

ARTICLE HISTORY

Received June 29, 2022

Accepted November 6, 2022

Published Online December 27, 2022

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How to cite: Özdemir, H.F., Toraman, Ç., Korkmaz, G. (2022). Are Academics Satisfied with the Measurement and Evaluation Practices Applied During Emergency Remote Teaching due to COVID-19? *Educational Process: International Journal*, 11(4): 27-52.



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RESEARCH ARTICLE

Are Academics Satisfied with the Measurement and Evaluation Practices Applied During Emergency Remote Teaching due to COVID-19?

Hasan Fehmi Özdemir^{ID} · Çetin Toraman^{ID} · Güneş Korkmaz^{ID}

ABSTRACT

Background/purpose – The aim of this research is to examine the meanings through metaphors that academics derive from their experiences regarding the measurement and evaluation practices when emergency remote teaching was conducted due to the COVID-19 pandemic, to identify the problems they experienced with the measurement and evaluation practices, and to present their solution recommendations.

Materials/methods – The study was structured as a qualitative research. The problems experienced by academics in measurement and evaluation practices, together with their solution suggestions were examined according to the “basic qualitative research” pattern. On the other hand, the “phenomenological qualitative research” design was used since the meanings attributed to the measurement and evaluation practice experiences were examined through metaphors. The participants of the study were 2,321 academics teaching at state and private universities in Turkey.

Results – The findings reveal that most of the problems experienced were related to “cheating, test security, fair exam environment, plagiarism, inability to measure whether learning objectives had been achieved, inappropriate online measurement and evaluation methods, lack of quality in assessment practices, and technical issues regarding learning management systems.”

Conclusion – The solutions proposed by the participant academics were the use of alternative assessment methods, conducting face-to-face rather than online exams, asking different questions for each student by mixing up the questions in the exam, and using webcams for online exam invigilation. Metaphors attributed to the measurement and evaluation practices were grouped under three categories; as positive metaphors (e.g., lighthouse, life buoy), negative metaphors (e.g., hallucination, digging a well with a needle), and metaphors implying that such practices played a key role (e.g., water in desert, surgery) in emergency.

Keywords – Emergency remote teaching, measurement and evaluation, academics, qualitative study, metaphors.

To link to this article– <https://dx.doi.org/10.22521/edupij.2022.114.2>

1. INTRODUCTION

Over time, the structure and scope of educational sciences have been supported and changed by many new tools and technologies, and especially in the past decade with the digital transformation associated with Industry 4.0 the use of digital technology in education has radically gained in its importance, and from preschool right through to higher education. This process has gained significant momentum, especially as a result of the COVID-19 pandemic, which suddenly impacted the world in 2020 and affected all areas of life on a global scale.

The very first paragraph of the foreword of the work titled “The Future of Education and Skills – Education 2030,” published by the OECD (2018), reads:

*We are facing unprecedented challenges –social, economic and environmental– driven by accelerating globalization and a faster rate of technological developments. At the same time, those forces are providing us with myriad new opportunities for human advancement. **The future is uncertain, and we cannot predict it; but we need to be open and ready for it.***

Not long after that, but only 1.5 years later, the aforementioned ‘uncertainty’ took the whole world into its palm in the blink of an eye. But unfortunately, it is hard to affirm that we were ‘open and ready for it’

The COVID-19 pandemic emerged in China in December 2019 and soon became a global pandemic, affecting the whole world in just a very short time (i.e., by March 2020; less than 4 months) (World Health Organization, 2020a, 2020b). Among the various consequences of the pandemic, certain issues stand out from an educational sciences perspective. Almost all schools worldwide were forced to close their doors due to COVID-19 by the end of the first quarter of 2020, with many remaining closed for different, but long durations (see Figure 1). Each country attempted to maintain connections with its students and teachers through online platforms and tools, urgently putting in place remote distance education plans as contingency. Under these unexpected circumstances, teachers and parents had to quickly adapt to teaching in this new reality in order to continue to engage students in learning (Almpanis & Joseph-Richard, 2022; El-Sakran et al., 2022; Liberman et al., 2020).

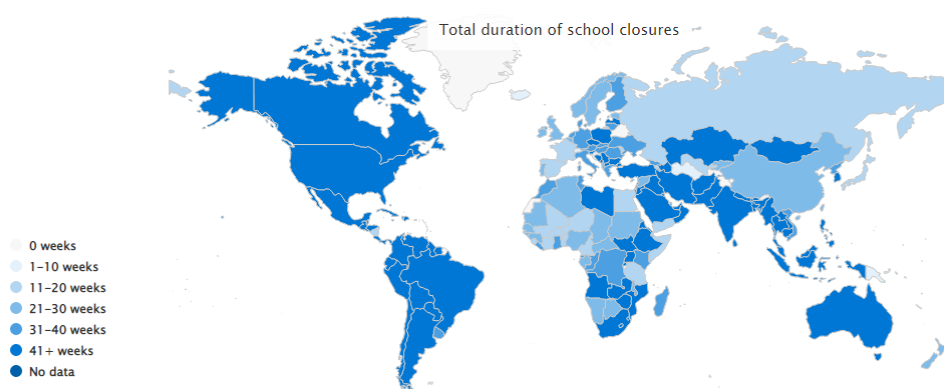


Figure 1. Total duration of school closures (UNESCO, 2020)

According to data released by UNESCO (2020), by the end of the first quarter of 2020, schools were completely closed to face-to-face education across 191 countries as a result of the pandemic, with schools closed either partially or regionally in another four countries. Almost all students at all levels were exposed to the negative effects of the COVID-19

outbreak. In Turkey, the decision was soon taken that all primary and secondary schools affiliated to the Turkish Ministry of National Education and all universities affiliated to the Turkish Council of Higher Education would continue their education activities through distance education only. Initially, the Turkish Council of Higher Education announced that education and training at all universities would be suspended for a certain period of time, and later that there would be no face-to-face classes given for the remainder of the spring-summer semester of the 2019-2020 academic year due to the ongoing uncertainties of the pandemic (Yüksek Öğretim Kurumu [Turkish Council of Higher Education], 2020a; 2020b). Thus, emergency remote teaching was rapidly introduced in all Turkish universities. With this sudden migration to teaching online, Turkish universities were forced to continue their teaching and learning activities using various online platforms such as Collaborate, Zoom, and Google Meet, etc. This decision was aimed at minimizing both the spread of the virus and its negative effects, as well as to limit the learning losses of students by continuing to offer education via online synchronous and asynchronous applications that were accessible to the student body via personal computers and also mobile devices (i.e., smartphones and tablet personal computers) (Almpanis & Joseph-Richard, 2022; Çetinkaya Aydın, 2020).

