Original Research Article

University Students' E-Assessment in the Era of COVID-19 through the Eyes of Undergraduates: A Qualitative Research

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Abstract

Amidst the corona-virus pandemic, universities around the globe had to switch the provision mode of higher-level education and students' assessment from face-to-face to online ones, without adequate preparation. Given this new educational reality, this study set out to explore undergraduate Greek students' points of view regarding the computer-based assessment that was implemented at their university Department under the covid-19 circumstances. Twenty-nine learners were purposefully and voluntarily recruited to participate in the research. Data were collected using as a research tool the spontaneous texts written by the students, while qualitative content analysis was used for the data analysis. Overall, findings indicated that most of the participated students were in disfavor with the computer-based assessment, stating mainly the disadvantages that this process entailed. As the most cited drawbacks, these were found to be the technical problems that used to arise, followed by the inadequate time assessees had for their assessment as well as the students' concerns about academic integrity. Still, most students found their experience with the computer-based assessment conducted unique and weird. While these findings do not support previous research, they are fully discussed in terms of their implications in the article.
Keywords: Online assessment, e-assessment, computer-based assessment, e-learning in higher education, COVID-19, undergraduate students, qualitative content analysis.

1. INTRODUCTION

Almost two years ago, no one could ever imagine what would follow. But the pandemic of coronavirus broke out suddenly and, since then, it has dramatically transformed people's lives worldwide in all aspects. One such aspect is educational reality generally and specifically this in Higher Education Institutions (HEIs). Almost up until March 2020, the provision of education by universities entailed predominantly face-to-face teaching and assessment conducted in classrooms. However, it was that time when most educational institutions, not only in Europe but all around the globe, had to close and switch to e-learning and e-assessment in the context of governments' initiatives to prevent the spread of the pandemic (Almusharraf & Khakro, 2020, p. 246; European University Association [E.U.A.], 2020, pp. 3-

4; OECD, 2005, pp. 2-3; Sharadgah & Sa' di, 2020, pp. 756-757).

Given this emergent domination of online learning in HEIs or the provision of emergency remote learning (E.U.A., 2020, p. 4)- as it has more correctly been characterized, the issue has captured researchers' attention. Thus, more and more research findings, which concern the majority non-European educational environments, are now being presented that indicate mainly the challenges having accompanied online learning in general during coronavirus (e.g., Adedoyin & Soykan, 2020; Almusharraf & Khahro, 2020; Mahyoob, 2020), as well as students' experiences, satisfaction, and perceptions regarding the e-learning being carried out in the pandemic (e.g., Bączek, Zagańczyk- Bączek, Szpringer, Jaroszyński, &

Wozakowska-Kaplon, 2021; Giray, 2021; Ramirez-Correa, Arenas-Gaitán, & Rondan-Cataluña, 2015).

Despite this emergent trend in the literature, a literature review reveals that e-assessment in HE and particularly students' perceptions about it have not received analogous attention by scholars (Dermo, 2009, p. 203; Kocdar, Karadeniz, Peytcheva-Forsyth, & Stoeva, 2018, p. 222; Sorensen, 2013, p. 174). This gap comes as a surprise since the role of assessment and assessees' views on it are critical to student learning (Struyven, Dochy, & Janssens, 2005, p. 325), while assessment in online environments raises multiple and various concerns (Rolim & Isaias, 2018, p. 4) and entails distinct challenges (Kearns, 2012, p. 198). In addition, e-assessment deserves to stand as a research objective of its own for the following reasons: a) there is a suspicion among members of the academic community about whether online education has a pedagogic value (Gibson & Blackwell, 2007, p. 1; OECD, 2005, pp. 1-5), b) the delivery of, and the registration for, online courses provided by HEIs' generally -and specifically by those of Europe- have significantly increased lately, and more augmentation is anticipated for years to come (Gaebel, Kupriyanova, Morais, & Colucci, 2014, p. 10; Guangul, Suhail, Khalit, & Khidhir, 2020, p. 521).

Considering the above, this study seeks to explore university students' views on their e-assessment during the corona-virus pandemic. The specific research question that was sought to be answered is the following:

How do undergraduate students evaluate e-assessment practices having been adopted in their university as a solution for the restriction of the coronavirus spread?

