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LECTURERS' ATTITUDE TOWARDS THE USE OF E-LEARNING TOOLS IN HIGHER EDUCATION: A CASE OF PORTUGAL

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ABSTRACT

This study aims to assess the lecturers' opinions about the use of e-learning tools to support distance and blended learning in higher education in Portugal, evidently reinforced by the COVID-19 pandemic. This research was based on a qualitative methodology, specifically, a focus group with professors from five higher education institutions from different geographical areas in Portugal. The obtained results were analysed along four main dimensions: (1) the level of knowledge of e-learning tools, (2) the reasons for using or (3) not using them, and, finally, (4) the opinion of lecturers on the student assessment process using these tools. The results showed that in addition to the concerns with smooth running classes and the appropriate delivery of the syllabus, the lecturers considered the transition to the e-learning context to have been easy. They noted a high level of literacy in the used tools, believed in the continued use of e-learning in the post-pandemic context, indicated several advantages for those involved in the e-learning context and a majority of limitations related to the time required for the adoption of more tools; and, finally, underlined the student assessment issue, which was pointed out as the most sensitive topic in the whole e-learning context. The study informed on the lecturers' perspective on e-learning and the used tools and provided insight into their perceived usefulness and benefits for lecturers and students. An especially strong concern was verified on the part of lecturers to optimise e-learning tools to provide better knowledge delivery to students.

KEY WORDS

education, communication, educational technologies, e-learning tools

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INTRODUCTION

Although some studies are available on the adoption of e-learning tools in higher education, all of them are focused on a specific institution and different limitations and perspectives (Regueras et al.,

2009; King & Boyatt, 2015; Valencia-Arias et al., 2019; Alkhawaja & Abd, 2019; Eze, 2020; Yamoah & ul Haque, 2022). Moreover, most of them investigate the students' but not the lecturers' perspectives on using the tools (Phutela & Dwivedi, 2020; Ho et al., 2020; Rehman et al., 2022; Al Rawashdeh et al., 2021; Almajali et al., 2021; Ejdays & Szpilko, 2021).

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Therefore, this study explored the lecturers' points of view.

Considering the research objectives, the study used the most relevant qualitative methodology, a focus group. From the initial stage, it was based on four specific investigated objectives: the level of lecturers' knowledge about existing e-learning tools; the perceived advantages and reasons for using them; the advantages and disadvantages of using e-learning tools; and, finally, the perspective of participating lecturers on the student assessment process and tools in e-learning.

The research objectives aligned with some unexplored points within studies on the same topic. Also, they were used for the focus group debate to learn the lecturer's opinions on the use of e-learning tools in the context of distance learning in Portugal, necessitated by the pandemic.

Throughout the research, the lecturers' opinions on the topic were facilitated and encouraged in the definition and application phases of the methodology, i.e., in the focus group. This research format was chosen to ensure as substantiated analysis of the results as possible and to draw lessons effectively in line with the statements given by the participating lecturers.

The article is divided into the following parts: first, a literature review focuses on various e-learning topics to be analysed; then, a detailed explanation and justification are given for the chosen research methodology; next, for the analysis and conclusions, research results are divided into four broad objectives and presented in writing and visually; and, finally, the conclusions are summarised and discussed, indicating perspectives for future studies on this research topic.

1. LITERATURE REVIEW

Before analysing the application of e-learning tools in higher education in Portugal, it is important to understand them and their advantages for teaching, as well as the main concerns in their development and application.

Nowadays, it is increasingly important to develop tools that keep up with digital transformations and user requirements, which are changing faster and more drastically (Costa et al., 2021; Rodrigues et al., 2021). Besides usability as a primary objective, software developers have offered e-learning tools with well-defined pedagogical strategies (Garcia et al.,

2022) and integrated training for students and lecturers, state-of-the-art technologies aligned with user expectations, continuous performance evaluation for students and the learning platform, various support to students and, finally, the pleasant design and appearance of the tools (Eneterio et al., 2020; Ayu, 2020).

Based on Aljawarneh et al. (2010), e-learning tools have taken a leading role in teaching delivery in the 21st century as it significantly reduces education costs and is much more efficient and effective than traditional teaching at its genesis. The authors listed five advantages of adopting e-learning tools: more proactive teaching; more diversified forms of teaching; greater attention and achievement of students; less time for lectures, and visual stimulation of classes and content. Also, they listed four disadvantages of the use of e-learning tools: equipment and hardware failures; the greater need for training and recovery plans in case of problems; anxiety caused by over-expository lectures; and the time spent learning new technologies and the skills needed to use them (Aljawarneh et al., 2010). According to another study on e-learning effectiveness conducted among higher education students, e-learning has such advantages as speediness, the economy in terms of time and financial costs, suitability for independent work, added value to teaching from the learner's perspective, usability for more proactive teaching; responsiveness to different needs, applicability outside the classroom, and the overall satisfactory quality of e-learning, indicating its effectiveness (Ali et al., 2018). This study aimed to verify if the same conclusions were true in Portugal from the lecturers' perspective.

