

Online Teaching During Pandemic In Portugal: University Teachers' Perspective And Consequences

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ARTICLE INFO ABSTRACT

The COVID-19 pandemic has become a critical challenge for the higher education sector worldwide. Under such a circumstance, the exploration of the capacity of this sector to adapt to such a state of uncertainty has become more of huge importance. In this investigation, we critically reflect on the Portuguese teaching experience during the early COVID-19 lockdown in this country. This is an exploratory study based on a qualitative approach with an aim to reflect about new practices of teaching under a pandemic emergency. Based on the teaching experience in Portugal, we explore the evaluation process conducted throughout the pandemic period in Portugal, namely, the perspectives that teachers have about the online learning method, the challenges arising from online teaching, and, in fact, what evaluation methods were used during the pandemic period, and related implications.

These conclusions point to the fact that teachers had a fairly good experience with online teaching during the pandemic, although they struggle with interaction and socialization problems with that regime. Furthermore, teacher tend to reject clearly the fact that online teaching will take over presential learning, thus the interaction between students and teacher is extremely difficult to manage. Furthermore, this study points out the fact that professors clearly prefer presential evaluation systems, although younger and less experienced professors tend to be more flexible, and that evaluation methods that teachers tend to value more online are written tests and exercises as well as group and individual work presentations.

Keywords: On-line Teaching, Pandemic, Evaluation Systems

Introduction

Online teaching has been adopted increasingly in the past two decades, where online learning has been the most common delivery method across the world during the covid-19 pandemic (Martin et al., 2020). The online learning has been adopted due to it's flexibility and openness (Wang, 2022; Zawacki-Richter & Naidu, 2016). Online teaching has been described as "conducting a course partially or entirely through the internet- either on the web or by way of mobile apps that allow one to maintain the online course element." (Ko & Rossen, 2017, P. 3). This sudden transition has created an urgency in the usage of the teachers' digital skills (Van der Spoel et al., 2020). Teachers' digital skills do not only include the widely used smartboards or PowerPoint, but the actual integration of technology supported teaching for pedagogical purposes is another expected level (Van der Spoel et al., 2020).

In (2015) Wang and Torrisi-Steele mentioned the importance of using critical theory perspective to empower educators in an online setting it will help reforming the teaching practices to the online teaching setting through the adjustments of roles teaching practices experiences and expectations. Moreover, Wang and Torrisi-Steele (2015) mentioned that although the rapid development of technologies for online teaching, online teaching has remained in the traditional content delivery, rather than promoting a deep learning experience. Online platforms were mainly used to the access of the educational materials and nothing further. Whereas in 2020, there was higher dependence on the entire setting to transform the whole teaching process into an online teaching experience. Where it was required from educators to deliver their courses online and utilize all the online facilities. Accordingly, it is important for the exploration of the educative experience during this time. In 2020 associated with the pandemic; online teaching has become a reality (Dhawan, 2020; Hoq, 2020; Wu, 2021). Hence educators have shifted to online teaching for the continuation of the educational process.

Subsequently, educators have to adapt to the change they have faced (James & Derrick, 2020, Elbawab, 2022). Therefore, researchers have called for the development of more studies to address online teaching in educational institutions (Flores et al., 2022), therefore this research is mainly exploring online teaching in universities during the pandemic.

This sudden change to online teaching includes opportunities to reshape education, teachers and even institutions (Van der Spoel et al., 2020; Flores 2020). Researchers explored the online teaching experience from the teacher's perspective in China example (Tsegay et al., 2022). In this study, the authors are exploring the case of Portugal. Few studies have been developed in Portugal discussing online teaching, however, these studies mainly measured the students' perceptions (Flores et al., 2022; Gonçalves et al., 2020). Other researchers have focused on preschool to secondary teachers' perceptions in schools (Seabra et al., 2021). In a qualitative study developed on students and university teachers in Portugal, the authors advised that online teaching during the covid-19 provided an opportunity to renew teaching and learning in higher education institutions (Vale et al., 2023). Accordingly, this study will focus on exploring the teacher's perspective regarding not only the teaching experience but also the most suitable learning practices in the Portuguese context. Moreover, this study is exploring what were the challenges that teachers have faced. This is considered a gap since few researchers addressed this gap. And finally, this research is going to focus on identifying the evaluation methods used by teachers during the pandemic period.