1.1. Distance Education and Emergency Remote Teaching

Although it is not possible to give a precise date, the concept of distance education dates back to the middle of the 19th century, with education offered initially by mail and later by way of radio and then television/video (Çelik et al., 2022; Simonson et al., 2019; Zhao et al., 2005). Today much has changed, with the advent of the Internet, education is now offered that is both interactive and engaging with online teaching and learning through the utilization of digital technologies (Agostinelli, 2019; Mayer, 2019; Sumner, 2010; Zhang et al., 2022). The increased use of personal computers, tablet computers, and smartphones around the world, the ubiquitous spread of Internet availability and connectivity, and the production of digital content and applications have made online learning increasingly popular in recent years. Due to changing conditions and demand, the concept of distance education has changed significantly over time with the emergence of online learning, online education, web-based education/learning, e-learning, blended learning, learning management systems, and virtual learning environments (Bizami et al., 2022; Daniel, 2014; Demir, 2015; Korkmaz & Toraman, 2020; Moore & Kearsley, 1996).

Distance education entered a new era in 2020 due to the COVID-19 pandemic, with face-to-face education activities suddenly replaced by distance education and online learning due to the sudden closure of educational institutions virtually worldwide in order to combat the spread of the virus (Pekcan & Toraman, 2022). However, care should be applied when using the term “distance education,” since it is a complex process that requires careful planning, design, and goal setting in order to create an effective learning ecology (Bozkurt & Sharma, 2020). Therefore, it would be more appropriate to describe the extraordinary period of the COVID-19 pandemic as “emergency remote teaching” in order to distinguish it from managed distance education conducted under normal conditions. Emphasis on the concept of “teaching” rather than education stems from the fact that this emergent process was carried out under the responsibility of instructors and teachers. The most obvious difference between distance education and emergency remote teaching is that the former is generally optional, whilst the latter was as a result of forced necessity (Pekcan & Toraman, 2022; Shohel et al., 2022). Well-planned online learning experiences are meaningfully different from courses offered online in response to a crisis or natural disaster. For example, distance

education is a planned activity, and its application differs according to each field and is based on theoretical and practical knowledge with applications designed that are specific to that field. Emergency remote teaching, on the other hand, is all about keeping education alive through the use of all available resources (offline and online) in times of crisis. In addition, it is important that a learning process is created that “supports different types of interaction” in order to ensure that distance education addresses both the cognitive and social participation of individuals living in separate locations (Bozkurt et al., 2020; Hodges et al., 2020; Salta et al., 2022).

Within such a metaphor study that you are reading right now, it would not be a false figure of speech to liken the “emergency remote teaching” concept to emergency trauma medicine applied in the case of a severe accident (i.e., the pandemic). The pandemic caused a deadly chain reaction accident, with priority given to those with life threatening injuries (the continuation of the education-training process) in the treatment of casualties facing serious injury to multiple limbs (i.e., the educational process itself). It is almost impossible to recover an entire system unharmed during such an unexpected emergency response, and we had no choice but to intervene according to the priorities of the triage process. Since the convalescence period has not yet been fully completed, time will tell whether or not there is any long-term permanent damage. We will all have to wait and see.

1.2. Online Measurement and Evaluation

It can be said that “education,” which aims to create desired behavioral changes in individuals, consists of three basic elements that are in constant interaction with each other. They are the purpose of education, the educational practices carried out in line with this purpose, and the measurement and evaluation processes that determine the effectiveness of the teaching-learning process, and to what extent the desired behavioral changes were achieved. It is also the process by which data/information is collected that can be used to make decisions that affect students, teachers, and schools, as well as the curricula and programs taught, the financing of education, and many other aspects of education policy. Effectively, measurement and evaluation is a function that provides continuous feedback on the educational system as a whole.

This feedback, on the other hand, affects the purpose and content of the teaching and learning process, and may also be used for many different purposes; from parents wanting to see their children’s academic progress and success amongst their peers, to teachers who are able to determine the points upon where they need to apply more focus and to conduct additional lessons or practice sessions. It also enables regional and national education directorates, as well as central governments to monitor the student body’s performance at the macro level, to reveal inequalities/biases in the system, to make decisions about graduation and/or selection-placement, and to assess the performance of teachers. It can also support decision-making that concerns the allocation of resources and the determination of the professional development needs of educators (National Academy of Education, 2021).

The rapid increases seen in online course provision has opened the doors to greater opportunities, whilst, on the other hand, new challenges have emerged when it comes to higher education (Tremblay et al., 2012). Accordingly, higher education institutions need to analyze the ways in which online students are assessed in order to make sure that they are accredited with the grades and certification they deserve (Steer et al., 2016).

Whether conducted face-to-face or remotely, the assessment and evaluation of the teaching-learning process generally involves three types of exams and tests: 1) Diagnostic

assessment, pre-assessment exams/tests used for level determination or exemption (preparatory skipping); 2) Formative assessment, end-of-unit tests for interim evaluation and monitoring, practice quizzes, 1-minute papers, and clearest/muddiest point exercises; and, 3) Summative assessment, end-of-term/year/course exams applied for the purpose of evaluating or making decisions about students, instructors, or even educational programs. It is also possible to categorize the evaluation/assessment processes conducted in distance education as being either formal or informal. While homework, quizzes, projects, role plays, and online discussions are generally used in formal assessment, tools such as email messages for the provision of feedback for improvement, and plus/minus charts that indicate well-functioning aspects of a course can be used as examples of informal assessment processes (Gunawardena & LaPointe, 2003).

The quality of education and training relates to the use of appropriate measurement and evaluation methods. It may be said that academics tend to use the same measurement and evaluation methods in both face-to-face education and distance education. However, it is clear that methods and techniques can also be specific to a certain field, and may therefore differ considerably. Determining and using the most appropriate methods and techniques is important for the development and academic achievement of students, and this issue should be considered when configuring distance education systems in particular (Pekcan & Toraman, 2022).