The identification of these advantages and disadvantages by other authors is extremely relevant for this study on the Portuguese reality, allowing to verify if the problems vary from country to country (Sebelempofu, 2020). According to Reddy (2015), the opportunities for developed and developing countries are somewhat similar, yet difficulties may vary a lot since, in developing countries, the constraints go far beyond the lack of motivation and proactivity of the involved actors, also noting the difficulties added by lacking technological infrastructure and incentives from governments to introduce such solutions in education. This important issue should also be investigated for a possibility to later verify if the advantages and difficulties in Portugal align with other countries implementing policies on e-learning tools in higher education. Higher education has been going through a gradual transition towards e-learning over the years.

According to Magano et al. (2008) in 2008, Portuguese higher education had overcome the initial traditionalist fears and mistrust of this distance learning method. Then, the authors considered that e-learning had already been seen as a valid means to overcome existing problems and enhance the teaching and learning quality in Portugal (Magano et al., 2008). This reality has become more evident in Portuguese higher education, especially during the COVID-19 pandemic, which required the adoption of strategies and responses to ensure the best possible transmission of knowledge (Pokhrel & Chhetri, 2021). This study also focused on this dimension to verify whether the e-learning context has evolved, considering, e.g., the preconceptions of 2008 about the e-learning framework.

The research environment in the studied area is still undeveloped, which explains why this article not only presents the lecturers' perspective but also elucidates on the Portuguese teaching context through qualitative analysis. These two factors are the main distinctive elements of the study. Until now, some studies have been conducted from the perspective of students regarding e-learning in Portuguese higher education. Remote and online e-learning is considered a more personalised and appropriate knowledge transmission format tailored to the needs of each student (Mamede, 2014). E-learning can also be defined as the use of technologies providing a wider range of solutions to problems associated with knowledge transmission. E-learning also supports the rising idea of flexible learning, which allows lecturers and students to personalise teaching and knowledge transmission and/or reception depending on the case (Kumar Basak et al., 2018). Besides these types of studies, many more specific case studies have been performed, several of which are related to Universidade Aberta in Portugal, an institution which mostly operates using an e-learning format. Based on some of the studies, the institution faced several problems regarding the lecturers' attitudes. According to Pereira et al. (2012), adequate training and necessary support were provided to all lecturers so that this type of teaching could be developed in the entire institution. Such cases are interesting due to the possibility of comparing whether the difficulties encountered by Universidade Aberta lecturers are similar to those currently felt. In preparation for this study, lecturers from several institutions in the country were interviewed, so it is pertinent to compare the difficulties faced by them and their institutions and the problems that existed at Universidade Aberta

during its transition since 2006 (Pereira et al., 2012) to verify if there is any difference related to the time gap.

In addition, other studies focused on specific geographical areas and teaching sectors. Baber (2021) presented a case study of South Korea defining the acceptance of e-learning during the COVID-19 pandemic. Based on the conclusion, the interaction was the main critical success factor in this teaching context, and the main initiator's role in such interaction must be taken by the teacher in charge and not the students (Baber, 2021). Irfan et al. (2020) studied a specific case of difficulties experienced in the transition from classroom teaching to e-learning in Indonesia. The study was focused on the teaching of mathematics and various associated sub-areas. The author indicated several constraints experienced by teachers in this transition, such as the lack of interaction with students, the barriers in the computerised use of mathematical symbols, and limited computer knowledge and content presentation skills as the teachers continued applying the models used in face-to-face settings which, evidently, were not suitable in an e-learning context (Irfan et al., 2020). Although such studies address areas different to those presented in this study, they allow for a comparison with other realities to understand if e-learning brought globalisation or polarity in the transmission of knowledge in the pandemic context.

The analysis of other literature reviews on the research subject allowed identifying some of the main study areas in the context of e-learning enhanced by the COVID-19 pandemic, i.e., the difficulties in adjusting the needs and desires of teachers to those of students, difficulties in connecting to devices and communication networks, less control over issues related to mental health, and the lack of necessary resources associated with the transmission and acquisition of academic knowledge (Zethembe, 2020). The author also indicated insufficient scientific research on these issues and their respective short and long-term consequences for e-learning in higher education (Zethembe, 2020). The study described in this article aims to fulfil these research needs and to deepen the understanding of how the situation in Portuguese higher education compares to other countries.

