# The impact of online assessment challenges on assessment principles during COVID-19 in Oman

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## Abstract

With the emergence of COVID-19, many educational pillars have been altered from conventional ways to online solutions. The educational assessment has been administered in online environments despite all encountered challenges. This descriptive study aimed to uncover the online assessment challenges that were confronted. Furthermore, it intended to display the impact of these challenges on the assessment principles. A mixed-method approach was adopted for data collection. A survey was used to collect quantitative data from 60 academic staff at Sultan Qaboos University in Oman, and semi-structured interviews were conducted with four of them. The study found some challenges when applying online assessment such as learners' refusal to turn on cameras, heavy teaching loads, cheating, the long time required for developing online assessment instruments, impersonation/dishonesty, assessing practical experiences, plagiarism, grades' inflation, assessing group's work, academic integrity and a large number of students per section. The study concluded that these challenges respectively threatened assessment principles of validity, efficiency, fairness, reliability and variability.

## Practitioner Notes

1. Reasons standing behind each of the found online assessment challenges should be explored and solutions for each particular challenge should be examined.
2. Principles of validity, reliability, fairness, variability and efficiency of the online assessment need to be addressed.
3. The study recommended applying various alternative assessment strategies embedded in the online course activities to reduce the likelihood of cheating and increase the validity and reliability of the overall assessment process.
4. Due to the found challenges of online assessment, academic staff should avoid conducting a single heavy-weighted strategy for summative assessment.
5. Teachers should attend to individual cases facing difficulties carefully in the online assessment contexts; and prepare flexible alternative assessment plans.

## Keywords

## Introduction

Online learning imposed itself as the best educational solution for all Higher Educational Institutions (HEIs) during the COVID-19 pandemic. Many practices were reconsidered and altered from a negative corner into a positive one. As with any development attempt, it is natural to face some barriers that distract the proper application of online learning. Gillett-Swan (2017) emphasised that online learning environments present challenges for academic staff who increasingly need technological competency levels and proficiency besides their regular academic workload. Likewise, some challenges were experienced during the move to online learning during the COVID-19 pandemic. Slimi (2020) found that the most annoying factors of online learning were poor internet connections, lack of collaboration among learners and cultural restrictions. Furthermore, the institutions' IT infrastructure, instructors, and students' readiness to shift to online learning can affect the educational quality if not well managed. Mohmmed et al. (2020) insisted on the internet accessibility issues in the Omani rural areas, where students endure uncomfortable travelling to obtain adequate network services and attend the online sessions.

In addition, assessment in online learning contexts has been discussed at the international level as online learning can be under the threat of cheating, plagiarism, dishonesty, and impersonation (Peytcheva-Forsyth et al., 2018). At the local level, Osman (2020) claimed that "The assessment of students' performance in online environments remains to be a challenge to both instructors and students, particularly the assessment of practical skills, technical competencies, and teaching practicum" (p. 9). Similarly, Bensaid and Brahimi (2020) mentioned that "it is difficult to analyse students' outcomes, measure the applied evaluation process, or evaluate the extent to which student learning outcomes are being effectively attained as per the requirements of respective accreditation bodies" (p. 12).

The online assessment is the measure of learners' development through internet-based instruments. As with online learning, online assessment can be either synchronous or asynchronous. Synchronous online assessment can be like auto-scoring and feedback quizzes, simulations, or presentations. Asynchronous online assessment can be in the form of e-portfolios, reflections, projects, or assignments (Khan & Jawaid, 2020). Thus, Online assessment uses information technology or any web-based measurement tool to measure students' abilities or skills acquisition. Therefore, the purpose of this paper is to investigate the assessment's challenges encountered in online learning contexts and suggest alternatives to help all educational stakeholders establish clear standards when shifting to the online assessment. This research was guided by the following questions:

1. What were the challenges academic staff faced when applying online assessment strategies at the College of Education during the COVID-19 pandemic?

2. How were the assessment principles impacted by the online assessment challenges during the COVID-19 pandemic?

## Literature review

The shift from the usual face-to-face environments to online platforms was associated with a number of difficulties. Furthermore, due to the COVID-19 pandemic, the urgent transfer to online learning has escalated the impact of these challenges and created other new ones. This review provides an overview of the encountered online assessment challenges. In addition, it highlights core assessment principles.