2. Literature Review

2.1 Experience of teachers

During the occurrence of the pandemic, education was one of the sectors that had a critical change. As the Portuguese universities decided to transform the learning from presential to e-learning. Due to the lockdown constraints and the serious regulations acquired. Therefore, online teaching was the solution in Portugal and worldwide for helping in the continuity of the learning processes in universities (Basilaia, 2020).

For further exploring online teaching, the teachers' experience in an online context is important to be addressed. As the learning process occurs in a two-way communication between the teacher and the student. Since (Tsegay et al., 2022) have focused on the student perspective, this study will focus on the teacher's perspective. Even though traditional pedagogical technologies such as PowerPoint and smart boards are widely accepted (Van der Spoel et al., 2020), still creating an online environment that leads to strong online teaching is another direction that needs to be improved (Van der Spoel et al., 2020). The formulation of a good online teaching experience and also a positive online learning experience requires training to be delivered to the teachers. Whereas focusing on professionalism enhances the online teaching experience (Van der Spoel et al., 2020). Therefore, exploring the teacher's experience during the pandemic in the online setting is the first goal of this study to understand their experience and develop better learning and teaching experiences. Accordingly, our first research question is:

RQ 1: What are the experiences of teachers in online teaching during the pandemic?

2.2 Challenges of online teaching

After exploring the experience of the teachers in the online learning setting, the researchers started to explore the advantages and the disadvantages of online teaching from the perspective of the educators in the universities. In a previous study developed by (Gonçalves et al. 2020) proposed the importance of understanding the advantages and disadvantages of online learning in the Portuguese context. The literature has shown several advantages of online learning including the easiness of learning anytime and anywhere, reducing the time needed for the commute to the university on a daily basis (Almahsees et al. 2021; Gonçalves et al. 2020; Collison et al. 2000). As for the disadvantages of the online learning, the literature has identified several disadvantages including technical issues, lack of interaction among the teachers and the students and the lack of training on the online platforms (Gautam, 2020; Almahsees et al. 2021). Also, the lack of training shouldn't only include the usage of the online platform efficiently, but also the most suitable pedagogies and teaching methodologies.

Moreover, the previous literature has highlighted several challenges in the online learning over the years. The challenges that faced the students include less communication between the students and teachers, demotivation of the students, lack of technological skills, lack of resources for example computers and the availability of strong internet connection (Gonçalves et al. 2020; Collison et al. 2000). As for the teachers' side, online teaching challenges have been mentioned as an increase in time consumption as the teacher spends a long time preparing the online materials (Gonçalves et al. 2020; Collison et al. 2000), also the lack of work-life balance since the teachers have high workload (Adedoyin and Sokan, 2020; Almahsees et al. 2021), lack of technological skills, lack of resources for example computers and the availability of strong internet connection (Almahsees et al. 2021; Gonçalves et al. 2020; Collison et al. 2000). Tanis (2020) advised that online teaching can be overwhelming and very time consuming, subsequently Tanis (2020) proposed that new faculty should be offered to reduce the teaching loads to enable them to transition to the demands of online learning.

Since the challenges are variable and will help in improving the online learning process and few empirical studies have assessed the challenges of online teaching in the universities during the pandemic. Hence the authors have concluded that they need to explore the following research question:

RQ2: what are the challenges of online teaching?**2.3 Evaluation methods of the online teaching**

Online courses have special characteristics as their evaluation methods call for the adoption of specific procedures to assess both the learning process and the student performance (Benigno and Trentin, 2000), hence in this section, we will start exploring the evaluation methods that could be used with online teaching.

Previous researchers have mentioned previously that the online evaluation methods that are used include online individual work, online group work and online tests (Gonçalves et al. 2020).

Normally the assessment methods of any course in the university depend on the learning objectives of the course, the objectives of the department, and also the program. When it comes to online settings, the evaluation methods should align with the pedagogical objectives of the course, the department and the program. Conrad and Openo (2018) added that also the belief system of the faculty members regarding designing the online course is considered when developing an online course.

Several assessment approaches are used in the online courses such as traditional approaches like online tests and quizzes, or authentic assessment methods like group work, online journals and e-portfolio (Martin et al., 2019; Flores et al., 2022). Some authors proposed the importance of using diverse methods and combining both traditional methods and authentic assessment methods as they have an impact on satisfaction (Sun et al., 2008; Martin et al., 2019).