Although most students preferred teaching in an e-learning context, it is important to look at the teachers' perspectives and the difficulties they experienced in this context. According to Kulikowski et al. (2022), the teachers' motivation and performance suffered because of job characteristics, which conse-

quently may have implications for the overall teaching performance. This “forced” e-learning adoption may have caused practically incorrigible impacts on the teachers’ opinions about this teaching context since many insufficient preparation cases could have jeopardised the adoption or the continuity of the use of the e-learning tools. Kulikowski et al. further suggested dividing the consequences of forced e-learning into two major tracks, one that understands the consequences derived from COVID-19 and the other that understands the major consequences that were motivated by the implementation and execution of e-learning (Kulikowski et al., 2022).

This division of consequences is essential for the analysis as it may demonstrate the paradigm verified by teachers in each of these two strands instead of just understanding the general opinion of teachers without any breakdown of the obtained results.

2. RESEARCH METHODS

The methodology used was a focus group with a sample of lecturers working in public higher education (universities or polytechnic schools) and representing different teaching and geographical areas to achieve a more holistic perspective on lecturers’ attitudes towards using e-learning tools. Participants were selected and invited based on the network of contacts of different researchers engaged in this study.

No exhaustive list of tools was created to ensure that lecturers mention the most-used e-learning tools and to encourage the discussion. Instead, all participants were asked to openly state the e-learning tools

used during teaching by distance or face-to-face modes. A more open study of knowledge and familiarity with new tools created a climate of knowledge transmission between participants of the focus group.

Since this study involved the personal perspectives of each teacher, no pre-established metrics were used to avoid limiting the opinions. However, perspectives given in the focus group and the analysis were always directed towards studied objectives to refrain from digressing too far into other topics.

Table 1 contains the list of participants providing their names, scientific area, educational institution, and a code assigned by the research team. In the following sections, whenever participants are mentioned in the conclusions drawn, they will be referred to by these codes.

Considering the nature of the studied subject, a qualitative approach was chosen to achieve a more comprehensive response and enhance the sharing of ideas. Following this methodological approach justification, a focus group was selected because it best meets the two premises.

Since the focus group can be used in various contexts, such as exploring new and examining existing areas of research or even exploring new areas that may arise from the methodology application (Wilkinson, 1998), the flow of information analysis is highly relevant.

The focus group was held on 10 March 2022 for approximately 1 hour and 30 minutes. The moderator asked the participants for permission to record the session to follow the sequence presented in Fig. 1. The results analysis and the focus group followed a spe-

Tab. 1. Focus group participants (n = 5)

NAME OF LECTURER	SCIENTIFIC AREA	HIGHER EDUCATION INSTITUTION	CODE
Ângela Silva	Logistics	Polytechnic Institute of Viana do Castelo	P1IPVC
Célio Marques	Information and Communication Technologies	Polytechnic Institute of Tomar	P2IPT
Samuel Mateus	Communication Sciences	University of Madeira	P3UMa
André Souto	Mathematics	University of Lisbon	P4UL
Tiago Pinho	Industrial Engineering and Management	Setúbal Polytechnic Institute	P5IPS

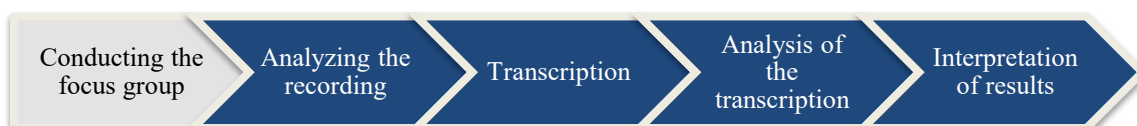


Fig. 1. Focus group analysis process

cific approach aimed at receiving and understanding the lecturers' perspectives. The topics analysed and the ideas derived from them, in terms of content, were used in the research as qualitative methods open to discussion. Direct participants' quotes stated during the focus group were used to support different objectives of the analysis (Jones et al., 2005).

The four major objectives outlined to respond to the methodology's application were: (1) the participant's level of knowledge of different e-learning tools and the freedom given by the institutions to choose them, which aimed to understand the reality felt in different scientific and geographical areas when inserted in the same teaching context; (2) the main advantages and (3) the main disadvantages associated with the use of these tools, aiming to understand the participants' opinions (positive or negative) the regarding their use to aid in the knowledge transmission; and (4) the lecturers' opinions on the assessment in the context of e-learning, previously identified as a critical factor and to be confirmed or rejected in this study and, most importantly, in the application of this methodology.