### *Online assessment*

The challenges were categorised into three main themes: information technology-related challenges, learners-related challenges and academic staff-related challenges. The IT infrastructure forms a backbone for online learning success in general and online assessment in particular. Without having sufficient hardware, software and network connection, some serious consequences might overwhelm the educational process. Rahim (2020) emphasised the importance of the availability of all required resources, including network service, online platforms, technological resources and infrastructure, and considered them prerequisites to implement online assessment and respond to educational challenges effectively during this pandemic. According to Kemp's (2020) statistics, only about 60% of the world's population had internet access. Tuah and Naing (2021) described the global IT infrastructure as "unreliable systems" (p. 63) because of the insufficient networking, equipment, software and IT security systems. In Oman, Mohmmed et al. (2020) and Slimi (2020) found that IT infrastructure and lack of adequate internet accessibility could be the top barriers impacting the proper implementation of the online assessment. Thus, the first gate towards the success of an online learning environment is the availability of IT infrastructure. The absence of such a facility can make the shift to online learning and online assessment much more difficult.

Students constitute the cornerstone of the success of the transition to online learning. However, some learner-related challenges could hinder such a process. These challenges can be traced as follows: learners' competencies, learners' sense of isolation, learners' refusal to turn on cameras, and learners' unethical practices. To cope with the assessment needs in the new context, students should have sufficient IT and time-management skills. Learners' IT skills are essential for ensuring their ability to manage learning in an online environment. Unfortunately, recent studies found that many students lack IT competencies (Adedoyin & Soykan, 2020; Tuah & Naing, 2021). This factor can decelerate the assessment process and create a digital divide between experienced and beginner IT users. Another developed barrier in online assessment environments was learners' time management skills (Mishra et al., 2020), leading to learners' late submissions and absences of synchronous assessment activities. Thus, learners' entry skills should be analysed before planning the compatible assessment strategies.

Kebritchi et al. (2017) found that learners in online environments felt isolated from their teachers and peers. Gillett-Swan (2017) claimed that students in the online learning context experienced a sense of isolation more than their counterparts learning in a face-to-face

context. Therefore, a sense of community and belonging needs to be developed to facilitate an interactive and engaging online learning experience and reduce the barriers often felt by isolated students. During the COVID-19 pandemic, García-Morales et al. (2021) claimed that a sense of isolation was a significant issue in designing online courses, signifying the need to find opportunities to promote students' engagement and collaboration. Although the issue seemed to be simple and neglectable, the previous findings delivered a serious message.

In face-to-face learning environments, body language and eye contact support verbal communication between teachers and learners. In addition, they provide clues of learning comprehension or difficulties. Thus, turning on cameras can play a role in enhancing instructional interaction. However, most Omani learners refuse to turn on cameras in online environments (Alruwais, 2018; Slimi, 2020). Castelli and Sarvary (2021) claimed that the refusal to turn on cameras is an international challenge. Moreover, the study found that learners' worries about their personal appearance, physical background, weak internet connections and cultural restrictions were the reasons behind such rejection. Thus, understanding learners' concerns and convincing them of turning on cameras during the assessment sessions could help teachers overcome this challenge.

The open nature of the online environment offers learners numerous easy means for obtaining high grades. Cheating has been a long-standing overwhelming issue for tutors in assessing students in online learning contexts (García-Morales et al., 2021). Also, impersonation and plagiarism were dominant threats for the online assessment environments (Peytcheva-Forsyth et al., 2019). Tuah and Naing (2021) provided examples of learners' practices during synchronous assessment sessions, such as screen sharing, utilising multiple screens, wearing Bluetooth headsets, using mobiles or forwarding screenshots to classmates. Furthermore, Munoz and Mackay (2019) labelled validity as the most threatened assessment principle. Menéndez-Varela and Gregori-Giralt (2018) confirmed the effects of learners' unethical practices on the validity and raised the issue of grades' inflation. Grades' inflation refers to crediting students' additional points that imprecisely represent the actual academic achievement (Arrafii, 2020). Consequently, these practices could cause misinterpretation of students' abilities and knowledge due to the misleading results.

To manage learners' practices and reduce their negative impact on the educational system, some solutions were proposed. Rahim (2020) emphasised the importance of taking precautions to address validity and reliability threats. Thus, some studies suggested implementing authorship and authentication checking instruments and plagiarism detection software (Peytcheva-Forsyth et al., 2019). In addition, García-Peñalvo et al. (2021) recommended assigning a more significant portion of assessment grades on the formative assessment. The authors also encouraged teachers to avoid implementing final exams due to their considerable drawbacks. Gamage et al. (2019) suggested maintaining a bank of questions, where each student could get a different set of equivalent questions. The article also proposed shuffling and randomising questions for test-takers. One possible solution is

to personalise the assessment experience, where learners get actively engaged in contextualised activities.

### *Academic staff*

The third theme, academic staff-related challenges, provides an overview of the encountered administrative issues and the competencies required to manipulate the online assessment process. Online learning administration could positively or negatively influence the online classroom experience. The way administration manages online courses determines the success or failure of online programs. Therefore, several administrative decisions might form challenges for the academic staff. Some of these issues are teaching workloads and large enrollments per section.