At the time of writing this paper, more than 2 years have passed since the start of the COVID-19 pandemic, which even today continues to show its impact worldwide. During this time, administrators and teachers in school systems worldwide have struggled to provide continuous teaching through virtual, face-to-face, and blended teaching and learning methods (Daniel, 2014). In this and similar uncertain and volatile environments, the difficulties of assessing what and how students learn have become ever more complex. Educators clearly need information in order to effectively guide classroom-level learning. However, evidence is needed on how the processes introduced due to the COVID-19 pandemic have affected the assessment and evaluation of education in order to be better prepared for future similar crises (UNICEF EAPRO, 2020).

Education systems should therefore use the COVID-19 crisis as an opportunity to transform existing assessment and evaluation mechanisms from the system to the classroom level, and/or to develop new applications and stronger distance education systems. Such a change, however, is only possible through the proper planning, design, and development of online teaching programs and, as a part of this, appropriate and effective measurement and evaluation processes (Adedoyin & Soykan, 2020).

The increase in the importance afforded to online measurement and evaluation naturally raises certain questions in the minds of academic researchers, such as what kind of problems were experienced in the measurement and evaluation processes conducted during the recent pandemic. One of the most effective ways to understand this would be through the determination of instructors' perceptions, i.e., the academics, who are one of the most important stakeholder groups in higher education, regarding the online measurement and evaluation processes applied during the pandemic. The perceptions of individuals on a particular subject can be determined through various methods such as the development and application of questionnaires, conducting interviews, thinking aloud, as well as through studying the metaphors that individuals may use to describe the phenomenon in question.

1.3. What is Metaphor and Thought Transference Using Metaphors?

A common definition given to “metaphor” is a figure of speech used to describe an action or an object in a way that is not literally true, but helps to explain an idea or to draw comparisons. Metaphors are not just a rhetoric to embellish the language used in daily life, as their importance in human life extends to much more than that (Saban, 2008; Stephens, 2022). Metaphors have the power to reveal accurate information, as individuals tend to express truths and facts, consciously or unconsciously, by using metaphors that form a pattern in accordance with their life experiences. Metaphor has been identified and discussed as an instrument of discovery (Hagstrom et al., 2000), as a pedagogical device (Hoban, 2000), as a tool for evaluation (Kemp, 1999), and also as a tool that can be applied in academic research (Guerrero & Villamil, 2002). Although different aspects have been emphasized in the literature, the primary function of metaphor is to develop understanding. Therefore, metaphor can be used in educational terms as a means to describing experiences and understanding, and to reflect ideas about teaching and learning practices (Forgács et al., 2022; Woon & Ho, 2005). In this respect, the current study aimed at utilizing metaphor to help provide insight to academics’ personal feelings, thoughts, and beliefs regarding the measurement and evaluation processes applied during the emergency remote teaching of the COVID-19 pandemic era.

2. LITERATURE REVIEW

Although various studies have been published on the problems, successes, and opportunities related to online distance education during the COVID-19 pandemic, few have examined perceptions based on metaphors. A study by Aksoy et al. (2021) revealed the perceptions of higher education students towards the distance education delivered during the pandemic. Bozkurt (2020), on the other hand, conducted a metaphor analysis on primary school students’ images and perceptions of distance education during the pandemic, whilst Yıldız et al. (2021) used metaphors to examine the views of primary school students on the concept of distance education.

In addition to the aforementioned studies that examined students’ perceptions of distance education in general, other studies focused directly on the measurement and evaluation practices of distance education. Kilinc et al. (2021) conducted a case study to determine factors that should be considered regarding the usability and security of online test applications used in assessment and evaluation during the COVID-19 pandemic. In another study, Senel and Senel (2021) examined the common assessment approaches used during the pandemic based on students’ perceptions about the quality of assessment applied, together with the pros and cons of using such practices. In reviewing the current literature, we met only one study that used metaphor to focus on the measurement and evaluation practices employed during the pandemic. In their study, Pekcan and Toraman (2022) examined online measurement and evaluation practices according to the views of both teachers and students.

Considering the target groups and number of participants in the aforementioned research, no prior studies were focused directly upon the opinions of academics through the use of metaphors, nor with substantial numbers of participants. Therefore, the current study is significant, and to our knowledge, presents the first study of this type to the literature.

The aim of the current research was to examine the meanings through metaphors that academics derive from their experiences about the measurement and evaluation practices conducted during the emergency remote teaching of the COVID-19 pandemic period. In

addition, the study aimed to identify the problems experienced by the participant academics in the measurement and evaluation practices during the emergency remote teaching period, and also to present their solution recommendations. For this purpose, answers to the following research questions were sought:

- RQ1 What problems were experienced by academics in the implementation of measurement and evaluation practices during emergency remote teaching?
- RQ2 What do academics suggest for solutions to problems experienced during emergency remote teaching in terms of measurement and evaluation practices?
- RQ3 What are the metaphors used by academics regarding emergency remote teaching measurement and evaluation practices?

3. METHODOLOGY

This study was structured as qualitative research. In the study, the problems experienced by academics in terms of the measurement and evaluation practices employed during the emergency remote teaching of the COVID-19 pandemic era were examined, together with their solution suggestions for these problems, according to the basic qualitative research pattern (Merriam & Tisdell, 2016). The phenomenological qualitative research design was selected since the meanings attributed by the academics to the measurement and evaluation practice experiences during the emergency remote teaching period were examined through metaphors.

3.1. Participants

In the study, the aim was to conduct the research with all levels of higher education teaching staff (professors, associate professors, assistant professors, lecturers with a PhD, research assistants with a PhD, lecturers, and research assistants) working in state and foundation universities affiliated to the Turkish Council of Higher Education. Voluntary participation in the study was considered essential, hence only those academics who voluntarily opted to participate formed the sample of the research. For this reason, the research sample adopted convenience sampling, a non-probability sampling method, which is based on working with readily accessible participants for easier data collection (Maxwell, 1996; Patton, 2002; Yıldırım & Şimşek, 2011). In total 2,321 academics participated in the study. Data where the instructors had not reported problems, did not offer solutions, or did not show a metaphor feature were excluded from the data file. The distribution of the academics in the research sample according to their sociodemographic characteristics is presented in Table 1.

