Why Graded Assessment for Undergraduates During the COVID-19 Lockdown? An Experience Introspection

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Abstract

This paper presents a retrospective evaluation of the Higher Colleges of Technology's student assessments during the COVID-19 lockdown, reflecting the justified decision to deploy graded assessments during the lockdown for students to academically progress and/or graduate on time, while maintaining the quality and rigor of academic awards. The outcome-based evaluation of this paper is intended to provide lessons for any future situations of this significance and magnitude. While online education was the obvious response to the pandemic, the provision of assessments was not possible without risk. Taking a high-stakes decision that would affect the future of thousands of students, for years to come, involved complex steps of reasoning and justification. Addressing the role of graded assessment in supporting institutional accountability and transferability of students' achievements, student efficacy and informed pedagogy alterations were the main objectives. To meet those objectives, the Higher Colleges of Technology was able to deploy an off-campus student assessment model that builds upon three pillars of adjustments (assessment development and deployment; technology infrastructure; and governance resilience) to support students' learning, while mitigating vulnerabilities. The evaluation of student performance indicators and stakeholders' satisfaction rates revealed a successful deployment of off-campus assessment while maintaining the traditional conventions pertaining to evaluation of assessments.

Keywords: COVID-19, formative, online assessment, summative

Background

The Higher Colleges of Technology (HCT) is the largest federal higher education institution (HEI) in the United Arab Emirates (UAE), being founded in 1988 and having awarded more than 92,000 undergraduate degrees in Applied Media, Business, Computer Information Science, Engineering Technology, Health Sciences, Education, and Military and Security. Amongst many other accreditations, HCT is one of the first six HEIs in the world to receive accreditation from the Quality Assurance Agency (QAA).

HCT had 19,614 undergraduate students registered in 16 campuses for the spring-2020 semester at the time COVID-19 was declared a global pandemic. Transitioning to full, online delivery was an intuitive strategic intervention that ensured timely, legitimatized student learning progression and graduation. However, an evident quality and accountability dilemma surfaced around the issue of student assessment. While instructional delivery was possible with minor challenges, such as developing new strategies to ensure student engagement during class, providing reliable evidence of student attainment through assessment was a challenge. As was described by the QAA, alternative assessment approaches became as crucial as the alternative pedagogical provisions. As degree-awarding institutions, governing entities expect HEIs to maintain academic standards when implementing adjustments to the learning and assessment strategies in response to COVID-19 (QAA, 2020a). Globally, some HEIs decided to cancel assessments, while some opted to use Pass or Fail grading schema (Burke, 2020).

As the struggle between safety and accountability was assuming academic detrimental proportions, HCT realized that cancelling assessment was not possible. However, HCT's existing curricula are designed for on-campus delivery including physical proctoring, so placing assessment adjustments and using e-proctoring tools became evident. Additionally, the concerns over undertaking large scale modifications to existing assessment frameworks, in an extremely limited time, became a global concern (Joint Information Systems Committee [JISC], 2020). Within a few days, HCT reviewed its options and available resources, while balancing the best interest of students with curricular integrity, and the welfare of students and staff. The aspiration of setting an example for students to thrive during disruptions was also an added incentive for the decision to utilize graded assessments.

Summative assessment (SA) validates student academic progression with credible evidence, and in conjunction with formative assessment (FA), both assessments contribute to the development of students during their learning journey (Cilliers et al., 2010; Knight, 2002; Lau, 2016). Academics admit that assessments influence learning behaviors and experiences more than teaching (Medland, 2016). Similarly, students and teachers equally believe that exam marks are the main influencer on study strategies. Students even admit to shuttling between deep, superficial learning and effort management adjustments just to pass or score high marks (Al-Kadri et al.,2011). Moreover, students perceive SA as an extrinsic motivation, especially because they perceive the outcome as a reward for their work. Hence, academics see SA's value as outweighing the burden on staff in terms of enhancing the learning (Trotter, 2006). Formative assessment is predominantly used for learning and is empirically linked to student self-regulation tending to impose cumulative effects on students' thinking, actions, and feelings (Hawe & Dixon, 2017). It is also an assessment as learning (Black & Wiliam, 2003), accomplished through assessing students' competencies during instruction, coupled with feedback to improve students' learning and academics' teaching (Cilliers et al., 2010; Guerrero-Roldán & Noguera, 2018; Knight, 2002; Lau, 2016).