3. RESEARCH RESULTS

The focus group began with an introductory discussion to assess how the transition from traditional face-to-face teaching to distance learning occurred starting in March 2020 during the spread of the SARS-CoV-2 virus.

The introductory discussion revealed that many represented institutions were prepared for the change. They provided training, equipment, constant monitoring and psychological support for students and lecturers. Despite all the efforts, the participants also emphasised some difficulties in this transition, mainly due to the lack of interactivity and the refusal of many lecturers to work remotely due to the belief that this method did not guarantee the required equity. In conclusion, despite some restrictions particular to this format of classes/assessments, positive results were achieved because higher education institutions were prepared, which made the transition quick, easy, and quite enjoyable. This reality highlighted the great responsiveness of higher education institutions in Portugal throughout this process.

The participants also showed great responsiveness to this context and were satisfied with the use of distance learning support tools, even stating that they continue to use them daily.

P5IPS — “I think it went well; now it's our daily life, so to speak!”

3.1. LEVEL OF KNOWLEDGE OF E-LEARNING TOOLS

After addressing the introductory topic, the research moved on to its first major dimension, aimed at measuring the degree of participants' knowledge of e-learning tools and the freedom given by their educational institutions to choose the tools. It was found that the focus group participants had complete freedom to choose the tools; however, the institutions made recommendations, i.e., mainly Zoom¹, Moodle², traditional e-mail³ and Microsoft Teams⁴ and in some instances, Fenix⁵, BigBlueButton⁶ and Exame.net⁷. The training was provided for lecturers on certain previously used tools, namely Moodle. It provided knowledge for more optimised assessments and introduced lecturers to earlier undiscovered and unexplored features. In addition to the tools licensed by educational institutions, other tools were used to streamline the course of the classes, such as Kahoot⁸. After measuring the participants' level of knowledge about these types of tools, the discussion delved into functionalities considered having an added value during lessons and necessary for their use within different teaching areas. Two participants defended the non-use of many tools; however, the remaining participants considered the use of more tools and methodologies as a way to increase the interaction lost in this remote teaching regime. Therefore, it was considered that such tools as Mentimeter⁹, Zoom simultaneous rooms, ScreenCasts¹⁰, Quizizz¹¹, Sway¹², Podcast¹³, Google Forms¹⁴, Microsoft Forms¹⁵, URKUND¹⁶, etc., could promote interaction with

¹ Zoom — videoconferencing tool.

² Moodle — sharing documentation.

³ E-mail — interpersonal communication.

⁴ Microsoft Teams — videoconferencing and documentation sharing tool.

⁵ Fenix — internal information system.

⁶ BigBlueButton — video conferencing tool.

⁷ Exame.net — assessment control.

⁸ Kahoot — interaction through questionnaires.

⁹ Mentimeter — interaction through questionnaires.

¹⁰ ScreenCasts — asynchronous teaching by sharing content via a screen.

¹¹ Quizizz — interaction through questionnaires.

¹² Sway — content presentation tool.

¹³ Podcast — asynchronous teaching by sharing content through audio recordings.

¹⁴ Google Forms — interaction through questionnaires.

¹⁵ Microsoft Forms — interaction through questionnaires.

¹⁶ URKUND — plagiarism detection tool.

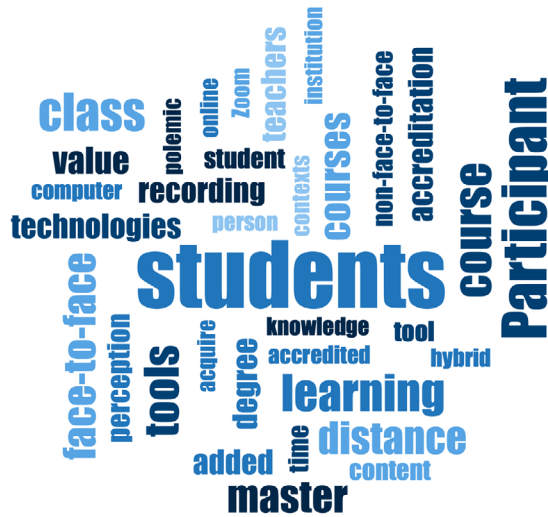


Fig. 3. Word cloud of the second dimension

Source: elaborated by the authors using the MAXQDA 2022 software.

e-learning tools. This topic revealed more divergence among the participants.

One participant believed that the tools brought practically no added value to students, as they remained quite discouraged due to the remote format of classes, even with various tools at their disposal. The institution of this particular participant prioritised face-to-face teaching, making no massive investment in technological tools and equipment to support e-learning.