Understanding the students' perspective on this issue will help universities obtain feedback for improving their online learning in the future. Furthermore, this study addresses researchers' calls from our country for more studies of e-learning in Greece to be carried out (Stampoltzi, Giannoulas, & Kalamatianos, 2019, p. 140), where the literature is still scant about the pedagogical issues in tertiary education (Manthou, 2009, p. 84).

2. LITERATURE REVIEW

As e-learning denotes the information and communications technology (ICT)'s usage for learning in higher education to be supported and improved (OECD, 2005, p. 2), so e-assessment [1] can broadly be

defined as the assessment that all its stages carried out electronically with the use of ICT (Alruwais, Wills, & Wald, 2018, p. 34; Appiah & van Tonder, 2018, p. 1454). Assessment generally is used here to denote a deliberate and systematic pedagogical procedure aiming at the judgment of students' progression, achievement, and learning outcomes (Kocdar et al., 2018, p. 221; Taratori-Tsalkatidou, 2009, pp. 15-16); while it can be dichotomized to formative and summative assessment in terms of its purposes (Brown & Knight, 2005, pp. 15-16). Whereas formative assessment is based on students' learning level, is interlinked with the teaching process, necessitates the active participation of learners, aims at fostering learning, and occurs before and throughout teaching; summative assessment is criterion-based, takes place at the end of the teaching process, and aims at measuring the students' overall performance for their categorization or their grades (Dixson & Worell, 2016, p. 154; Harlen & James, 1997, pp. 372-373; Taratori-Tsalkatidou, 2009, pp. 65-66). As far as the delivery methods of electronic assessment are concerned, two different types are identified, synchronous and asynchronous. While in the latter assessees download and store assessment assignments on their pc or another electronic device to carry them out whenever and wherever they can; in synchronous e-assessment learners connect with the internet to complete their assignments in real-time, obtaining immediate feedback (Appiah & van Tonder, 2019, n.p.). Although in online assessment the tasks of traditional assessment can be used, such as written exams (Stödberg, 2012, p. 594); the avoidance of conventional assessment practices is encouraged for students to adopt a deep learning approach (Sorensen, 2013, p. 173).

Furthermore, Brink and Lautenbach (2011, p. 503) advocated that computer-based assessment is similar to traditional assessment in its quality criteria, namely its fairness, flexibility, and validity. In a similar vein, Guangul et al., (2020, pp. 524-525) stressed the need for assessment to be reliable, transparent, valid, and invulnerable to technical problems. As for the latter, assessors should cogitate before the process of how to cope with such predicaments. On the other hand, a valid assessment practice indeed measures students' learning progress based on their learning outcomes that are determined, while an assessment is reliable when academic integrity is secured. Moreover, assessors should provide students with adequate and clear-cut guidelines and explanations about the assessment methods used. In that way, students will understand not only how to proceed with the assessment material and procedures but also the assessors' anticipations of them (Guangul et al., 2020, pp. 524-525).

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[1] E-assessment is also named in the literature as computer-assisted assessment, online assessment, and computer-based assessment (Kocdar et al., 2018, p. 222). Therefore, these terms will be used interchangeably in this article.

Generally, it is said that the conduct of assessment with the use of computers began in the 1970s for decreasing the grading workload of human assessors, while the fact that it is accurate and convenient has led to its wide usage in large-scale assessments (e.g., college entrance exams) (Shute & Kim, n.d., n.p.). Apart from its convenience and flexibility since e-assessment is free of commute restrictions, relevant literature suggests that it is advantageous for students in many other aspects. For instance, research findings have shown that electronic assessment boosts students' motivation, increasing in that way their achievement; while the fact that students obtain instant feedback in comparison to traditional paper-pencil tests contributes to the advancement of their learning (Alruwais *et al.*, 2018, p. 35). The latter is considered by several scholars as to e-assessment's key advantage (Rolim & Isaias, 2018, pp. 3-4), which allows students to improve their learning level since they can identify their gaps (Sorensen, 2013, p. 173). Appiah and van Tonder (2019, n.p.) have also added that computer-based activities foster students' autonomous learning and their engagement with activities, as well as online assessment assignments help learners to become more collaborative.