It is unorthodox for academics to change pedagogy without enough planning, training, and piloting. Due to the concerns of faculty to engage in a high-stakes enterprise without detrimental consequences, assessment is the area of least change in HEIs (Deneen & Boud, 2013). It is customary for faculty to investigate how students' learning is affected by any changes in teaching methods based on the students' performance in FA so they would adapt their teaching approaches. Conducting FA during the online pedagogy provided impromptu valuable guidance for faculty to adjust their teaching thus buffering the abrupt switching of lanes between on and off-campus pedagogy.

While e-proctored off-campus assessments can potentially increase student academic dishonesty (SAD), HCT addressed SAD from the moral imperative "Do No Harm", which assumes the position of keeping SAD to as-low-as reasonably achievable levels: an approach used commonly for management of safety-critical systems. Simply expressed by Williams and Wong (2009),

> While there will always be a small number of students who will cheat, the main priority should be to focus on the higher quality learning outcomes of the majority, rather than set up an entire system to stop a small minority (p. 234).

Discussions and deliberations were held with various stakeholders, including campus student council representatives and the UAE Ministry of Higher Education, to mention a few. Eventually, HCT deployed the Off-Campus Student Assessment Model (OCSAM) which ensured stakeholders' engagement and builds upon placing assessment adjustments, enhancing the technology infrastructure by the introduction of e-proctoring, and exhibiting governance resilience to support students' learning while mitigating the risks. The foundation of OCSAM observes QAA,2018 assessment principles and preserves curricular alignment to maintain academic standards (AlShamsi & El-Farra, 2021).

At the end, the retrospective evaluation of SAD rates, make-up rates, grades and cumulative Grade Point Average (cGPA), and graduation rates, in addition to the stakeholders' satisfaction results have indicated a successful intervention in response to the COVID-19 pandemic.

Why Graded Assessments in the First Place?

Summative assessment like final exams, dissertations, or final projects are conducted upon completion of an episode of teaching (for example, a course) and are mainly designed to assess students' learning without providing student performance feedback for improvement. The importance of SA is related to its ability to measure students' comprehensive outcomes' achievement with sound evidence, which supports accountability of HEIs (Bearman et al., 2016; Chong, 2018; Dixson & Worrell, 2016; Guerrero-Roldán & Noguera, 2018; Knight, 2002; Stödberg, 2012; Timmis et al., 2016). Complementing SA are FA instances, assessment tasks deployed periodically throughout the duration of the semester like quizzes, reports, and presentations with extensive reliance on structured feedback to provide guidance on how students could improve their learning, and how faculty could adjust their teaching (Knight, 2002; Trotter, 2006). Despite the debate around which assessment is better, having both types of assessments can provide invaluable pedagogical improvement tools for academics and students (Banta & Palomba, 2014; Chong, 2018; Crisp, 2012; Knight, 2002; Lau, 2016).

While some HEIs, at the global and local levels, have deferred assessments or applied Pass or Fail grading schema, HCT justified deployment of graded assessments based on: establishing accountability expectations to provide validated and transferable credentials; enhancing students' motivation and efficacy; and using feedback of FA to provide impromptu guidance to academics to prognosticate how successful this unprecedented pedogeological intervention may or may not be.

Accountability and Transferability

Predominantly, assessment of learning supports HEIs' accountability for students' employability prospects. When assessment or a collection of assessments warrant/certify achievement, grades are interpreted as metrics of performance that must be construed with trust and confidence by students, academics, institutions, employers, and quality assurance agencies (Knight, 2002). In addition to certification, SA provides information about the students' level of mastery (Trotter, 2006), thus informing progression to the next level of the study (Crisp, 2012). Moreover, assessment outcomes provide trustworthy evidence of students' attainment and provide stakeholders with astute judgements about students' achievements in stated learning outcomes (Knight, 2002).