Table 1. Sociodemographic characteristics of participants

Variables		Reporting Problems <i>n</i> (%)	Offering Solutions <i>n</i> (%)	Metaphors <i>n</i> (%)
University type	Public/State	1,431 (90.5)	1,318 (90.3)	1,372 (90.7)
	Foundation/Private	151 (9.5)	141 (9.7)	140 (9.3)
Field	Educational sciences	158 (10)	147 (10.1)	152 (10)
	Fine arts	53 (3.4)	47 (3.2)	48 (3.2)
	Health sciences	589 (37.2)	540 (37)	575 (38)
	Social sciences	327 (20.7)	304 (20.8)	343 (27.7)
	Basic sciences	114 (7.2)	94 (6.4)	97 (6.4)
	Applied sciences	341 (21.6)	327 (22.4)	298 (19.7)
	Title	Research assistant	131 (8.3)	109 (7.5)

Variables	Reporting Problems n (%)	Offering Solutions n (%)	Metaphors n (%)
Research assistant PhD	81 (5.1)	77 (5.3)	79 (5.2)
Lecturer	207 (13.1)	183 (12.5)	199 (13.2)
Lecturer PhD	111 (7)	103 (7.1)	116 (7.7)
Assistant professor	364 (23)	336 (23)	362 (23.9)
Associate professor	302 (19.1)	272 (18.6)	281 (18.6)
Professor	386 (24.4)	379 (26)	350 (23.1)
Seniority	5 years or less	277 (17.5)	252 (17.3)
	6-10 years	383 (24.1)	339 (23.2)
	11-15 years	285 (18)	264 (18.1)
	16 years or more	638 (40.3)	604 (41.4)
Total	1,582(100)	1,459 (100)	1,513 (100)

3.2. Instruments

The data collection instrument was developed by the researchers. In the data collection tool, a sociodemographic section was included, which sought to obtain information about the gender of the academics, the type of university at which they worked, their field of teaching, academic title, and seniority in terms of years of teaching.

In the next section of the tool, the academics were given the following instruction including three questions: In terms of the emergency remote teaching process in place during the COVID-19 pandemic, “Were there any problems in the measurement and evaluation practices applied during this process?” If your answer was YES, “What kind of problems did you experience?” and “What are your solution suggestions to these problems?”

The final section of the data collection tool aimed to identify the metaphors; as in, a figure of speech in which a word or phrase literally denoting one kind of object or idea is used in place of another to suggest a likeness or analogy between them.

Metaphor (figurative expression) is the use of a word or concept to mean something other than what is usually accepted.

For example, “‘My father is a lion,’ because he is as strong as a lion.”

The measurement and evaluation practices during the emergency remote teaching were like.....

because.....

After the data collection tool had been developed, its draft was presented to two experts from the field of educational technology, plus three experts from the field of measurement and evaluation. Expert opinions were obtained according to response options of *appropriate, partly appropriate, not appropriate, and suggestions, if any* for each item. Prior to considering the experts’ opinions, consistency in their opinions were analyzed according to the Krippendorff alpha interrater reliability calculation, and a value of .88 was obtained. According to this value, it was decided that the consistency between the experts

(raters) was high (Krippendorff, 2004). Based on the high level of consistency, the opinions of the experts were examined and, where appropriate, the suggested revisions were reflected in the measurement tool. Once the experts' opinions had been reflected in the questionnaire, an online Google Forms document was created.

3.3. Validity and Reliability Studies

In order to have an appropriate effect, one way or another, on the theory or practices in any field, research studies should be carefully designed and implemented. Also, they should ensure that the insights and conclusions provided appear true and justified to readers, practitioners, and also to their peers (other researchers). The concepts of credibility, portability, reliability, and verifiability used in qualitative research literature correspond to the concepts of internal validity, external validity, reliability, and objectivity in quantitative research (Merriam & Tisdell, 2016).

Prior to interviewing the participants, the researchers informed them in detail about the research process, and made it clear that they had the option to leave the study if they so wished (to help ensure the honesty of the informants), so that only volunteers contributed to the research (Shenton, 2004). In order to obtain reliable data (dependability), each researcher submitted their coding for control (crosscheck) by the other researchers (Creswell, 2012). In addition, three external experts, who were not directly involved in the current research, were asked to supervise and evaluate the data and findings. In this way, an external audit of the data analysis (Christensen et al., 2014; Creswell, 2007, 2014) was provided.

3.4. Procedures

During the research process, the websites of all universities in Turkey listed on the website of the Turkish Council of Higher Education were checked, and the institutional email addresses all levels of academic staff were obtained (professors, associate professors, assistant professors, lecturers with a PhD, research assistants with a PhD, lecturers, and research assistants). The Google Forms link of the structured data collection tool, together with instructions and an explanation about the current study were then emailed to the academic staff. Those academics who gave their consent to participate in the study were then able to view the questions. In the case of where no consent was given, the questions were not activated, and the webpage and the form subsequently closed. Due to the principle of voluntary participation, the researchers only obtained data from academics who consented to participate in the study.

3.5. Data Analysis

The data obtained in the research were analyzed by way of content analysis. There are numerous ways to categorize data in content analysis, with the two dominant forms being inductive analysis and deductive analysis (Mayring, 2015). In the current research, deductive content analysis was applied in order to determine the problems identified by the participants and their suggested solutions. In deductive content analysis, possible themes are made clear from the outset. Since the questions in the data collection tool guided the creation of the themes, the themes themselves were designated prior to the data being analyzed. Then, the categories and codes determined from the data itself during coding were then combined under these themes. Analysis of the collected data for the problems identified and the solution suggestions was conducted according to the following steps:

- Explanations provided by the participants were coded separately by the three researchers who conducted the study according to the themes of problems or solution suggestions.
- Each researcher submitted their own coding to the control of the other researchers of the study (Creswell, 2012).
- The researchers met to discuss any codes where they did not initially agree, and worked together in order to reach a consensus on an agreed coding solution.
- Three other experts, who were not otherwise involved in the current research, were asked to supervise and evaluate the coding and the coding classification performed by the study's researchers according to the agreed themes. In this way, external audit was provided for this stage of the analysis (Christensen et al., 2014; Creswell, 2007, 2014).