The usage of online assessment like group work, requires appropriate attention from both the students and the teacher's as a peer and instructor feedback cycle with several checkpoints of assessment throughout the cycle. Online faculty and researchers are concerned with the quality and integrity of online assessments (Wang and Chen, 2017), therefore faculty and researchers used online evaluation methods, and everyday there are new technological advancements in this area (for example learning analytics) (Nyland et al., 2017). Hence the following research question arises:

RQ3: What are the evaluation methods used for the online teaching ?**3. Materials, Method and Sample**

In order to accomplish the objectives, set for this exploratory investigation a survey was conducted in order for university teachers share their opinions and experiences regarding the evaluation methods held during the pandemic period.

Such survey was destined to university teachers, online, and was organized in 4 different areas: (i) Information about the respondent, (ii) perspectives they have about online teaching, (iii) challenges arising from online teaching and (iv) evaluation methods and implications used during the pandemic period.

As result, 188 valid responses have been considered valid, and thus subject to this empirical study, on a total of 188 responses received. As for that, we verified that a portion of 27% of respondents were not happy with the online teaching experience, which implies that we considered a portion of 73% verify the characteristics of reveling a fairly good experience with online teaching.

The sample size is adequate to the universe in study – Portugal - having in mind a total of around 38.000 active Phd Professors in this region¹. As to calculate the minimum sample size for 95% confidence level for such study,

$$n = \frac{pq}{\frac{D^2}{Z_a^2} + \frac{pq}{N}}$$

Being:

n the sample size;

$Z_{\alpha/2}$ the critical value that corresponds to the desired degree of confidence (1,96);

p the proportion of the population that verifies the characteristic under study (73%);

q the proportion of the population that does not verify the characteristic under study, i.e. (1-p = 27%); and

D the margin of error or maximum estimation error that identifies the maximum difference between the sample mean (\bar{X}) and the true population mean (6,5%).

For the data collected we calculate a relevant sample of 179 answers, thus the sample size obtained is adequate and relevant for the purposes of the study carried out.

¹ Source/Entidades: DGEEC/ME-MCTES, PORDATA. Last update: 2022-09-22

The questionnaire issued questioned the answering teachers their level of agreement and opinion according to a 5 level Lickert Scale. We find this methodology is adequate for the article purposes as it is often used to measure respondents' attitudes by asking the extent to which respondents agree or disagree with a particular question or statement. According to Reis *et al.* (2019), the instrument used is adequate to evaluate the opinion or acceptance degree of a certain issue under evaluation.

Over such descriptive analysis, independence testing was conducted in order to evaluation the impact of some variables and age, or hierarchical position in the subjects under investigation. SPSS statistical software was used for data analysis.

4 Data analysis

4.1 Sample Description

The sample obtained of 188 respondents, may be classified as follows, in terms of (i) Gender, (ii) Age, (iii) professional category and (iv) teaching experience.

Gender

The sample collected is as follows:

Table 1 - Gender

		Frequency	Percentage	Valid	Cumulative Percentage
Válido	Female	56	29,8	29,8	29,8
	Male	132	70,2	70,2	100,0
	Total	188	100,0	100,0	

As shown, the sample is composed mainly of man (70,2%), being the female proportion of 29,8%.

Age

Regarding the age of the respondents, the sample is composed as follows:

Table 2 - Age

		Frequency	Percentage	Valid	Cumulative Percentage
Válido	Betw. 32 and 42 y/o	48	25,5	25,5	25,5
	Betw 42 and 52 y/o	68	36,2	36,2	61,7
	Betw 52 and 62 y/o	60	31,9	31,9	93,6
	Mora than 62 y/o	12	6,4	6,4	100,0
	Total	188	100,0	100,0	

Considering intervals of 10 years from 32 years old, 93,6% of respondents show an age below 62 years old.

Professional Category

Regarding the professional category, the sample obtained follows the table below:

Table 3 – Professional Category

		Frequency	Percentage	Valid	Cumulative Percentage
Válido	Assistant Professor	144	76,6	76,6	76,6
	Associate Professor	32	17,0	17,0	93,6
	Full Professor	12	6,4	6,4	100,0
	Total	188	100,0	100,0	

The obtained sample shows fairly the regular composition of the professors in a university in terms of professional level, as graduate professors total 23,4% of the total respondents.