The teaching workload is not only about the teaching hours an academic staff spends delivering instruction per week. The staff efforts are expanded due to the preparation of the online resources, designing assessment activities, supporting learners and grading tasks. In face-to-face learning environments, the communication between teachers and learners is mostly regulated to the classroom sessions in addition to the announced office hours. However, in online environments, some learners expect 24/7 support from teachers. Tyanan et al. (2015) found that overloading academic staff with the teaching hours led to significant levels of staff dissatisfaction. In addition, the heavy workloads can result in unforeseen cost and time impacts (Adedoyin & Soykan, 2020). Bright (2012) believed that "it must be remembered that at least part of the future and sustainability of e-learning depends on lecturers managing their e-learning workload effectively so that they don't "burn out" from workload demands" (p. 3). Also, academic staff claimed that if they reduce their online teaching time, the learning outcomes might be barely achieved (Tyanan et al., 2015). Hence, the educational administration should align the teaching workloads with the new tasks, support and communication amendments of the online context.

Large enrollments of students per section is another administrative issue. Increasing the learners' numbers per online section does not impact the administrative efforts to offer extra seats, teaching halls, equipment, accommodations, transportation, and health centres. From an administrative view, the academic staff can deliver the same content to any number of students. However, Bettinger et al. (2017) raised some concerns affecting large-group teaching. First, the educational administration does not expect teachers to decrease the number of assessment activities, time spent in grading and providing feedback, or the amount of the delivered content. Second, there is an increased probability of peer disruption due to the highly demanding learners and many discussion posts. Therefore, a standard number of enrolled students in online courses should be considered. Arzt (2011) recommended keeping students' enrollments between 15 and 22 in an online environment. According to Orellana (2009), a class of 16 learners was perceived sufficient to maintain the highest levels of learning interactions. Thus, an adequate average of students' enrollments in online classes should be considered.

Several competencies can make a great difference in the performance of academic staff. The absence of these competencies could generate a gap between what the context requires and what the staff has. This section discusses the challenges associated with staff's competencies. These competencies are academic staff IT skills, assessing group projects, assessing practical experiences, online grading and offering individual feedback.

The transition to online contexts demands academic staff readiness to manipulate the changes of the new environment, including possession of sufficient IT skills level. Govindarajan and Srivastava (2020) indicated that some faculty members who mainly rely on traditional teaching tools fall into a digital divide. This digital divide takes lower-skilled staff away from digital natives' competencies. Younger faculty and learners can easily and quickly manage IT tools, which adds embarrassment and lateness to the lower-skilled staff. García-Morales et al. (2021) summarised the essential IT skills needed for teachers in online contexts. These skills are proficient hardware knowledge, specific telecommunication capabilities, sufficient management of numerous learning management tools and abilities to solve technical issues quickly during online classes. Thus, academic staff should ensure having these skills to concentrate on other fundamental tasks in instruction.

Assessing group projects is another challenge facing academic staff. Most academic staff encourage learners to share experiences by assigning them into groups, which helps learners break down complex problems into collaboratively assembled tasks to achieve the desired results. However, Alruwais et al. (2018) argued that assessing group projects is difficult for the academic staff in an online learning environment. This difficulty was due to the teacher's doubts about the actual contribution of each team member. To overcome the problem of assessing group projects, García-Peñalvo et al. (2020) set several guidelines for group sizes in an online learning environment. For instance, the defence can be arranged through video-conferencing applications for a group of 2 to 4 members. An oral exam via video conference could be feasible for individuals between 4 and 15 members. The timely controlled oral exams can be applied for intermediate-sized groups, between 15 to 40 students. Alternatively, the group can be divided into sub-groups of 10 learners, where oral exams can be conducted and monitored through video-conference. Finally, large-sized groups, above 40 learners, should be divided into smaller groups and examined using an e-proctored testing system.

In addition, due to the unexpected shift to online learning platforms during the COVID-19 pandemic, the measurement of practical experiences could form a great concern to learners and educators. It is one of the most challenging factors in online assessment (Osman, 2020). Reeves (2000) linked this challenge to the subjectivity of assessing these experiences. Some authors claimed that manual skills should be only demonstrated in physical environments to ensure a valid measurement of learning outcomes (García-Peñalvo et al., 2020; Phillips & Lowe, 2003). Leszczyński et al. (2018) encouraged augmenting face-to-face experiences until learners return to authentic physical environments. The previous studies questioned the validity of online assessment instruments in measuring hands-on

experiences. Thus, finding alternative solutions for assessing practical experiences in online contexts needs further investigation.