However, electronic assessment is not devoid of drawbacks. Its Achilles' heel is commonly referred to be its vulnerability to higher levels of academic dishonesty (e.g., cheating, plagiarism) due to many reasons, such as learners' proficiency in technology, the non-existence of face-to-face interaction between assessors and assessees, the predicament of spotting misconducts online, or the lack of supervision in e-assessment settings (Dendir & Maxwell, 2020, pp. 1-2; Peterson, 2019, pp. 27-28). This negative characteristic leads assessees into being distrustful of this type of assessment, as well as it leads to negative repercussions regarding the reliability and validity of the procedure (Kocdar et al., 2018, p. 222). However, research findings regarding whether students show more academic misconduct at online assessment versus traditional assessment are mixed (e.g., Cole & Swartz, 2013; Kennedy, Nowak, Raghuraman, Thomas, & Davis, 2000; Krsak, 2007; Lanier, 2006) and still scant (Black, Greaser, & Dawson, 2008, p. 23).

Despite these drawbacks, a commonality in previous research findings is the learners' eagerness to participate in online assessment and their positive stance towards it (Kocdar *et al.*, 2018, p. 221). For example, in the first study conducted in Germany, Küppers and Schroeder (2019, n.p.) found that the participated students, who came from diverse HEIs, wanted to be assessed electronically in parallel with their traditional paper-based exams. The researchers explained this finding by the benefits of e-assessment that students stated in the research, such as the more lifelike and diverse tasks used, or the quicker feedback obtained. However, in the same study, the learners also seemed to be worried about the issues of usability, impartiality, and security; which were stated as the drawbacks of online assessment in addition to the technical problems bringing about the loss of completed tasks. In another study, Kocdar *et al.*, (2018, pp. 224-233) investigated 952 Turkish and Bulgarian students' perceptions on cheating and plagiarism in online assessment, finding that a portion of their participants was worried about such incidents of academic dishonesty and was also distrustful to electronic assessment, although the majority were in favor of it.

3. RESEARCH METHODOLOGY

The starting point for conducting this research was a) the importance of students' views on the issue of their assessment in conjunction with the meager relevant research findings that exist and b) the ascertain course of the corona-virus pandemic. Furthermore, the personal interest of the authors also served as a point of departure for this study.

The main purpose of the research was to explore the views of students studying at the Department of Primary Education of the Democritus University of Thrace regarding the electronic assessment that was applied during their studies amid the pandemic. Given that the research purpose was explorative, written text was chosen as the most suitable -in our opinion- research tool since this tool is beneficial to capture honest and unconstrained opinions from the participants (Stravakou, 2019, pp. 76-77; Stravakou & Lozgka, 2018, pp. 111-112; Taratori, 2004a, p. 758 & 2004b, p. 513). Specifically, 29 (23 women and 6 men) undergraduate students, who were in the fourth semester of their studies, were asked for an hour to freely write down their thoughts and opinions about the issue under-study. This study began at the beginning of the spring semester of the academic year 2020-2021, when the participants were purposefully recruited with convenience sampling to voluntarily participate in the research (Patton, 1990, pp. 169-183). The participated undergraduate students had already been assessed once with an on-site assessment at their university Department and three times with the online assessment held due to coronavirus and, therefore, they could make value judgments by weighting both methods[2].

After gathering the texts, the authors read them multiple times to obtain a deep understanding of their content. Then, qualitative content analysis was applied

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[2] It should be noted here that, according to the official decision of the University's Academic Senate, academic faculty could have chosen between written or oral exams to electronically assess the students (Decision of Senate of the Democritus University of Thrace, 26/42-14-1-2021).

for the data analysis because this method enables the gathered material to be summed up and described in a purposeful -based on the specific research question-, yet systematic manner (Schreier, 2012, pp. 3-9). The qualitative content analysis, which is considered a mixed-method approach that includes both quantitative and qualitative analytical stages, was conducted inductively, through the following steps (Mayring, 2014, pp. 6, 79-87):

1) First, a word, a phrase, and a sentence were selected as the units of coding.
2) Then, each text was analyzed line by line for the relevant units of coding to be identified and subcategories to emerge.
3) Later, the subcategories were grouped to formulate main themes/categories. Each coder, the two authors of the paper, conducted the analysis separately, but at the end of the process they compared their findings and

resolved any disagreements for the intercoder reliability to be ensured (Mayring, 2014, pp. 82-83; Schreier, 2012, p. 174; Taratori, 2004a, p. 758).