Teaching Experience

In terms of teaching experience measured in years, the sample obtained is as follows:

Table 4 - Teaching Experience

		Frequency	Percentage	Valid	Cumulative Percentage
Válido	Under 2 years	8	4,3	4,3	4,3
	Btw 2 and 5 years	16	8,5	8,5	12,8
	Btw 5 and 8 years	28	14,9	14,9	27,7
	Btw 8 and 11 years	4	2,1	2,1	29,8
	Btw 11 and 14 years	16	8,5	8,5	38,3
	More than 14 years	116	61,7	61,7	100,0
	Total	188	100,0	100,0	

The large majority of respondents show a significant teaching experience above 14 years (61,7%), which allows a more robust and experienced scenario about the questionnaire applied.

4.2. Data Analysis

We will develop the descriptive and independence analysis in the following points, in respect to each of the variables studied in this article.

4.2.1 Perspectives about online teaching

On a first instance respondents were asked to share their experience regarding online teaching during the pandemic period. The answers given were as follows:

Table 5 - Experience About Online Teaching

		Frequency	Percentage	Valid	Cumulative Percentage
Válido	Insufficient	8	4,3	4,3	4,3
	Reasonable	44	23,4	23,4	27,7
	Good	80	42,6	42,6	70,3
	Very good	40	21,3	21,3	91,5
	Excellent	16	8,5	8,5	100,0
	Total	188	100,0	100,0	

The answers show a clear tendency to a fairly good experience regarding online teaching experience. This shows that extremely bad or excellent levels of experience are residual within the respondents (central answer tendency).

One could think that this profile of answers could be somehow related to age of teaching experience levels of respondent professors. Therefore, independence testing was conducted in order to evaluate whether such variables influence or not the level experienced by teacher with on line teaching.

Table 6 - Age Vs Experience Online

		EXPERIENCE ONLINE TEACHING				
		Insufficient	Reason.	Good	Very good	Excellent
AGE	Btw 32 and 42 y/o	0	4	28	12	4
	Btw 42 and 52 y/o	4	24	20	16	4
	Btw 52 and 62 y/o	4	16	24	8	8
	More than 62 y/o	0	0	8	4	0
Total		8	44	80	40	16

The statistics of the Pearson Chi Square test were as follows:

Table 7 – Chi Square Testing Age vs Experience

	Statistic Value	df	Significance
Chi Square de Pearson	29,232 ^a	12	,004
Razão de verossimilhança	36,182	12	,000
Valid	188		

Thus we may conclude that the level of experience held with online experience depend on the age of the professors.

Furthermore, having in mind that such variable is dependent of age, we investigated also if it could somehow depend on the experience (years of experience) level of the professors. The testing show:

Table 8 - Teaching Experience Vs Experience Online

		EXPERIENCE ONLINE					Total
		Insuffic.	Reason.	Good	Very good	Excelent	
TEACHING EXPERIENCE	Under 2 years	0	0	4	0	4	8
	Btw 2 and 5 years	0	0	8	4	4	16
	Btw 5 and 8 years	0	4	16	8	0	28
	Btw 8 and 11 years	0	0	0	4	0	4
	Btw 11 and 14 years	0	8	4	4	0	16
	More than 14 years	8	32	48	20	8	116
Total		8	44	80	40	16	188

Table 9 – Chi Square Testing Teaching Experience vs Online

	Statistics	df	Significance
Chi Square Pearson	63,710 ^a	20	,000
Razão de verossimilhança	63,494	20	,000
Valid	188		

Where, it may be concluded that also the teaching experience influences the evaluation about online teaching, being clear that more experienced teachers may have experienced a lower level of satisfaction with online teaching.

4.2.2 Challenges arising from online teaching

A second vector that it is intended to study within online teaching during the pandemic is how professors evaluate the strong and weak points of such learning method, as the main challenges that also arise from online teaching.

In order to approach this issue, it was questioned to respondents what would be the weaknesses and strength of online teaching. Results obtained were as follows:

Table 10 - Weak Points of Online Teaching

		Frequency	Percentage	Valid	Cumulative Percentage
Válido	No integration and socialization with students and teachers	104	55,3	55,3	55,3
	Online evaluation	44	23,4	23,4	78,7
	Time spent with PC	32	17,0	17,0	95,8
	Manage timings	4	2,1	2,1	97,9
	Other	4	2,1	2,1	100,0
	Total	188	100,0	100,0	

It is very clear that socialization and integration of amongst teachers and students is undoubtedly the major problem identified by professors (55,3% of answers) and also it is very clear that the evaluation process may arise as a problem for a significant part of teachers (23,4%).