P3UMa — “There is a limitation of the technologies to be used, whether it is at the hardware level in the rooms (...), whether it is at the level of imitation software, there is no interactivity on the boards or anything that allows it.”

Other participants mentioned several yet very different advantages of the use of e-learning tools in this same context.

While some participants saw advantages for students, who seemed more motivated and energised in this context, others indicated benefits related to the ease of working with students, meeting them after work and scheduling individual tutoring sessions and even arranging meetings with companies connected to the educational institutions. The participants indicated that the tools allowed for a simplified and more practical day-to-day running of the classes and interaction with stakeholders involved in higher education.

The second view was based on the premise that higher education students are digital natives, perceiving e-learning tools as extremely beneficial in general and to lessons in particular. The supporters of this view also argued they were using the tools because they were considered the best by students. They saw effective advantages in the use of the tools, and if students wanted other types of methodologies, they would have also been used to ensure student satisfaction with the e-learning process.

P2IPT — “I’ve been using a lot of digital tools because I think that’s what the students want, but if the students wanted something else, I would use it because I have to achieve my goal.”

The word cloud model allowed for the verification of lecturers’ concern regarding the focus on students and the smooth running of classes, as can be seen from the terminology most used by the participants in this category (Fig. 3). Also, some most frequently used terminology evaluated the use of distance learning support tools as good and creating “added value” in meeting the objectives and adapting methodologies.

3.3. MAIN DISADVANTAGES AND REASONS FOR NOT USING E-LEARNING TOOLS

While it makes sense to study the advantages of using e-learning tools, it also makes sense to study the main disadvantages and/or reasons for not using some of the available solutions.

Some factors causing the non-use of tools were perceived; however, the participants mostly mentioned the lack of time to master them, the practicality and ease in finding the contents by students, insufficient adequate training regarding the existing technologies and choosing the best in each situation/context of the classes taught by the participants’ strong financial constraints throughout higher education for the acquisition of licenses, cameras, interactive whiteboards and computers, the need to adapt the material to be taught remotely, and the lack of time to autonomously learn about tools and their use.

Participants gave a range of reasons for not using certain tools in the e-learning context. One indicated not using more tools because it was impossible to use them all, and trying to do so would run the risk of losing focus on teaching and knowl-



Fig. 4. Word cloud of the third dimension

Source: elaborated by the authors using the MAXQDA 2022 software.

edge transmission. Therefore, the participant felt forced to analyse and choose the tools best suited for the lecturer's and syllabus' objectives.

Although different reasons were given, all participants strongly advocated for the lack of available time to master the tools perfectly and to increase the practicality of students' cognitive process through simplicity.

P5IPS — “I would maintain here, as a fundamental point, the objective need to achieve certain goals in various contexts. The amount of time that lecturers have to spend to be able to master the tool is also relevant.”

As the cloud of words for the third dimension verifies, the term “tools” clearly stands out, once again showing a great interest in mastering the platforms to contribute to the smooth running of classes and transmission of the greatest degree of knowledge and information to students in this remote teaching context (Fig. 4).

3.4. GENERAL OPINION ABOUT ASSESSMENT IN THE E-LEARNING CONTEXT

After studying different perspectives on dimensions concerning the environment and the context of used e-learning tools, the study moved to address the lecturers' views on student assessment since this was one of the most sensitive and least successful issues in the context of remote classes.

In this dimension, the answers were very similar, indicating the aspect as the least successful area due to numerous fraud cases and the unreliability of students' academic results. Some situations were defended by the participants as more sensible for remote rather than face-to-face assessments; however, they underlined the necessity to guarantee some equity in the results, i.e., performing oral tests and using other methods of substantiating the performance obtained in the different moments of assessment.

In addition to this practically unanimous perception of the assessment in remote learning contexts, one participant was an exception. As a lecturer in the archipelago of Madeira, he could always perform assessments in a face-to-face setting due to different regulations compared to mainland Portugal. The participant also pointed out the possibility of continuing assessments face-to-face, even in the context of remotely taught classes. Practically all lecturers in this educational institution chose to use this assessment method already implemented in a face-to-face setting because they considered it filled the gaps previously exposed in the study of this dimension.

Although the participants believed that assessment was the least successful accomplishment of e-learning tools, a concern was raised that no assessment method is 100 % reliable and that all means must be validated to achieve greater equity in results.

P2IPT — “I'll start by saying that there is no 100 % reliable instrument, whether it's online or face-to-face.”

As this last dimension delved into student assessment in remote teaching, the most frequently used terms were related to students, the assessment and the maintenance of equity among them, also reflecting the need to adapt the strategies to ensure greater accuracy of remote testing (Fig. 5).