4) The total research findings are presented in the next section, where on the one hand the frequency of occurrences of the emerged (sub) categories and on the other hand the interpretation of the final coding system that emerged can be found (Mayring, 2014, p. 83).

4. FINDINGS AND DISCUSSION
4.1 A frequency analysis of the research findings

From the analysis of the undergraduate students' opinions, descriptions, and accounts regarding their e-assessment held by their university Department due to coronavirus, 5 main categories (A1, A2, A3, A4, A5), including subcategories, emerged as such:

Table 1: The main categories emerged

A1.	Characterizations of online assessment
A2.	Preferred assessment types and methods in online assessment
A3.	Disadvantages of, and problems with, the online assessment applied
A4.	Advantages of the online assessment applied
A5.	Students' general stance on online assessment

Excluding the main category of students' general stance (A5) since it emerged after the summarization of each participant's opinions presented

in his/her whole text, the exact references of each of the rest main categories presented above are illustrated in Table 2.

Table 2: The exact references of the main categories emerged

The exact references of the main categories		N	Percent%
A1.	Characterizations of online assessment	24	25%
A2.	Preferred assessment types and methods in online assessment	8	8.3%
A3.	Disadvantages of, and problems with, the online assessment applied	55	57.3%
A4.	Advantages with the online assessment applied	9	9.4%
Total		**96**	**100%**

According to Table 2., in the first rank, gathering almost half of the total participants' accounts, came the category regarding the drawbacks of e-assessment and the problems that the participated students found when they had to be assessed online (A3). Second, with 24 accounts, came the category concerns the characterizations that the participated learners used to describe e-assessment (A1); while the students made only a few references about the benefits of online assessment (A4) as well as the assessment

types and methods they preferred for their e-assessment (A2).

It can be seen from the data in Table 2. that there is a considerable discrepancy between the participants' accounts concerning the advantages and the disadvantages of e-assessment, which comes with no surprise, since most of the participants had a negative stance about their e-assessment and only 1 student demonstrated a clear positive attitude:

Table 3: The students' general stance on online assessment (A5)

Students' general stance		N	Percent%
1.	Positive	1	3.45%
2.	Negative	16	55.17%
3.	Not stated	12	41.38%
Total		**29**	**100%**

What is striking about the findings presented above in Table 3. is that several participants did not

clearly express their opinion about the issue under-study, but only referred to the benefits and drawbacks

they detected. Since our participants had adequate experience with online assessment, the most plausible explanation for that finding seems to be the undergraduate students' reluctance to freely express their opinion due to their fear of the adverse consequences that this may have had since the first author was also their professor; which seems to be a common phenomenon when undergraduate students are called to assess their professors' teaching, according to a research conducted in Greece (Stravakou, 2015, p. 687).

If we now turn to the specific findings of each main category, the most cited drawback and the problem of e-assessment (A3) were technical issues. Regarding more specifically the latter, many participated students referred to the loss of the internet connection and general the problems arising with the

Internet, the shortage of proficient knowledge and skills that both professors and learners had about ICTs, as well as the mistakes that can be made in the submission of completed answers due to the online platform used, resulting in students' failure in e-exams. After the technical issues, the second most reported problem was the inadequate time that the students had available for their electronic assessment. Several students also stressed that e-assessment fosters the unethical behavior of cheating and heightens the anxiety levels in exams. Lastly, a couple of participants mentioned that, when they were assessed online, they felt lonely and isolated, did not adequately absorb the learning material, took lower grades, and did not take feedback about their achievement because they did not have direct interaction with their professors (Table 4) findings that are against the e-assessment's advantages which are commonly found in the relevant literature:

Table 4: The disadvantages of and problems with the online assessment applied

Disadvantages and problems	N	Percent %
Feelings of loneliness and isolation	3	5.45%
No concentration	1	1.82%
No adequate absorption of the learning material	2	3.64%
High anxiety levels	6	10.90%
Insufficient time to be assessed	13	23.64%
Low academic achievement/lower grades	2	3.64%
Technical issues (problems with the network, shortage of knowledge and skills about the online platform and technical equipment, loss of completed answers)	19	34.55%
Problems with academic integrity (cheating)	7	12.72%
No direct interaction with Professors and no feedback	2	3.64%
Total	**55**	**100%**

Most of the characterizations that the participated students gave for online assessment (A1) were negative, since the adjectives "unprecedented", "weird", "invalid", "unfair", and "biased" predominated in the students' written texts. This finding is reasonable given the fact that most of the participants were not in

favor of the online assessment and referred mainly to the negative characteristics that they found in the process. On the contrary, only the student who was positive about e-assessment characterized the process as *"effective"* (Table 5.):

Table 5: The characterizations found of online assessment (A1)

Characterizations	N	Percent%
Effective	1	4.16%
Complicated and difficult	3	12.5%
Invalid	4	16.67%
Indirect	1	4.17%
Ineffective	2	8.33%
Unprecedented and weird process	5	20.83%
Unreliable	3	12.5%
Unfair and biased	4	16.67%
Uninnovative	1	4.17%
Total	**24**	**100%**

Turning now to the most preferred assessment type for e-assessment (A2), from the participants' points of view, that was oral final exams, which fall into summative assessment; followed by the combination of

final exams and assignments during a semester, which can be regarded as a mix of formative and summative assessment (Table 6).

Table 6: Preferred assessment types and methods for online assessment (A2)

Preferred assessment types and methods	N	Percent%
Oral final exams	4	50%
Oral and written final exams	1	12.5%
Final exams and assignments during a semester	3	37.5%
Total	**8**	**100%**

Lastly, the analysis revealed a large dispersion in the students' opinions (see also Dermo, 2009, p. 210) concerning the benefits of e-assessment, which were expressed mainly by individual participants. Only two participants shared the view that the assessment conducted electronically refreshed the educational process:

Table 7: The advantages with the online assessment applied (A4)

Advantages	N	Percent%
No technical problems	1	11.11%
Refreshment of the educational process	2	22.23%
Enhancing both assessors' and assessees' flexibility	1	11.11%
Implementation of contemporary assessment methods	1	11.11%
Restriction of cheating	1	11.11%
No need to commute	1	11.11%
Less anxiety	1	11.11%
Fast announcement of assessment outcomes (final grades) to students	1	11.11%
Total	**9**	**100%**

Overall, from the quantitative analysis of the research data, the following conclusions can be drawn:

- The variety of the categories emerging from the students' written speech in conjunction with the large number of the total reports accumulated indicate that the issue of e-assessment was of interest and particular concern to the undergraduate students. This conclusion reflects that of Stravakou (2019, p. 77) who has also found that the issue of assessment generally sparked the interest of the undergraduate students who participated in her research and they originated from the same research population as in the present study.
- While a significant number of the undergraduate students participating in the study did not state their clear opinion about e-assessment, most of them were in disfavor with it, stating, therefore, more disadvantages rather than advantages for the issue under study. The most cited disadvantage was the technical problems and issues arising during their assessment in the online environment, followed by the insufficient time that the students had for their assessment. Of particular interest is that several students found the online assessment as a highly stressful process as well as a process that is more vulnerable to cheating. On the contrary, only a couple of students thought of it as a revitalizing alternative to the traditional assessment.
- Still, for most of the students, their experience with computer-based assessment was unique and weird; while some participants characterized it as invalid, unfair, and biased, as well as complicated and difficult.
- Lastly, it was found that the undergraduate students preferred to be electronically assessed mainly with summative assessment by the method of oral final exams.
- These findings serve as a point of departure for the interpretation of the findings, which follows.