Regarding the strong aspects of online teaching, the answers were as follows:

Table 11 - Strong Points of Online Teaching

		Frequency	Percentage	Valid	Cumulative Percentage
Válido	No travelling time wasted	88	46,8	46,8	46,8
	Strong engagement of teachers and students	32	17,0	17,0	63,8
	Easy to Schedule lessons and presentations	28	14,9	14,9	78,7
	Quick adpat from students	28	14,9	14,9	93,6
	Other	12	6,4	6,4	100,0
	Total	188	100,0	100,0	

A very significant concentration on the factor that online teaching saves time on travelling is clearly observed. Also relevant is the strong engagement shown by professors and students due to the pandemic issue.

Regarding the main challenges that arise from online teaching, the answers observed were as follows:

Table 12 – Online Teaching Challenges

		Frequency	Percentage	Valid	Cumulative Percentage
Válido	Manage all interactions btw teachers and students	112	59,6	59,6	59,6
	Info circulation	36	19,1	19,1	78,7
	Platforms capacity	24	12,8	12,8	91,5
	Online community creation	4	2,1	2,1	93,6
	Other	12	6,4	6,4	100,0
	Total	188	100,0	100,0	

Regarding the challenges matter it is verified a clear concentration on the management of all interactions that happen during and after classes, that is, is difficult to teachers to manage all the activities that happen alongside the teaching process (59,6%).

Finally, professors were asked if they believed that online teaching would take over presential teaching process. The results were as follows:

Table 13 – Will Online Teaching Prevail

		Frequency	Percentage	Valid	Cumulative Percentage
Válido	Tottaly agree	4	2,1	2,1	2,1
	Agree	24	12,8	12,8	14,9
	No opinion	40	21,3	21,3	36,2
	Desagree	52	27,7	27,7	63,8
	Totally disagree	68	36,2	36,2	100,0
	Total	188	100,0	100,0	

Regarding this issue it is very clear that teachers do not support the point that online teaching will prevail as the main teaching method (63,9%), and it was only used due to the extraordinary pandemic situation period. Nevertheless, a significant percentage of professors do not have a closed opinion about this issue (21,3%).

4.2.3 Evaluation methods used and implications

On first stance we investigated the professors preferences regarding the evaluation process, in order to understand the level of acceptance on online evaluation. The results were as follows:

Table 14 – Evaluation Method Preference

		Frequency	Percentage	Valid	Cumulative Percentage
Válido	Presential	152	80,9	80,9	80,9
	Online	24	12,8	12,8	93,6
	Other	12	6,4	6,4	100,0
	Total	188	100,0	100,0	

A clear concentration of responses show that professors tend to prefer presential evaluation methods, instead of online methods.

In order to understand if this concentration of results is influenced by any of the characteristics of the sample, independence testing was conducted, being the results the following:

Table 15 - Gender vs Evaluation Method

		EVALUATION METHOD			
		Other	Online	Presential	Total
GENDER	Female	0	4	52	56
	Male	12	20	100	132
Total		12	24	152	188

The statistics results associated to the combination of these two variables came as shown below:

Table 16 - Chi Square – Gender vs Evaluation Method

	Statistics	df	Significance
Chi Square de Pearson	8,488 ^a	2	,014
Razão de verossimilhança	12,080	2	,002
Valid	188		

Thus the independence hypotheses shall be rejected, meaning that gender influences on the evaluation method preference.

Regarding the independence between age and evaluation methods the cross table obtained is shown below:

Table 17 – Age vs Evaluation Method

		EVALUATION METHOD			
		Other	Online	Presential	Total
AGE	Btw 32 and 42 y/o	4	4	40	48
	Btw 42 and 52 y/o	0	16	52	68
	Btw 52 and 62 y/o	8	0	52	60
	Mais de 62 y/o	0	4	8	12
Total		12	24	152	188

Reading the dependence between age and evaluation methods, results show that such variables are dependent, as shown below:

Table 18 - Chi Square Evaluation Method vs Age

	Statistics	df	Significance
Chi Square de Pearson	29,227 ^a	6	,000
Razão de verossimilhança	38,516	6	,000
Valid	188		

Furthermore, it was tested whether the professional category influenced the evaluation method preference. The cross table is as follows:

Table 19 - Category vs Evaluation Method

		EVALUATION METHOD			
		Other	Online	Presential	Total
CATEGORY	Assistant Professor	12	20	112	144
	Associate Professor	0	4	28	32
	Full Professor	0	0	12	12
Total		12	24	152	188

In this case independence between these two variables is accepted as follows.