CONCLUSIONS

To draw more centralised and schematic conclusions about the studied topic, the research team considered it important to present the dimensions and different perspectives provided by the focus group participants in their different responses (Table 2).



Fig. 5. Word cloud of the fourth dimension
Source: elaborated by the authors using the MAXQDA 2022 software.

The summary of data and the analysis of the lecturers' perspectives on the use of e-learning tools allowed for a conclusion that the main objective of the remote teaching process was to ensure the transmission of knowledge in line with the expectations and needs of students.

Several different views were offered regarding the greater or smaller number of tools to be used during classes, considering the demands and limitations of each teaching area and/or represented higher education institution.

Besides a very comprehensive set of answers, the focus group as a research methodology allowed for a continuous sharing of knowledge and for obtaining broad results for each of the pre-established dimensions, which was extremely necessary for the analysis of the topic with such an intrinsic component for each participant.

The main considerations, besides the concern with the smooth and appropriate delivery of the syllabus, were very much focused on an easy transition to the remote learning context, the literacy of a fairly broad level of e-learning tools and the continuity of their use in a post-pandemic context, several advantages for specific cases and those involved in the remote learning context, limited time for the adoption of more e-learning tools; and the assessment as the most sensitive point in the whole remote learning process.

Despite fairly divided opinions on some of the studied dimensions, it was possible to verify high technological literacy and extensive preparation by participants and represented higher education institutions. It was possible to verify the enormous capacity demonstrated by the lecturers throughout this process to adapt and work towards the success of students.

P5IPS — “This context somehow also forced us to do some technological updates in certain solutions that were a little older.”

P3UMa — “I believe that with technologies, we are the ones who adapt to them and not the other way around.”

Nearly all the participants were concerned with adapting methodologies to the context in which they were required to teach and used several digital e-learning tools as a current form of work, both in teaching and professional terms.

As verified, higher education institutions also had a preponderant role in the success as they had to provide training, licenses, and the best possibilities for remote classes from the perspective of the lecturers in this case.

This case study in Portugal verified some of the earlier pointed-out difficulties (Kulikowski et al., 2022) faced by teachers. It was possible to verify the consequences of this forced adoption of e-learning in Portugal, motivated by the COVID-19 pandemic. In most cases, teachers continue to use tools even though they are no longer mandatory but are effectively seen as having added value. Therefore, in this case study, the consequences for teachers in Portugal were not as much derived from the sudden and forced implementation of e-learning but rather from the pandemic context that was experienced and the implication this had on the physical and mental health of teachers.

P2IPT — “It seems to me that students, as digital natives, are more linked to technologies than to other types of methodologies, such as chalk and blackboard.”

P2IPT — “It was far from what distance learning is, but for remote learning, it was amazing!”

The limitations of this paper are based on two major points. The first limitation is the sample used since not all higher education institutions in Portugal were represented, and each of them had only one representative. The second major limitation is the

Tab. 2. Synthesising the answers by dimension

POINT UNDER STUDY	FIRST PERSPECTIVE	SUPPORTERS OF THE FIRST PERSPECTIVE	SECOND PERSPECTIVE	SUPPORTERS OF THE SECOND-PERSPECTIVE
How was the transition to remote teaching	Simple, fast, and prepared transfer	P2IPT P3UMa P4UL P5IPS	Fast change, but not very easy	P1PVC
Level of knowledge of remote teaching tools	Freedom of choice; great knowledge of tools; use of a wide range of tools; many of them continue to be used in the post-pandemic context	P1PVC P2IPT P5IPS	Not using many tools; discontinuity of the use in the post-pandemic context	P3UMa P4UL
Reasons why lecturers use this type of tools	Advantages for students and others; scheduling of tutoring sessions; added value for students by meeting their needs and wants	P1PVC P2IPT P4UL P5IPS	No added value for the students and a lot of demotivation	P3UMa
Reasons why lecturers do not use some tools	Lack of time and availability; optimise convenience for students; the lack of proper training in some cases; the lack of funding to purchase hardware and software	P1PVC P2IPT P3UMa P4UL P5IPS	-	-
General opinion about assessment in the remote teaching context	Most problematic point in this context; the lack of equity in results; the need to complement them with other forms of assessment	P1PVC P2IPT P4UL P5IPS	Always performed face-to-face assessments because it was possible in the archipelago	P3UMa

focus on one country only, which represents the specific reality of lecturers in a specific country. This may prevent generalising the results to some other countries with a greater or lesser impact of the COVID-19 pandemic on the national education system. Therefore, there should be adapted and in-depth studies of the realities of other countries.