4.2 The Interpretation of the Research Findings

The overall findings displayed above correspond with the dimensions used by Dermo (2009, pp. 205-213) for the operationalization of the concept under-study in his quantitative analysis. Dermo's dimensions concern specifically the practical difficulties and advantages of e-assessment, its fairness and reliability compared with traditional assessment, its validity denoting the suitability of assessment tasks for participants' university studies, its security, its affective aspects or in other words students' feelings during the process, and pedagogy, which is the potential effect of e-assessment on university teaching and learning. However, in contrast to Dermo's (2009, p. 211) participants, who were undergraduate students studying in various scientific domains and attended an English university, most of the undergraduate students participating in this study indicated a negative stance generally towards e-assessment. This finding also contradicts the common result of the previous research which has shown that students were willing to be assessed electronically and that they had mainly a positive stance towards e-assessment (Alsadoon, 2017, p. 150; Küppers & Schroeder, 2018, n.p.; Sorensen, 2013, p. 184), as it was stated at the first section of this

article. This discrepancy may be explained by the fact that e-assessment was adopted in Greek universities under the corona-virus circumstances and, as such, the participants' opinions might reflect their feelings on the situation that the pandemic brought about (Camacho-Zuñiga, Pego, Escamilla, & Hosseini, 2021, p. 8). To put it differently, the students' first experience with e-assessment may be inextricably interwoven with the pandemic situation and their new, anxious-inducing, and unique educational reality that they had to conform (Aristovnik, Keržič, Ravšelj, Tomaževič, & Umek, 2020, p. 18). This justification can be further supported by the written text of 1 participant:

"The times and situations we are going through in the last year are difficult, and I could say a little strange. My group was the last that managed to be assessed at least one semester on campus and the other three semesters online. We had experienced the student life in the university up close, going to classes, making friends, hanging out with our fellow students between the breaks of the courses but also outside the university, we took exams at the Department." (Participant 1, female)

As it can be inferred by the last excerpt, before the Covid-19 era student assessment in Greek universities was traditionally held on campus. That is why online assessment was mostly seen by the students as a unique and bizarre experience or quite a complicated process:

"From my point of view, online assessment was something unprecedented and weird, and not something innovative" (Participant 21, female).

According to the Senatorial official decision that regulated the students' e-assessment (Decision of Senate of the Democritus University of Thrace, 26/42-14-1-2021), the latter could have been conducted either with written exams or with oral exams. Regarding this, it comes with no surprise why the methods with which students preferred to be assessed online were final exams with or without written assignments during the semester. These methods are also applied for the traditional face-to-face assessment held at the participants' university Department, according to previous research findings concerning the same education context with this study (Stravakou, 2019, p. 79), and, therefore, these methods are particularly known to the students in this research. However, what is novel here is the students' preference for oral final exams. More specifically, the participants proposed the latter as a method to mitigate the disadvantages that e-assessment exhibits.

And these disadvantages mainly pertained to the technical issues that commonly used to arise, which predominated to the participants' written texts. The students explained analytically that with e-assessment there is always the danger for the internet loss or the system crash, which will consequently lead to the end of their assessment as well as the assessors' and assessees' frustration. As this can happen only to some of the assessees, it will bring about, among others, unfairness; while in that way assessment becomes more difficult. Furthermore, as the students always had this danger of the technical issues in mind every time that they were to be assessed online, they ended up having much more anxiety about the process of e-assessment:

"During these two semesters when I was assessed online, I noticed that my anxiety increased in comparison with face-to-face exams… I felt an unexplained pressure and stress during tests and because of the problems I might have had with the connection" (Participant 2, female)

"Another reason that I would not choose online assessment instead of face-to-face assessment is the technical problems that arise. It is not uncommon to be either an internet problem due to the weather or a breakdown. Also, due to many students, there is a risk of the system overload, because of which access is impossible, and it is not so fair for everyone." (Participant 22, female)

"However, the many connection problems that arise during such exams, more or less upset students and teachers." (Participant 28, male)

"In this way (e-assessment) exams are even more difficult for each student, because at the time of written exams the connection may be lost, and the lesson may be lost"(Participant 12, female)