On the other hand, the inductive form of content analysis was used to analyze the participants' metaphors within the scope of the study. For inductive content analysis, the text is first coded and the codes are then categorized. Analysis then continues with the combination of categories under the given themes. The analysis of the metaphors in the collected data was conducted according to the following steps:

- Three researchers coded the metaphors separately.
- Codes were gathered under categories and combined into themes.
- Each researcher submitted their own coding to the interior control of the other two researchers (Creswell, 2012).
- The researchers discussed any codes, categories, and themes where they initially disagreed until a consensus could be reached.
- Three independent experts, who were not otherwise involved in the current research, supervised and evaluated the coding performed by the researchers and the classification of codes under themes. In this way, external audit was provided (Christensen et al., 2014; Creswell, 2007, 2014).

4. RESULTS

4.1. RQ1: Problems with Measurement and Evaluation During Emergency Remote Teaching

In the first question of the data collection tool, the academics were asked whether or not they experienced any problems related to the measurement and evaluation of their students during the emergency remote teaching offered at the time of the COVID-19 pandemic. Those who answered "Yes" to this question were then asked to share "What kind of problems they experienced." This question from the data collection tool formed the first theme, i.e., the problems experienced, and a summary of the participants' responses is presented in Table 2.

Table 2. Problems that Academics Experienced in Measurement and Evaluation Practices During Emergency Remote Teaching

Problems Experienced	Frequency
Cheating, exam security, surveillance, supervision, fair exam environment, taking an exam for someone else, hire someone to do one's homework/assignment, plagiarism, ethical violations, results that do not reflect reality.	952
Inability to measure whether or not learning objectives were achieved (especially required in practical courses), inappropriate or inadequate online measurement and evaluation methods (virtual practice exams), lack of quality in measurement and evaluation practices.	433
Infrastructure, technical inadequacy; technological, internet access, connection, system-software-hardware problems.	417
Unclear attendance tracking, problems focusing on the course, indifference to the course, loss of motivation.	124
Failure to evaluate the process (lack of formative assessment).	105
Inequality of opportunity, inability to identify individual differences.	95
Academics' measurement and evaluation deficiencies, online measurement techniques, test development, exam/test question writing.	95
Inconsistency between evaluators, lack of objective measurement, unfair grading.	85
Low-level technological readiness of academics and/or students, adaptation and technological literacy problems.	59
Communication/interaction problems; lack of communication, misunderstanding, inability to teach interactively, inability to teach effectively.	56
High student numbers, time-consuming assessment, additional workload for academics, increased/decreased numbers of questions in exams.	48
Unable to complete exams, insufficient time to complete exam.	30
Administrative problems.	15

When Table 2 is examined, it can be seen that the most significant problem encountered by the participant academics related to emergency remote teaching measurement and evaluation practices was individual or organized cheating behaviors during exams (e.g., students' use of messaging applications on smartphones such as WhatsApp groups. Groups of students may get together to answer online exam questions collaboratively and then each completes their own exam from their own account, or the receipt of help from others during online exams), and plagiarism is sometimes used in the responses submitted for assignment-based work.

The inability to audit exams due to the online platforms used and/or limitations related to Internet connectivity, and also limited university administration oversight, which remained passive about the obligation of webcam proctoring during exams, stating that it was contradictory to the protection of personal data, caused the problem to grow exponentially, which resulted in fair examinations being unable to be conducted. Moreover, it was noted that even the use of cameras to monitor student behaviors during exams were not always effective in preventing academic dishonesty.

Arranging for homework or the writing of a thesis in return for money, which has been acknowledged as a considerable problem for a long time, notably increased during the pandemic. Additionally, payments made to others to take exams in place of registered students emerged as a new opportunistic source of income. It was stated that some students who previously failed to graduate from departments they had been attending for some years, especially those unable to pass even critical basic courses, started to pass their courses with high grades, and even graduated during the pandemic era.

It was claimed that students and those who provided illicit exam/coursework support to students (e.g., those taking exams on behalf of students or answering their exam questions) saw no harm in their behavior and normalized it by saying that “Everyone does this!” Some participant responses even claimed that certain academic staff aided and abetted in helping their students. It is therefore argued by the authors of this study that cheating reached epidemic proportions that became at least as dangerous as COVID-19 itself, and that radical measures are needed at all levels of education to mitigate this risk to the integrity of education. It is clear that there is a much more serious problem in terms of measurement and evaluation in distance education attributed to face-to-face education. The concept of “reliability,” one of the psychometric features of a test, is the degree to which a measure is free from random errors. The lesser the assumed error rate is, the closer the measurement results are to the truth/reality, and therefore the higher the reliability is of the measurement. Moreover, reliability is also a prerequisite for validity, which is another important psychometric property. In other words, for a measurement tool to be considered valid, it must also be deemed reliable; and, if a test is not considered reliable, its validity cannot be accepted. The use of such test results, which do not reflect reality and which are subsequently used to decide a student’s success, has led to some students moving up to the next grade or even graduating without having the critical acquisitions required by the relevant field. It is clear that we should put on our thinking caps and to determine an appropriate course going forwards.

Another important problem expressed was the inability to fully determine whether or not the learning objectives required by practice-oriented courses were fully achieved where virtual exams were applied, due to the poor quality of measurement and evaluation processes in play. The reason for this was stated as a lack of formative assessment, the use of inappropriate virtual practice exams, and inadequate methods of measurement and evaluation. At this point, two other issues were suggested in relation to this problem; 1) deficiencies of academics in measurement and evaluation in general, online measurement techniques, test development, and question writing, and 2) low levels of technological readiness, adaptation speed and technological literacy levels of academics and, to a certain extent, students. Certain minor issues that could actually have been fixed ultimately led to more serious problems.

Another issue expressed by the participants were technical and technological problems originating from infrastructure, Internet connectivity/speed/access, as well as system/platform issues, or the software and/or hardware used. Since each university differed, and thereby its affiliated academic structure (i.e., institutes, faculties, schools/vocational schools, research and application centers, etc.) and administrative functions (e.g., information technology department, student affairs, etc.), and also the levels of ownership of appropriate technical hardware/software or access to services differed significantly for academic and administrative staff and also students, the problems and breadth of issues experienced also varied considerably.