Furthermore, online grading can be time and efforts consuming. Farooq et al. (2020) reported grading learners' submissions in online environments as a challenge. In fact, online grading can be a consequence of other challenges, like the lack of IT skills, the large numbers of learners per section, assessing practical experiences and assessing group's projects. Also, Tuah and Naing (2021) believed that the challenging level increased when assessing higher-order learning objectives. This difficulty is due to the nature of subjective judgment and following the procedures of plagiarism checkups. Therefore, clear rubrics may accompany a peer assessment strategy to offer insights into the deserved grade to reduce marking struggle.

Although feedback is undoubtedly essential in enlightening learners of the right path for meeting the learning outcomes, providing online feedback to individual learners could be another challenge. Abduh (2021) confirmed the importance of feedback in enhancing the effectiveness of the assessment process in online learning during COVID-19 lockdown, pointing out that teachers on online learning lack the skills to provide instant and constructive feedback. Furthermore, Henderson et al. (2019) insisted that feedback should be personalised to each student, clear, detailed, providing exemplars, and addressing both strengths and weaknesses of the submitted work.

### Assessment principles

As this paper studied the impact of the online assessment challenges on the assessment principles, there are essential principles to optimise the quality of the educational assessment. These principles are validity, reliability, fairness, variability and efficiency (McMillan, 2018). Gay et al. (2011) defined validity as the trustworthiness of objectives-achievement measures and their interpretations. Menéndez-Varela and Gregori-Giralt (2018) viewed reliability as avoiding any biases or interventions during the assessment process. In other words, reliability represents the stability of assessment results when the assessment is repeated. Fairness is about ensuring learners' equity of any irrelevant constructs, like age, gender, language or illness conditions (Rasooli et al., 2018). McMillan (2018) insisted on using different measurement instruments that best suit the learning outcomes and delivery strategies, referred to as the variability principle. Finally, efficiency reflects teachers' competencies in educational assessment and other supportive factors of infrastructure, cost and time (Looney et al., 2018).

The field of online assessment has rapidly grown due to the COVID-19 pandemic. The unprepared shift to online environments demolished the face-to-face assessment choice and transferred the applied assessment strategies to the new contexts. Some considerable threats affected the quality of assessment and consequently influenced the core assessment principles.

## Method

A mixed-method research design was used to collect the data to answer the research question and explore the challenges in an online environment. It combined quantitative and qualitative inquiry methods to help bridge the gap between the data obtained from the questionnaire and the findings of the semi-structured interviews. The mixed-method research builds collaboration between quantitative and qualitative methods to better understand a phenomenon than using quantitative or qualitative methods separately (Gay et al., 2011). Thus, this mixed-method approach allowed the researcher to report the things as they exist in nature and drew a holistic image of the findings.

The population of this study was represented in all academic staff at the College of Education (COE) at Sultan Qaboos University in the academic year 2020-2021. The college has eight academic departments: Art Education, Curriculum and Instruction, Early Childhood Education, Educational Foundation and Administration, Instructional and Learning Technologies, Islamic Education, Physical Education and Psychology. There were about 113 academic staff at the COE, and all were invited to participate in filling out the questionnaire. There were 60 anonymous responses collected from the eight departments. In addition, four academic staff were purposively selected to participate in the semi-structured interviews. It is worth mentioning that Participant A and Participant D were chosen for their expertise in the online assessment field. Moreover, Participant B and Participant C were selected due to the practical nature of their teaching courses. The purposive sampling offered the researchers a greater chance to collect insightful data (Merriam & Tisdell, 2015).

A questionnaire and a semi-structured interview were both designed by the researchers based on the reviewed literature (Alruwais et al., 2018; Chuah & Mohamad, 2020; Mohmmed et al., 2020; Slimi, 2020) that have tackled the online assessment challenges. The initial versions of the instruments were reviewed and checked by nine experts in the educational assessment field to check the clarity, relevancy to the main research question and detect potential issues and concerns emerging during the actual data collection process. Accordingly, the term "tutors" was replaced with "academic staff", some items were modified to enhance their clarity, and a few unnecessary items were deleted. Then, the final version of the questionnaire was pilot-tested on 30 respondents, and the reliability of the items was measured using Cronbach reliability coefficient ($\alpha = 0.90$). The coefficient reflected an appropriate reliability level of the research instrument (Pallant, 2011). Later, the questionnaire was distributed to the participants, and the collected data were analysed and interpreted.

## Results

To answer the research questions, data collected from the questionnaire and semi-structured interviews were analysed.

### *Online assessment*

A five-point Likert scale was used to analyse the questionnaire, namely strongly agree = 5, agree = 4, neutral = 3, disagree = 2 and strongly disagree = 1. Table 1 presents the calculated values and their interpretations (Pimentel, 2019).