While the problems that emerge from technical issues are commonly stressed in the literature concerning online assessment as well as they have been mostly advocated by students in other similar studies (Appiah & van Todler, 2019, n.p.; Brink & Lautenbach, 2011, p. 508; Guangul *et al.*, 2020, p. 531), these findings were foreseeable here, given that not only Greek universities but all universities around the globe had not enough time to arrange the change in their educational reality, as they had immediately to switch the mode of learning and teaching from onsite classes to online ones in the context of the corona-virus (Aristovnik *et al.*, 2020, p. 18). However, according to our participants, technical issues also emerged because both professors and learners had insufficient knowledge and skills about ICTs. According to the participants, such deficiencies result in a waste of time in parallel with other difficulties that prevent e-assessment from being implemented smoothly, ultimately complicating the process. The quote below about the students' difficulties is revealing:

"We also waste time typing answers. I write much faster with a pen than with a keyboard. In addition, in an examination with closed-ended questions, the platform displays questions one by one, it had happened to me and other students instead of pressing the button "next" to press the cancellation button, because of

which we missed the lesson. Something that would not have happened in face-to-face traditional assessment." (Participant 10, female)

Apart from the technical issues, the limited time the students had available to develop their thoughts in exams used for the online assessment was evident from their texts that they bothered them a lot. Several students stressed that, due to the little time given, they felt more stressed, they did not have the opportunity to double-check their answers or reflect on them, and, consequently, their achievement was reduced; although some participants saw this as a solution that their professors had found to tackle the e-assessment's vulnerability to cheating:

"Under no circumstances, I don't prefer e-assessment to traditional face-to-face assessment, because most of the time we have had little time for many things we have to do and, therefore, sometimes we answered unconsciously, without having the opportunity to think about it one more time due to time restrictions" (Participant 11, female)

"At the same time, it has to be noted the restricted time given in e-assessment compared to face-to-face assessment since the online exams are unsupervised and this restriction come as a way to secure the trustworthiness of the process" (Participant 22, female)

Considering the above, some participants proposed oral exams as a way for overcoming the repercussions of the restricted time given in online written exams, while they advocated that the oral exams would also address the cheating phenomena to which online assessment is susceptible (see also Guangul *et al.*, 2020, p. 532). More specifically about the latter, several students either expressed only their opinion that cheating is easier in the online environment due to the difficulties in supervision, or they shared such lived experiences, which made some of them characterize the process as *"invalid"*, *"unreliable"*, or *"unfair and biased"*:

"Then, we are faced with the reliability of the process. I'm sure it is easier to cheat when exams are executed electronically, as there is no proper supervision." (Participant 4, female)

"On-site assessment firstly is much more reliable and unbiased since it is conducted under the physical presence of all students and obligatorily with personal information and academic identities. In this way, nobody could be helped from someone else, for example, from another student and, as such, the writing is exclusively a student's creation and it is based on students' knowledge." (Participant 26, female)

"...we have seen the phenomenon of students' cheating when cameras and microphones are closed" (Participant 3, male)

However, relevant research findings as well as academics' viewpoints regarding the fact that online assessment is prone to unethical behaviors such as cheating, which violates academic integrity, are miscellaneous (Gibson & Blackwell, 2007, pp. 2-5). Nevertheless, considering the emphasis our participants gave upon cheating and the diverse data and opinions found in the literature, the issue of academic integrity in traditional in-class assessment versus online assessment deserves to stand as a research objective in future studies on its own.

Counter to most participants' negative views and critics about online assessment, a female student had only positive characteristics to refer, advocating, among others, that this type of assessment contributed to the refreshment of the educational process as well as to the enhancement of both professors' and students' flexibility, while at the same time it constrained, according to that participant, commuting to the university, with this to be particularly positive in light of the difficult economic situation many Greeks live in. Furthermore, for that student, e-assessment relieves assessees from stress since students are being assessed at their home and provides immediate feedback about the results:

"The establishment of e-assessment practices refreshed the educational process, improving both professors' and students' flexibility... the general transition from face-to-face to online assessment offered the possibility of lesser traveling to educational institutions, which in the era of economic difficulties has had profound positive consequences. Regarding the process of e-assessment, the assessment at every student's home significantly limits anxiety since the circumstances and tests of on-site assessment always contribute to the escalation of students' stress and nervousness" (Participant 6, female)

Although the benefits of e-assessment stressed above echo those shared by students in other studies (e.g., Alsadoon, 2017, pp. 150-151; Özden, Ertürk, & Sanli, 2004, p. 89), it was not feasible from the data to be explained why our participants' opinion stands to the opposite direction of the positive stance to e-assessment that students have commonly manifested in previous research. Therefore, an important issue for future research is the systematic investigation of the factors that impinge on students' attitudes towards computer-based assessment.

