support team point of view demanding a flexible, creative and holistic approach to support.

As a final remark and in addition to the importance of any support strategy adopted by an institution, we would like to point out the importance of the existence of differentiated teams with educational

technologies background expertise. This background is an added value when supporting teachers since it allows a better adaptation of digital tools to different pedagogical contexts.

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