**Table 1:**
*Online assessment mean scores and interpretation*

| Scale Value | Interpretation |
|---|---|
| 4.20 – 5.00 | A destructive challenge |
| 3.40 – 4.19 | A serious challenge |
| 2.60 – 3.39 | A moderate challenge |
| 1.80 – 2.59 | A slight challenge |
| 1 – 1.79 | Not a challenge at all |

First, the mean and standard deviation was found for each challenge. Second, the applied online assessment challenges were placed according to their mean into their representative scale. Third, the challenges were ranked from the top to the least challenging items. Table 2 presents the means and standard deviations for the challenges, ranked from the serious to the slight challenging ones, as reported by a sample of 60 academic staff from the eight departments at the COE.

Table 2 presented that no single challenge could be considered at the destructive challenging level. However, eleven items fall into the serious challenge level. These serious challenges were learners' refusal to open cameras, heavy teaching loads, cheating, the long time required for developing online assessment instruments, impersonation/dishonesty, measuring some learning outcomes, plagiarism, grade inflation, assessing group's work, academic integrity and students' number per section. Nine challenges were placed at the moderate challenging level. These challenges were learners' feeling of isolation, learners' late submissions, poor IT infrastructure, the unfamiliarity of academic staff with technology, learners' lack of technological competencies, online grading, internet accessibility, LMS issues and offering feedback to students. Finally, learners' absences were the only challenge at the slight challenging level. It is worth mentioning that the "not a challenge at all" level did not catch any of the items. To analyse the semi-structured interviews, thematic analysis was manually administered (Braun & Clarke, 2012). Table 3 shows the thematic analysis of online assessment challenges that the interviewees faced during the COVID-19 pandemic.

**Table 2:**

*Online assessment challenges*

| Rank | Challenge | M | SD | Interpretation |
|------|-----------|------|------|----------------|
| 1 | Learners refuse to open cameras due to cultural restrictions. | 3.97 | 1.11 | |
| 2 | Academic staff are overloaded with teaching hours. | 3.88 | 1.12 | |
| 3 | Cheating is a major problem in online assessment. | 3.86 | 1.37 | Serious Challenges |
| 4 | Developing online assessment instruments requires a lot of time. | 3.83 | 1.05 | |
| 5 | Online assessment faces many impersonation/dishonesty threats. | 3.81 | 1.17 | |
| 6 | It is difficult to measure some learning outcomes through the online assessment. | 3.80 | 0.89 | |
| 7 | Students tend to plagiarise in online assessment. | 3.68 | 1.25 | |
| 8 | Online assessment leads to grade inflation. | 3.64 | 1.13 | |
| 9 | Assessing group projects is a difficult task. | 3.61 | 1.10 | |
| 10 | It is difficult to ensure an appropriate process (integrity) of student authentication. | 3.54 | 1.21 | |
| 11 | There is a large number of students per section. | 3.46 | 1.32 | |
| 12 | Learners feel isolated and not supported. | 3.32 | 1.24 | Moderate Challenges |
| 13 | Learners submit their online assignments late. | 3.31 | 1.05 | |
| 14 | Information Technology (IT) infrastructure is poor. | 3.20 | 1.21 | |
| 15 | Academic staff are unfamiliar with technology. | 3.08 | 1.12 | |
| 16 | Learners lack technological competency. | 3.03 | 1.17 | |
| 17 | It's hard to manage online marking/grading. | 2.88 | 1.28 | |
| 18 | There is a lack of internet accessibility. | 2.86 | 1.22 | |
| 19 | Learning Management System (LMS) has some issues. | 2.81 | 1.17 | |
| 20 | It's difficult to provide feedback on learners' performance. | 2.67 | 1.19 | |
| 21 | Learners' absences rate is high. | 2.35 | 1.08 | A slight challenge |

Table 3 presents three main themes of challenges: administrative issues, practical experiences assessment and online environment. The "administrative issues" theme represented the heavy teaching loads and the increased number of students per section in the online classes during the COVID-19 pandemic. Academic staff insisted that the teaching load was over than it should be for online environments. Respondent B stated, "I

have 20 teaching hours, three sections of one course and another course with one section". Also, the number of enrolled learners was considered high for online learning environments. Respondent C clarified, "The average number of students per section is 25. In a face-to-face context, this number was manageable. I discovered that the efforts got doubled for the same number of students in an online learning context," and Respondent B elaborated, "The number of students became larger in sections. Usually, there are 15 students only in each section for the workshops, while in online learning, one section has reached 30 and another had 27 students."