Uncertainty of student course attendance, problems of focusing and/or indifference to online course attendance, and reduced motivation were among the problems expressed most by the participant academics. Another problem emphasized was that the student-teacher communication and normal level of interaction associated with face-to-face education could not be fully established via distance education. This apparent lack of communication caused misunderstanding and led to problems such as the inability to conduct effective and interactive lessons. In terms of some courses, the large number of students, due to the need

to combine sections for online classes, created additional workload for teaching academics. With measurement and evaluation processes being time-consuming, fewer exam questions were being asked. On the other hand, some academics created question pools in order to avoid the problems associated with exam cheating and then used different question sets for each student to the extent that the online education platforms would allow, or at least mixed the order of exam questions or response options. These actions increased the workload of the instructors, however, it was also emphasized that such efforts were largely ineffective in reducing the number of instances of cheating in exams.

In addition to the aforementioned issues and problems, the academics participating in the current study pointed out that inequality of opportunity was created amongst the student body; individual differences, which are the main purpose of measurement and evaluation in terms of academic achievement, cannot be determined exactly; and there are also inconsistencies between the evaluators to be considered since objective measurement cannot be performed within such an evaluation modal, and unfair grading is a reality due to inappropriate administrative interventions conducted to prevent students from being victimized during such an extraordinary process.

4.2. RQ2: Solution Suggestions for Problems in Measurement and Evaluation During Emergency Remote Teaching

In the second question of the data collection tool, academics were asked to share their suggestions for how to resolve the problems they experienced related to measurement and evaluation practices during the emergency remote teaching period of the COVID-19 pandemic. This question formed the second theme of the study. The participant academics' proposed solutions were examined in terms of the type of university at which they worked, their field of instruction, and their seniority in terms of number of years teaching. A summary of the solutions proposed is presented in Tables 3-5.

Table 3. Proposed Solutions to Problems in Measurement and Evaluation Practices During Emergency Remote Teaching (by University Type)

Type of University	Frequency	Proposed solutions
Public/State	1,318	<p>Alternative measurement and evaluation methods should be used in place of written exams.</p> <p>Exams should be conducted face-to-face.</p> <p>Examinations should be conducted by institutions/organizations such as the Centre for Assessment, Selection and Placement.</p> <p>Where class size are small, oral exams should be administered.</p> <p>Each student should be asked different questions by using platforms that allow questions to be mixed.</p> <p>Students should be provided with the necessary technical equipment (e.g., personal computer, tablet computer, Internet, webcams, etc.) to sit an exam.</p>

Foundation/Private	141	<p>Exams should be conducted face-to-face.</p> <p>Alternative measurement and evaluation methods such as projects and take-home exams should be adopted more than multiple-choice testing.</p> <p>Even if exams are conducted remotely, webcams should be used to invigilate exam takers.</p> <p>Each student should be asked different questions in the exam using artificial intelligence.</p>
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The findings regarding the solutions suggested by the academics to the problems they experienced in the measurement and evaluation practices administered during the pandemic's period of emergency remote teaching revealed that academics from public/state and private/foundation universities focused on very similar issues such as the use of alternative assessment methods, conducting face-to-face exams rather than online, asking students different questions by mixing up the exam questions, and the use of webcams for the purposes of exam invigilation. On the other hand, the solution mentioned by those academics who worked at public/state universities about exams being conducted centrally by institutions such as the Centre for Assessment, Selection and Placement reveals a certain level of hesitation about the exams prepared and conducted at the local level. This may be due to state universities having a greater number of students than private universities; therefore, measurement and evaluation processes would have a more significant impact in terms of the time required to prepare and administrate exams. However, this is only an option where exams are comprised solely of multiple-choice questions. In addition, this may result in "no feedback" being offered to students, thereby causing serious issues when it comes to their learning. Similarly, the use of individual oral examinations would be hard to conduct when the class sizes at state universities are considered.

Table 4. Proposed Solutions to Problems in Measurement and Evaluation Practices During Emergency Remote Teaching (by Field of Instruction)

Field	Frequency	Proposed Solutions
Educational sciences	147	<p>Alternative assessment strategies should be adopted.</p> <p>Webcams should be used during exams.</p> <p>Face-to-face exams should be conducted in small groups.</p>
Health sciences	540	<p>Face-to-face exams should be conducted in small groups.</p> <p>Alternative assessment strategies should be adopted.</p>
Social sciences	304	<p>Personalized assignments should be given to students.</p> <p>Webcams should be used during exams.</p> <p>Cheat detection or prevention software should be developed.</p> <p>Exam duration should be shortened.</p> <p>Oral exams should be administered in classes where the number of students is appropriate.</p>
Basic sciences	94	<p>Exams for theoretical courses could be conducted online, whereas the exams of applied courses (requiring hands-on practice) should be face-to-face.</p> <p>Exams should be administered with the use of cameras and supervisors.</p>

Field	Frequency	Proposed Solutions
Applied sciences	327	Where it is not possible to conduct exams face-to-face, they should be conducted using webcams and invigilators. Individual tests should be prepared. Assignments based on research and practice should be given.
Fine arts	47	Face-to-face exams should be conducted in small groups. Webcams should be used during exams. Exams should be conducted face-to-face.

As can be seen from Table 4, the academics suggested similar solutions to the problems they experienced in the measurement and evaluation practices used during the emergency remote teaching period of the pandemic in terms of the fields in which they teach. Accordingly, the solutions focused on alternative assessment strategies such as the use of webcams to detect and prevent cheating during exams. However, some of the academics who taught in the applied sciences suggested that assignments based on research and practice should be given in place of traditional exams. This may relate to courses in these areas being more focused on hands-on teaching and learning rather than theoretical knowledge.

Table 5. Proposed Solutions to Problems in Measurement and Evaluation Practices During Emergency Remote Teaching (by Seniority)

Seniority	Frequency	Proposed Solutions
5 years or less	252	Exams should be conducted face-to-face. Process evaluation approach and various measurement and evaluation tools should be used. Technology infrastructure and technological equipment should be better supported.
6-10 years	339	Exams should be conducted face-to-face. Exams should be conducted synchronously. Learning management systems or software that provides students with different questions at the same time should be used.
11-15 years	264	Class numbers per faculty member should be reduced. Student quotas for universities should be reduced. Faculty members should receive training on remote measurement and evaluation best practices. Ethics training should be provided to students to help prevent exam cheating. Internet connectivity and technical problems should be fixed.