Future studies on this research topic should include two major subjects. The first should seek to understand the students' attitudes towards the use of e-learning tools in the context of higher education in Portugal. This study would disclose student opinions, showing both sides of the same coin. Also, this would show the connection between the arguments used and verified by teachers, students and educational institutions regarding the tools that greatly impacted Portuguese higher education.

The second topic should be devoted to studying the reality of other countries. Although the study focused on the opinions of Portuguese teachers regarding the use of e-learning tools, it would be important and interesting to adapt and perform the

study in other countries to compare different higher education institutions and experiences of teachers in using these tools, aiming to ascertain the existence of a pattern for the adoption and acceptance in different countries.

LITERATURE

- Al Rawashdeh, A. Z., Mohammed, E. Y., Al Arab, A. R., Alara, M., & Al-Rawashdeh, B. (2021). Advantages and disadvantages of using e-learning in university education: Analyzing students' perspectives. *Electronic Journal of e-Learning*, 19(3), 107-117.
- Ali, M., Hossain, S. K., & Ahmed, T. (2018). Effectiveness of E-Learning for University Students: Evidence from Bangladesh. *Asian Journal of Empirical Research*, 8(10), 352-360. doi: 10.18488/journal.1007/2018.8.10/1007.10.352.360
- Aljawarneh, S., Muhsin, Z., Nsour, A., Alkhateeb, F., & AlMaghayreh, E. (2010). *e-Learning Tools and Technologies in Education. A Perspective*. LINC Proceedings.
- Alkhawaja, M. I., & Abd Halim, M. S. B. (2019). Challenges of e-learning system adoption in Jordan higher edu-