One concluding comment here is that, in contrast with other research findings (e.g., Alruwais *et al.*, 2018, p. 35), there were few findings in this study that underestimate e-assessment's pedagogical value. However, their limited occurrence left this question unanswered, and, therefore, there is abundant room for further progress in it, given that this is an issue that concerns researchers, as was stated in the section of the literature review.

5. CONCLUSION AND IMPLICATIONS

On the occasion of e-learning and e-assessment's establishment in universities for limiting the coronavirus spread, this study explored undergraduate students' opinions regarding their computer-based emergency remote assessment. Although the current study is based on a small sample of participants and, therefore, its findings should be interpreted in caution (Chatzidimou & Stamovlasis, 2014, pp. 47-65); the most obvious finding to emerge is that most of the participated students were in disfavor with the implementation of e-assessment during their undergraduate studies. Since this finding does not support the previous research, further large-scale research should be conducted in the same population, since this study was explorative. Furthermore, to develop a full picture of online assessment, additional studies will be needed that recruit both undergraduate and postgraduate students while comparing their views on the issue under-study in relation also to their grades, given that age, study level, and performance are influential to students' attitudes towards e-assessment, according to previous research (Küppers & Schroeder, 2018, n.p.; Sorensen, 2013, p. 184).

Despite the study's limitations, its findings raise serious concerns on the e-assessment's implementation at universities during the corona-virus pandemic, paving in parallel to a specific way for its practical implications. Since the most striking finding concerns the drawbacks coming from the way that the computer-based assessment has been implemented, Universities' Authorities, who are responsible for organizing the educational process and context (Lozgka, 2021, pp. 215-230), should reorganize the process, taking into consideration the emergency e-assessment's negative characteristics and repercussions, as well as the Rectorial Authorities should face the technical issues with the assistance of the specialized university administrative and technical services.

A reasonable approach to tackle the technical problems that are commonly arisen is both academic faculty's and students' training in using the applied assessment systems (Brink & Lautenbach, 2011, pp. 508, 511). This seems to be of particular importance since previous research findings suggest that how students perceive online assessment is highly influenced by the knowledge they have on computers and tools used in e-assessment (Özden *et al.*, 2004, p. 90), especially, if e-assessment needs to be used in the future in light of the massification in higher education (Sorensen, 2013, p. 173). For the latter, it is also of paramount significance the quality of implemented e-assessment to be ensured.

Although the official Senatorial Decision has stipulated an austere procedure for students' participation in the emergency e-assessment, according to which learners could take part only under authorized check with the university's credentials (Decision of Senate of the Democritus University of Thrace, 26/42-14-1-2021), as the research participants mentioned, these measures did not overcome the problem of cheating. Therefore, a possible solution might be the implementation of alternative assignments for e-assessment which scholars have proposed that can safeguard academic integrity. For example, Gibson and Blackwell (2007, pp. 5-6) have stressed that e-assessment tasks should not demand from students to memorize learning material, but to demonstrate higher-order skills, such as synthesizing, integrating, and applying knowledge. Furthermore, these scholars added that assessment tasks in the online environment should be adapted to each assessee and course, while faculty should interact daily with students and provide each week learners with their grades as feedback. These measures in conjunction with the provision of more time to students for their assessment may contribute to a more interesting assessment experience for learners.

Last but not least, assessment tasks other than written exams should be tried on as well as formative assessment should be blended with summative assessment in online assessment to the study population˙ measures which, based on the relevant literature, are anticipated to make a difference in the participated students' attitude towards e-assessment.

Declaration of interest: None

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