Table 20 - Chi Square - Evaluation Method vs Category

	Statistics	df	Significance
Chi Square de Pearson	6,230 ^a	4	,183
Razão de verossimilhança	10,449	4	,034
Valid	188		

Finally, it was tested whether teaching experience influenced the evaluation methods adopted by professors. The cross table may be observed below:

Table 21 – Teaching Experience vs Evaluation Method

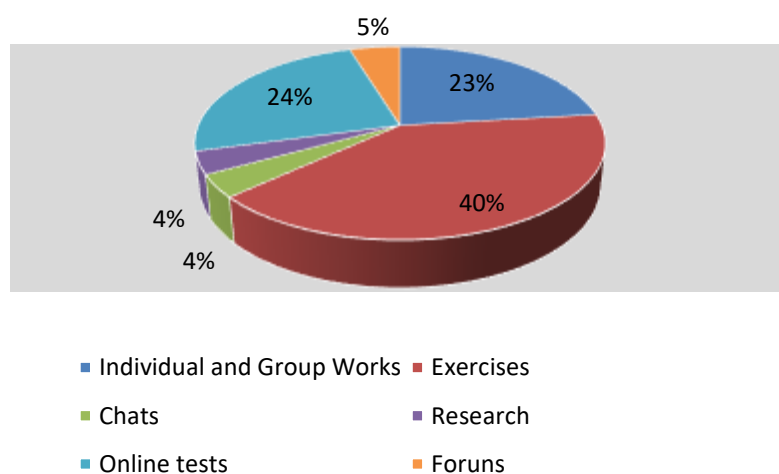
		EVALUATION			Total
		Other	Online	Presential	
TEACHEXPERIENCE	Under 2 years	0	4	4	8
	Btw 2 and 5 years	0	0	16	16
	Btw 5 and 8 years	4	0	24	28
	Btw 8 and 11 years	0	0	4	4
	Btw 11 and 14 years	0	4	12	16
	More than 14 years	8	16	92	116
Total		12	24	152	188

Independence testing show that there is a significant relation between the teaching experience and evaluation method, which is somehow surprising due to the relation between verified regarding the professional category.

Table 22 – Chi Square Learning Experience vs Evaluation Method

	Statistics	df	Significance
Chi Square de Pearson	24,416 ^a	10	,007
Razão de verossimilhança	28,577	10	,001
Valid	188		

Having in mind that there is a clear preference by presential evaluation methods, the questionnaire tried to evaluate what type of online evaluations techniques professors followed in order to mitigate the risks associates to such approach. The results shown below present a situation in which Group works, exercises and online tests play a major roll in the techniques used, rather than research, chats or participation in forums.

Graph 1 - Evaluation Techniques

5. Conclusion and Recommendations

According to the investigation carried out we may conclude that online teaching was well adopted by teachers due the pandemic situation during 2020 and 2021, with a stronger concentration of that fairly good experience in the in younger and less graduated teachers.

Nevertheless, it comes clear that widely it is understood online teaching will not prevail throughout the pandemic times, as its weak points such as socialization problems and evaluation issues overpass the strong points that are mainly the fact that there is no need for travelling and the strong engagement levels revealed from students.

Regarding the evaluation process, it was clearly identified as being one of the main problems on online education. In fact, in this study results point clearly to the fact that teachers rather evaluate their students in a presential model. Regarding this point, we may also conclude that online evaluation is better accepted by younger and less experienced teachers, that use mainly exercises, individual and group works as well as online tests, that is, widening the sources of evaluation, rather than concentrating uniquely on tests.

We may outline from these conclusions, and having in mind that younger and less experienced students seem to be more available to solve the evaluation as a week point of online teaching, that in some time the skepticism still shown will be overpassed as younger teachers and less graduated tend to evolve in that matter. Also, there is a clear tendency to diversify evaluation methods granting a continuous evaluation process as a standard in online teaching. The usage of LMS (Learning Management Systems) is clearly widened, and its increased use is inevitable.

It would be very interesting to widen this research to the students experience and somehow evaluate the degree of coincidence of their opinion in the matters developed in this study, as more relevant information may arise from such an investigation.

6 Conflict of Interest

Authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

7 Author Contributions

All authors discussed, finalized, and approved the manuscript for publication.

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