**Table 3**
*Online assessment challenges facing academic staff*

| Themes | Codes |
| --- | --- |
| Administrative Issues | Teaching hours |
| | Large students' number per section |
| Practical experiences assessment | Unrepresentative work |
| Online environment | Developing assessment activities |
| | Grading and feedback |

The "practical experiences assessment" theme mainly concentrated on the challenges of receiving unclear photos or videos from students' work, where some essential details of the required skills were unclear. Respondent B explained that "Some students photographed their hand-made projects with poor quality, impacting the precision of colours' degrees as well as the sizes of the objects.". For tangible objects, the academic staff struggled to assess the students' process to achieve the final project. They were not sure of how the final outcome was achieved. Another issue with assessing the practical experience concerns the integrity of student authentication, identifying who produced the hand-made requirements of the course. Furthermore, the academic staff faced difficulty ensuring the quality of the applied skills if the context changed to face-to-face. In this regard, Respondent C claimed, "Although teaching practice trainees demonstrated what they gained through online assessment tools, I am still not sure of their abilities to apply face-to-face teaching strategies". Academic staff efforts were insufficient to overcome the absence of physical attendance. Summing up, practical experiences can be best measured in face-to-face contexts.

The "online environment" theme refers to the nature of the learning context and its requirements. The academic staff believed that it is harder to develop assessment activities, grade students' work and offer feedback in an online learning environment than in face-to-face contexts. Respondent A reported, "I offered students feedback as a part of formative assessment. My aim is to concentrate on students' mastery level, even if it causes grades inflation and consumes the time of my personal and family life.". Respondent B considered online grading and offering feedback as challenges too,

> *It isn't easy to grade the work online, neither to give students feedback on the initial drafts of their artistic works. If the teacher decides to give students feedback for improvement, he/she will overburden himself/herself with double work and distract his/her mind.*

Despite all the discovered challenges, academic staff continued applying online assessment strategies for some critical reasons. The semi-structured interviews showed that the academic staff valued online assessment as it enabled them to precede the learning process. Respondent A believed that online assessment is the best assessment choice for COVID-19 pandemic, "I think it is the best choice to use online assessment strategies because it suits the situation of COVID-19 pandemic…. It is better to apply online assessment, especially during this period, than using paperwork or the conventional assessment methods." Respondent D agreed with Respondent A, "Online assessment was the best affordable choice". Also, Respondent C encouraged spending various efforts to optimise the educational practices, "It is a survival solution for COVID-19 situation. It is better to attempt it and learn new experiences than wasting time waiting for the pandemic to become over". Even if academic staff were aware of online assessment drawbacks, it was unavoidable. Their opinions, reflections, and comments represent a deep need for viable and varied online assessments methods and strategies as a solution during the COVID-19 pandemic, affecting the educational environment locally and globally.

### *Assessment principles*

Aligning the online assessment challenges with its impacted principles could provide an insight into how such challenges influence the whole assessment process; some challenges affected more than a single assessment principle. Table 4 presents the corresponding principle to each assessment challenge. These findings showed how several challenges in online learning environments threatened assessment principles. As per the findings of this study, eight serious challenges could influence the validity principle. These challenges were cheating, impersonation/dishonesty, plagiarism, learners' refusal to open cameras, assessing group projects, measuring some learning outcomes in an online learning environment, grades inflation and ensuring learners' authentication. Moreover, reliability was negatively impacted by three serious challenges. These challenges were cheating, measuring some learning outcomes in an online environment and ensuring learners' authentication.

Fairness was threatened by three serious challenges, five moderate challenges and one slight challenge. The three serious challenges were learners' refusal to open cameras, assessing group projects and grades inflation. The five moderate challenges were poor IT infrastructure, lack of internet accessibility, learners' lack of technological skills, learners' late submissions of online assignments, and learners' isolation. The slight challenge was learners' high-rate of absence. Variability was affected by one serious challenge and two moderate challenges. The serious challenge was measuring some learning outcomes in an online environment, while the moderate challenges were poor IT infrastructure and lack of internet accessibility.

**Table 4:**

*Assessment principle challenges*

| Assessment Principle | Challenge | Level |
|---|---|---|
| Validity (McMillan, 2018; Menéndez-Varela & Gregori-Giralt, 2018; Munoz & Mackay, 2019; Tuah & Naing, 2021) | Cheating<br>Impersonation/dishonesty<br>Plagiarism<br>Refusal to open cameras due to cultural restrictions<br>Assessing group projects<br>Measuring learning outcomes in an online environment<br>Grades' inflations<br>Ensuring learners' authentication. | Serious Challenges |
| Reliability (Menéndez-Varela & Gregori-Giralt, 2018; Tuah & Naing, 2021) | Cheating<br>Measuring some learning outcomes in an online environment<br>Ensuring learners' authentication | Serious Challenges |
| Fairness (Rasooli et al., 2018; Tierney, 2012) | Refusal to open cameras due to cultural restrictions<br>Assessing group projects<br>Grades' inflation | Serious Challenges |
|  | Poor IT infrastructure<br>Lack of internet accessibility<br>Learners' lack of technological competency Learners' late submissions of online assignments<br>Learners' feelings of isolation | Moderate Challenges |
|  | Learners' high-rate absences | A slight challenge |
| Variability (McMillan, 2018; Reeves, 2000) | Measuring learning outcomes in an online environment | A Serious Challenge |
|  | Lack of internet accessibility<br>Poor IT infrastructure | Moderate Challenges |
| Efficiency (Looney et al., 2018) | Heavy teaching workloads<br>A large number of students per section<br>Assessing group projects<br>Measuring learning outcomes in an online environment<br>Required time for developing online assessment instruments | Serious Challenges |
|  | Poor IT infrastructure<br>lack of internet accessibility<br>Learning Management System (LMS) issues<br>Academic staff's unfamiliarity with technology<br>Online marking/grading<br>Providing feedback to learners' performance | Moderate Challenges |