Seniority	Frequency	Proposed Solutions
16+ years	604	<p>Exams should be conducted face-to-face.</p> <p>Cheat detection or prevention software should be employed.</p> <p>Webcams should be used during exams.</p> <p>Examinations should be conducted by centralized institutions (i.e., Centre for Assessment, Selection and Placement).</p> <p>Numbers of classes per faculty member should be reduced.</p> <p>Faculty members should receive training on remote measurement and evaluation best practices.</p>

Table 5 indicates that, regardless of their seniority, the participant academics focused on similar solutions regarding the problems they experienced in the measurement and evaluation practices employed during the period of emergency remote teaching. However, a few of the suggestions related to issues with the number of classes taught, whilst others reportedly lacked the requisite knowledge or experience regarding how to conduct exams remotely. These findings show that some of the problems experienced by the academics were related both to the university system itself (e.g., numbers of students taught by faculty members) and also the academics (e.g., lack of knowledge or experience regarding conducting exams remotely).

4.3. RQ3: Metaphors about Measurement and Evaluation Problems Experienced During Emergency Remote Teaching

In this section, the metaphors used by the participant academics relating to the measurement and evaluation practices used during the emergency remote teaching period were analyzed and are presented in three separate categories; (1) positive metaphors, (2) negative metaphors, and, (3) metaphors that imply online measurement and evaluation practices played a key role during emergency remote teaching.

The positive metaphors used by the participant academics related to the online measurement and evaluation practices used during the emergency remote teaching period were as follows:

- “A juggler” (if you are good at doing something, things work well)
- “Preliminary study” (describes what is required of students)
- “Harvest season” (indicates the yield achieved in the end)
- “Rubber” (flexible)
- “Mirror” (you see yourself, good or bad)
- “Lighthouse” (guiding faculty and students)
- “Aspirin” (used for all, regardless of the type of disease)
- “Play dough” (can be shaped however you want)
- “Water” (measurement is both healthy and essential in education)
- “Life buoy” (a remedy for evaluation)
- “The process of project management” (requires knowledge, skills, and competence)
- “A lathe” (indicates the learning level)
- “Information age, as it should be” (measurement appropriate for the era)

- “Wolf” (strong enough to stand alone)
- “Precision scale” (used to measure very valuable items such as gold)

The negative metaphors used for online measurement and evaluation practices experienced during emergency remote teaching were as follows:

- “Imitation” (dysfunctional and insufficient)
- “Make do with” (unresolved process that is denied)
- “Tree branch” (weak)
- “Hallucination” (does not reflect reality)
- “Blind man’s bluff” (interlocutor uncertain)
- “Masquerade ball” (nobody gets to know anybody)
- “At cross purposes” (does not distinguish between honest and dishonest)
- “Beating your head against the wall” (wasted work)
- “Pinocchio” (there was, but it did not exist)
- “Solving a puzzle by looking at the answers” (all answers copied from the Internet)
- “Digging a well with a needle” (trying to measure with a useless method)
- “Easy going chap” (faculty uses whatever opportunity the university affords them)
- “Open sea” (you will drown if you do not know how to use it)
- “Gold on the weighing scale” (you cannot actually measure what you want)
- “Window-shopping” (you cannot touch the products)
- “Mountain climbing” (technically difficult for students and academics)
- “Bird with a broken wing” (it cannot fly, no matter how hard it tries)
- “UFO” (unknown to everyone)
- “Dust cloud” (everything is hack)
- “Chameleon” (students go all shades of purple)
- “Food without salt” (always missing something)
- “Lemon” (looks good from the outside, but tastes the opposite)
- “Onion” (a problem that is different at every layer)
- “Ungrateful cat” (not trustworthy)
- “Fire” (objective and fair evaluation is difficult)
- “Speaking without thinking” (rambling procedure)
- “Equation with multiple variables” (contains many unknowns)
- “Cinema” (we are away from the stage, but we are watching students from different places in front of a camera)

The metaphors used that implied that the measurement and evaluation practices employed played a key role during the emergency remote teaching period were as follows:

- “Trying to survive in the camp without the required equipment” (preventing the process from being interrupted)
- “Sky” (infinite opportunities)
- “Someone else’s dress” (it is ready, but needs to be tailored to us)

- “A ball of yarn” (it works, but sometimes it is complex)
- “Water in the desert” (vital, it helps in getting over this period)
- “Remove stones from rice” (you have to be careful)
- “Surgery” (you have to pay attention to every single detail)
- “Fire” (useful, but difficult to control)
- “Walking/treading on eggshells” (you must be meticulous)
- “Fragile” (you have to be very careful)
- “Atom” (weapon of mass destruction or medical imaging device)
- “Spider’s web” (it saves the day)
- “Tooth extraction” (both inevitable and distressing)
- “Balloon” (inflated, it saves the day)

5. DISCUSSION

In this study, we aimed to examine the views of academics regarding the measurement and evaluation practices conducted during the period of emergency remote teaching that was administered during the COVID-19 pandemic in Turkey. The findings were grouped based on the problems that the academics experienced with measurement and evaluation practices during that period, the solutions they proposed to these problems, and the metaphors they attributed to the measurement and evaluation practices during that period.