- cation. *International Journal of Academic Research in Business and Social Sciences*, 9(9), 487-494.
- Almajali, D., Al-Okaily, M., Barakat, S., Al-Zegaier, H., & Dahalin, Z. M. (2022). Students' perceptions of the sustainability of distance learning systems in the post-COVID-19: a qualitative perspective. *Sustainability*, 14(12), 7353.
- Ayu, M. (2020). Online Learning: Leading e-Learning at Higher Education. *The Journal of English Literacy Education: The Teaching and Learning of English as a Foreign Language*, 7(1), 47-54. doi: 10.36706/jele.v7i1.11515
- Baber, H. (2021). Modelling the acceptance of e-learning during the pandemic of COVID-19-A study of South Korea. *International Journal of Management Education*, 19(2), 100503. doi: 10.1016/j.ijme.2021.100503
- Costa, C. R., Garcia, J. E., Serra da Fonseca, M. J., & Teixeira, A. (2021). Data Analysis in Content Marketing Strategies. *16th Iberian Conference on Information Systems and Technologies (CISTI)*, Chaves, Portugal, 1-6. doi: 10.23919/cisti52073.2021.9476377
- Ejdys, J., & Szpilko, D. (2021). Teachers' Perception of e-learning on the Example of Białystok University of Technology. *Przegląd Organizacji*, 9(980), 27-39. 10.33141/po.2021.9.04
- Eneterio, N. da P., Major, C. R., Oliveira, E., Rolindo, J., Freitas, M., Ferreira, M., Abreu, S., & Morais, T. (2020). O E-Learning Como Ferramenta Estratégica Na Pandemia Covid-19. *Anais do Seminário de Atualização de Práticas Docentes*, 163-167. Retrieved from <http://45.4.96.34/index.php/praticasdocentes/article/view/5742>
- Eze, S. C., Chinedu-Eze, V. C., Okike, C. K., & Bello, A. O. (2020). Factors influencing the use of e-learning facilities by students in a private Higher Education Institution (HEI) in a developing economy. *Humanities and social sciences communications*, 7(1), 133.
- Garcia, J. E., Rodrigues, P., Simões, J., & Serra da Fonseca, M. J. (2022). Gamification Strategies for Social Media. In J. Remondes, & S. Teixeira (Eds.), *Implementing Automation Initiatives in Companies to Create Better-Connected Experiences* (pp. 137-159). IGI Global. doi: 10.4018/978-1-6684-5538-8.ch007
- Ho, N. T. T., Sivapalan, S., Pham, H. H., Nguyen, L. T. M., Pham, A. T. V., & Dinh, H. V. (2021). Students' adoption of e-learning in emergency situation: the case of a Vietnamese university during COVID-19. *Interactive Technology and Smart Education*, 18(2), 246-269. doi: 10.1108/ITSE-08-2020-0164
- Irfan, M., Kusumaningrum, B., Yulia, Y., & Widodo, S. A. (2020). Challenges During the Pandemic: Use of E. Learning in Mathematics Learning in Higher Education. *Infinity Journal*, 9(2), 147. doi: 10.22460/infinity.v9i2.p147-158
- Jones, A. Q., Dewey, C. E., Doré, K., Majowicz, S. E., McEwen, S. A., Waltner-Toews, D., Henson, S. J., & Mathews, E. (2005). Public perception of drinking water from private water supplies: Focus group analyses. *BMC Public Health*, 5, 1-12. doi: 10.1186/1471-2458-5-129
- King, E., & Boyatt, R. (2015). Exploring factors that influence adoption of e-learning within higher education. *British Journal of Educational Technology*, 46(6), 1272-1280.
- Kulikowski, K., Przytuła, S., & Sułkowski, Ł. (2022). E-learning? Never again! On the unintended consequences of COVID-19 forced e-learning on academic teacher motivational job characteristics. *Higher Education Quarterly*, 76(1), 174-189.
- Kumar Basak, S., Wotto, M., & Bélanger, P. (2018). E-learning, M-learning and D-learning: Conceptual definition and comparative analysis. *E-Learning and Digital Media*, 15(4), 191-216. doi: 10.1177/2042-753018785180
- Magano, J., Castro, A. V., & Carvalho, C. V. (2008). O e-Learning no Ensino Superior: um caso de estudo. *Educação, Formação & Tecnologia*, 1(1), 79-92.
- Mamede, S. M. P. (2014). Comportamento do consumidor digital: o caso do e-learning nas licenciaturas do ensino superior português. Retrieved from <http://search.ebscohost.com/login.aspx?direct=true&site=eds-live&db=edsrca&AN=rcaap.openAccess.10400.22.5454>
- Pereira, A., Quintas-Mendes, A., & Morgado, L. (2012). Educação on-line no Ensino Superior: um programa de doutoramento em educação a distância e e-learning na Universidade Aberta (Portugal). *Revista Teias*, 13, 313-333.
- Phutela, N., & Dwivedi, S. (2020). A qualitative study of students' perspective on e-learning adoption in India. *Journal of Applied Research in Higher Education*, 12(4), 545-559. doi: 10.1108/JARHE-02-2019-0041
- Pokhrel, S., & Chhetri, R. (2021). A Literature Review on Impact of COVID-19 Pandemic on Teaching and Learning. *Higher Education for the Future*, 8(1), 133-141. doi: 10.1177/2347631120983481
- Regueras, L. M., Verdu, E., Munoz, M. F., Perez, M. A., De Castro, J. P., & Verdu, M. J. (2009). Effects of competitive e-learning tools on higher education students: A case study. *IEEE Transactions on Education*, 52(2), 279-285.
- Rehman, M. A., Soroya, S. H., Abbas, Z., Mirza, F., & Mahmood, K. (2021). Understanding the challenges of e-learning during the global pandemic emergency: the students' perspective. *Quality Assurance in Education*, 29(2/3), 259-276. doi: 10.1108/QAE-02-2021-0025
- Rodrigues, M. I., Fonseca, M. J., & Garcia, J. E. (2022). The Use of CRM in Marketing and Communication Strategies in Portuguese Non-Profit Organizations. In J. Andrade, & T. Ruão (Eds.), *Navigating Digital Communication and Challenges for Organizations* (pp. 223-244). IGI Global. doi: 10.4018/978-1-7998-9790-3.ch013
- Sebele-Mpofu, F. Y. (2020). Saturation controversy in qualitative research: Complexities and underlying assumptions. A literature review. *Congent Social Sciences*, 6(1). doi: 10.1080/23311886.2020.1838706
- Sree Reddy, B. (2015). Challenges and Opportunity of E-Learning in Developed and Developing Countries-A Review. *International Journal of Emerging Research in Management & Technology*, 46, 2278-9359.

- Valencia-Arias, A., Chalela-Naffah, S., & Bermúdez-Hernández, J. (2019). A proposed model of e-learning tools acceptance among university students in developing countries. *Education and Information Technologies*, 24(2), 1057-1071.
- Wilkinson, S. (1998). Focus group methodology: A review. *International Journal of Social Research Methodology*, 1(3), 181-203. doi: 10.1080/13645579.1998.10846874
- Yamoah, F. A. ., & ul Haque, A. . (2022). Strategic Management Through Digital Platforms for Remote Working in the Higher Education Industry During and After the COVID-19 Pandemic. *Forum Scientiae Oeconomia*, 10(2), 111-128. doi: 10.23762/FSO_VOL10_NO2_6
- Zethembe, M. (2020). A Literature Review of E-Learning and E-Teaching in the Era of Covid-19 Pandemic. *International Journal of Innovative Science and Research Technology*, 5(10), 588-597.