Efficiency was impacted by five serious challenges and six moderate challenges. The five serious challenges were heavy teaching workloads, a large number of students per section, assessing group projects, measuring some learning outcomes in an online environment and the time required for developing online assessment instruments. The six moderate challenges were poor IT infrastructure, lack of internet accessibility, Learning Management System (LMS) issues, academic staff's unfamiliarity with technology, online grading, and feedback on learners' performance.

Thus, validity was the most affected principle, as it responded to the largest number of serious online assessment challenges. Efficiency came at the second threatened place due to scoring five serious challenges and six moderate ones. In the third place, fairness was located. It was threatened by three serious challenges, five moderate challenges and one slight challenge. Reliability was at the fourth impacted place, responding to three serious challenges. Finally, variability was the least affected principle as it was influenced by one serious challenge and two moderate challenges.

## Discussion

The findings indicated that academic staff didn't face any destructive challenges that could threaten the whole educational process during the pandemic. However, the current study found several serious challenges that need to be managed. These challenges were learners' reluctance to turn on their cameras, heavy teaching loads, cheating, the long time required for developing online assessment instruments, impersonation/dishonesty, measuring some learning outcomes, plagiarism, grades inflation, assessing group's work, academic integrity and students' number per section.

Due to cultural restrictions, Omani learners refuse to turn on their cameras during synchronous class meetings. This finding agreed with Slimi's (2020) results claiming that the non-turning on of cameras in online conferences could be attributed to cultural issues. The issue is broader than just turning on a camera for no sake. Turning on cameras help academic staff ensure learners' identity, keep eye contact with students, interpret facial expressions, add the invigilation value to the assessment, and reduce social isolation stress. Castelli and Sarvary (2021) claimed that students should have their cameras turned on during remote learning for several reasons, such as expanding educational experience, improving instruction effectiveness, building instructor-student and student-student relationships and decreasing feelings of loneliness. This reluctance can decrease over time, especially when a clear policy is shared with students at the beginning of the semester. Therefore, more studies on why students are reluctant to turn on their video cameras during synchronous class meetings can help educators gain valuable insights and develop strategies to encourage students to turn on their cameras during online classes.

The teaching load and the number of students per section were two other challenges related to administrative issues, supporting Chuah and Mohamad's (2020) findings. In an online learning environment, the educational administration doesn't need to worry about the capacity of the physical infrastructure, like teaching venues, computer labs, students' accommodation and transportation. From an administrative perspective, adding new sections and extra learners' numbers per section in online classes was more manageable than in face-to-face classes. However, such decisions could form serious challenges for the academic staff. In an online environment, it is recommended to keep students' enrollments between 15 and 22 (Arzt, 2011), and the teaching workload should not exceed what was in a face-to-face setting (Bright, 2012).

Some serious challenges were identified and directly related to the learners' ethics and morals towards learning, like cheating, impersonation/dishonesty, plagiarism, grades inflation and academic integrity. Measuring some learning outcomes is difficult due to their practical nature. These challenges with such a level of seriousness directly jeopardise core assessment principles of validity, reliability and fairness (Menéndez-Varela & Gregori-Giralt, 2018; Munoz & Mackay, 2019; Tuah & Naing, 2021). Validity is impacted by the inferences built on the students' results. They usually represent graduates with fake intellectual skills, physical abilities, competencies and attitudes, which eventually scarifies the quality of the whole educational system. Another threat in the online environment is that academic staff face difficulties balancing between the assessment strategies that best measure their learning objectives on the one hand and the strategies that best suit the nature of the online environment (Phillips & Lowe, 2003). Keeping the online requirements a priority over the learning outcomes reduces content validity and increases reliability (Menéndez-Varela & Gregori-Giralt, 2018). The historical relationship between the two principles rejects surrendering one to add value to the other. In other words, having most students high grades with great consistency among scores doesn't mean that the learning objectives were achieved by most of the students. It could mean that some hidden threats must be dug and brought to the surface. Reflecting on the current assessment practices and adopting alternative assessment strategies can reduce the sharpness level of these challenges. According to Kunnan's (2004) fairness assessment framework, fairness can only be achieved if both validity and reliability are guaranteed.