According to the findings, the results of the first research question showed that the academics had experienced a number of problems related to exam cheating, test security, ethical violations and plagiarism, inability to measure whether or not learning objectives had been achieved, the use of inappropriate and inadequate measurement and evaluation methods, the quality of assessment and evaluation, and technical issues experienced regarding the learning management systems used. These findings can be said to correlate with several other studies in the related literature (e.g., Janke et al., 2021; Mata, 2021; Sharma et al., 2021). For example, in a study conducted by Saleh and Meccawy (2022), it was stated that cheating and plagiarism was a major problem for educators in higher education as it was considered all too easy to cheat in online environments. These studies also demonstrated that students found it easy to cheat during online exams; therefore, they were not motivated to attend, participate, or learn in their online lessons (Baniamer & Muhamed, 2022), and this resulted in increased instances of academic dishonesty (Mata, 2021; Surahman & Wang, 2022; Tarigan et al., 2021). In addition, the faculty members in the current study noted that the measurement and evaluation practices employed in online environments increased the inequality of opportunity. Whilst some studies in the literature (Armstrong-Carter & Telzer, 2021; Rojas-de-Gracia et al., 2021; Spitzer & Musslick, 2021) suggested that remote measurement and evaluation can expand opportunities afforded to for learners and create more equal practices, other research (Bekova et al., 2021; Dimopoulos et al., 2021; Karaköse, 2021) were more in line with the findings of the current study in that online measurement and evaluation practices may increase the inequality among students when their familial socioeconomic status was taken into account. They also pointed out that they felt inadequate when it came to online measurement techniques, exam creation, and in preparing questions for online exams. This shows a low level of technological readiness, and a lack of adaptation by academics to overcome the problems they experienced. These findings

correlate with those reported in the literature (Junus et al., 2021). Another finding regarding the problems experienced by academics was the high number of students that they taught, and how time-consuming the assessment procedures were over the academic year. The participant academics stated that this created additional workload for them; a finding that correlates with the study conducted by Olatunde-Aiyedun et al. (2021).

The current study's results in terms of the second research question indicate that the solutions proposed by the academics concerned the use of alternative assessment methods, asking different questions to students by mixing up the questions in exams through the use of appropriate software, and the use of webcams for exam invigilation and to help prevent cheating during exams. Similarly, Mata (2021) suggested changing assessments from objective measures (e.g., multiple-choice and true-false questions) to more subjective measures (e.g., essays and research papers) that required students to demonstrate a more in-depth understanding of a topic and that required greater personal expression. Mixing up the questions used in online examinations via appropriate software was also suggested in other studies published in the related literature (Mahajan et al., 2021; Nigam et al., 2021). Another proposed solution to prevent exam cheating was the use of webcams for invigilation during online exams. This finding was also reported by Kamble and Ghorpade (2021), Linden and Gonzalez (2021), Nigam et al. (2021), and also Noorbehbahani et al. (2022). However, in the study conducted by Henderson et al. (2022), it was reported that although some forms of invigilation systems reduced the frequencies of cheating during online exams, they were considered incomplete solutions due to complex variables in play. Although almost all of the participants suggested that exams could have been conducted face-to-face, this suggestion cannot be regarded as realistic due to the health-related restrictions imposed during such a pandemic. In other words, if the conditions had allowed, we probably would not have conducted exams online anyway.

The metaphors used by the participant academics related to the measurement and evaluation practices they experienced were grouped under three categories, as positive metaphors, negative metaphors, and metaphors that implied online measurement and evaluation practices as having played a key role during the period of emergency remote teaching. These categories showed that some of the participant academics thought that the online measurement and evaluation practices they experienced were really meaningful, whereas others reckoned that, in their experience, the remote measurement and evaluation processes were not considered to be a valid method. This may be due to the academics having taught subjects in different fields, and some courses rather than others may not have been that appropriate to assess within an online environment, e.g., those requiring hands-on or practice-based activities. Another reason why they used more negative than positive metaphors may be explained by the participant academics not having the adequate knowledge or experience to satisfactorily conduct measurement and evaluation practices within a remote teaching environment.

6. CONCLUSION

Although the current research was focused on the measurement and evaluation practices in operation during the emergency remote teaching period of the COVID-19 pandemic, we believe that it also revealed that remote learning had already shown its various advantages in terms of teaching and learning and would therefore likely be used more effectively in the future should similar emergency conditions prevail. The reason why the participant academics were not really that satisfied with the measurement and evaluation practices during the

remote teaching era may be due to the emergent nature of the teaching practices in play being still quite novel to many academics and the shift to online education was simply too fast for many; with academics required to adapt suddenly to significant changes in the field of measurement and evaluation due to the sole use of online environments in such a short space of time. However, we should also acknowledge that online environments had already become an indispensable part of higher education. Therefore, teaching, learning and staff development all have to form a part of the wider professional development and lifelong learning of academics. In addition, higher education teaching professionals should not only develop themselves in terms of the most appropriate and up-to-date teaching methods and techniques, but also seek out appropriate solutions to create more reliable measurement and evaluation processes for the remote teaching and learning setting.

7. SUGGESTIONS AND LIMITATIONS

We suggest that all universities should review their measurement and evaluation strategies as well as their curricula in order to help overcome the various problems encountered in teaching within the online environment, since it seems inevitable that online education will form an ongoing part of educational systems in the future. In doing this, all higher education institutions should provide continuous professional development opportunities for faculty members so as to increase their readiness regarding the planning and implementation of online measurement and evaluation processes, as well as to better support their general digital competencies. In addition, universities should provide their faculty members with all the necessary equipment and infrastructure needed to minimize the problems reportedly experienced during online measurement and evaluation practices.

Future studies in this area could be conducted in different countries and with larger sample sizes in order to assess the full impact of the COVID-19 pandemic on the measurement and evaluation of higher education students. Similarly, longitudinal studies could be designed and conducted that are aimed at revealing the effect over time of remote teaching.

This current study presents certain limitations. The COVID-19 pandemic was a global phenomenon and the problems encountered during this period were universal. Therefore, this single-country study, although conducted with a large sample size, may not offer findings that can be generalized to the international context. However, the study can be acknowledged as having highlighted important aspects about the problems experienced with measurement and evaluation practices in the online setting, revealing a better understanding of how academics struggled to resolve the problems they encountered during the pandemic. Another limitation is that the conclusions reached are solely based on qualitative data. Further studies could therefore focus on gathering quantitative data regarding the views of teaching academics on the measurement and evaluation practices employed during the COVID-19 pandemic.

DECLARATIONS

Author Contributions: All authors contributed equally.

Conflicts of Interest: There is no conflict of interest between the authors in the research.

Ethical Approval: This research was conducted with the permission of Çanakkale Onsekiz Mart University's scientific research ethics committee (dated 07/09/2021; numbered E-84026528-050.01.04-2100156592).

Data Availability Statement: The data that supports the findings of this study are available from the corresponding author, upon reasonable request.

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