Other serious challenges were related to assessing the group's work and the time and effort required for developing online assessment instruments, which supports Alruwais et al.'s (2018) results. These two challenges impact efficiency (Looney et al., 2018). Thus, the educational administration needs to configure staff's professional development needs and address them.

Some challenges were impacting both learners and academic staff and were considered quantitatively at the moderate level, whereas reported as serious challenges in other local and international studies (Chuah & Mohamad, 2020; Mohmmed et al., 2020; Slimi, 2020). These challenges were learners' feelings of isolation, learners' late submissions, poor IT infrastructure, the unfamiliarity of academic staff with technology, learners' lack of technological competencies, online grading, internet accessibility, LMS issues and offering feedback to students. The learners' related challenges directly influenced fairness (Rasooli et al., 2018; Tierney, 2012) and variability (McMillan, 2018; Reeves, 2000) principles. Therefore, it's recommended to conduct a comprehensive needs analysis of learners' needs before the semester begins. Learners at COE belong to a wide geographical diversity, varying from core cities to remote rural areas. Accordingly, the assessment strategies can be carefully decided on, planned and implemented.

The challenges of being unfamiliar with technology, online grading, and providing feedback to students can influence academic staff performance during online assessments. The qualitative data supports the literature by indicating that the academic staff spend significant effort and long periods in grading and offering effective feedback. Rahim (2020) insisted on the importance of ensuring high quality of feedback for students in online assessment. Thus, it is essential to admit that grades throughout formative assessment must be accompanied by corrective feedback to enhance learners' understanding of the intended outcomes and motivate them to perform better in summative assessment. These staff-related challenges represent the efficiency principle of assessment (Looney et al., 2018). Raising the awareness of the assessment's efficiency for both academic staff and educational administration is the first developmental step for

overcoming staff's struggles. Thus, although some challenges were at the moderate level, they still affected the fairness, variability and efficiency principles of assessment.

At the slight challenging level, learners' absence was placed as a challenge. Thus, students' attendance issues were not a big concern in online courses. Trinder (2002) emphasised that "The benefits of multiple modalities, online support tools, and instant feedback are believed to have the potential of increasing learner control, motivation, and autonomy" (p.69). It seems that the elements of portability and immediacy of online assessment are essential in the success of any attempt to create a motivating learning experience for digital learners.

## Conclusion

The study precisely examined the online assessment challenges to offer insights for one of the most worrying parts of the educational system during the pandemic. The study was conducted during the COVID-19 pandemic; in the academic year 2020/2021. The findings are confined to the current context of the study. The trend of online learning and online assessment is growing rapidly. Therefore, the practices of SQU academic staff towards online assessment are also changing rapidly. The findings indicated that several serious challenges needed to be managed. These challenges were learners' refusal to turn on cameras, heavy teaching loads, cheating, the long time required for developing online assessment instruments, impersonation/dishonesty, measuring some learning outcomes, plagiarism, grades' inflation, assessing group's work, academic integrity and large students' number per section.

The significance of online assessment in educational contexts is incontestable. Therefore, principles of validity, efficiency, fairness, variability, and reliability of the online assessment need to be addressed. This study added a theoretical value to the literature of online assessment by grouping the challenges to their corresponding assessment principle. Each assessment principle should be intensively examined to discover any other upcoming threats.

Due to the found challenges of online assessment, academic staff should avoid conducting a single heavy-weighted strategy for summative assessment. Instead, a larger grading weight should be distributed among various formative assessment strategies. Furthermore, the study recommended applying various alternative assessment strategies embedded in the online course activities to reduce the likelihood of cheating and increase the validity and reliability of the overall assessment process. Also, it is suggested that academic staff need to design and adapt assessment tools that require students to demonstrate skill and knowledge acquisition. In addition, teachers should attend to individual cases facing difficulties carefully, especially learners with low incomes, special needs, or those living in rural areas. These cases suffer an additional burden of acquiring the essential IT requirements of online assessment contexts. Thus, teachers should have flexible alternative assessment plans and report their difficulties to the institutional administration to take necessary actions.

Moreover, it is crucial to reduce teaching workload and the number of learners per section so that academic staff can follow each individual's learning progression per section, providing the necessary feedback to benefit from online courses. Instructional designers should consider IT infrastructure status and the weakness of internet connections when designing resources and activities for online courses. This study uncovered several online assessment challenges. Reasons standing behind each of these challenges should

be explored. Hence, solutions for each particular challenge can be suggested and examined. The online assessment was a rescue solution despite some drawbacks that need to be considered carefully. Human efforts need to be combined and concentrated on managing such a novel experience to transfer it to similar future crises around the globe. The pandemic has taught educators and experts to be creative enough in altering online assessment from its old negatively perceived basement.

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