In its COVID-19 initial guidance for higher education providers on standards and quality, the QAA stressed the need for HEIs to carefully define the extent that is deemed as sufficient evidence to verify achievement of learning outcomes, regardless of the different levels of courses and students. Additionally, HEIs which decide to award credits or qualifications to students who have not completed all planned assessments, need to record the basis for that decision (QAA, 2020a). In other words, while addressing the pandemic has required flexibility, quality compromises were not advised and when compromises were necessary, proper documentation must be carried out. To this end, and from an accountability standpoint, graded assessment was still the only possible avenue by which HCT could provide student learning quality assurance for all stakeholders.

Transferability of learning instances between different HEIs indicates that achievements of the learner can transfer to other settings and depends on the learning methodology (Knight, 2002). As official student records, transcripts are expected to accurately provide clarity on what adjustments have been made, regardless of the lockdown conditions. This, however, should be balanced against creating a perception that the spring-2020 awards are less credible than other years (QAA, 2020a). By positioning assessments at the heart of evidencing achievement, HCT decided to give leverage to transferability for students and safeguard their performance, so they are not "stigmatized". So, like all previous semesters since the establishment of HCT, spring-2020 graded assessments can be tracked down for evidence of attainment at any time in a student's life.

Student Motivation and Self-efficacy

Students are reward-oriented beings, who are less inclined to make an intensive effort for low-stakes assignments, even if the learning activities were appealing (Cilliers et al., 2010). Also, students seem to prefer assessments that extend discriminatory indications of academic capacity. Furthermore, students perceive marks obtained without assessment as being unfair (Iannone & Simpson, 2017). It is also evident that assessment has an unswerving impact on the quality of students' learning and performance (Al-Kadri et al., 2011; Cilliers et al., 2012; Medland et al., 2016; Trotter, 2006; Van de Watering et al., 2008). The effect of assessment goes even further, as students tend to alter their learning behaviors against their longer-term goals and quality of learning. It is also not uncommon for students to gauge the scale and

distribution of effort of study based on what an examiner was likely to ask (Cilliers et al., 2010). Likewise, research describes a directly proportional relationship between the associated magnitude and severity of assessment consequences, and students' learning (Al-Kadri et al., 2011; Cilliers et al., 2012). Learning behaviors are even shaped by students' perception of the assessment impact (Cilliers et al., 2010, 2012). Some students get achievement-motivated, based on the weighting of the assessment, so they plan their study strategies around passing or scoring high marks (Al-Kadri et al., 2011; Cilliers et al., 2010). Raupach et al. (2013) empirically reported that students perceive ideal and innovative teaching approaches as useless if incentives of SA are not offered. Finally, students reported that when they know that they are being assessed they start calibrating their studies so they would meet the assessment expectation regardless of adversities, such as short time frames and study loads (Cilliers et al., 2010). On the grounds of the above three demands, it was evident to HCT that online teaching, without conducting graded assessments, would not benefit students' learning, nor would it support HCTs' accountability or transferability of achievement.

Feedback for Informed Impromptu Pedagogy Adjustments

For distance learning HEIs, which are designed to deliver online programs, off-campus pedagogy and e-proctoring are not new. However, applying such off-campus pedagogy to curricula, which were intended for face-to-face on-campus delivery without exhaustive adjustments did not take place in the recent history of education. Identifying tools to probe the impact of such a paradox of delivering non-online pedagogy in an online context was crucial. Formative assessment is frequently considered a valuable tool that shapes curricula to enhance learning (Crisp, 2012; James, 2016). Also, because FA are low-stakes, feedback and outcomes of formative assessments became the instrumental "new" way of HCT faculty examining the efficiency of the "new curriculum delivery". As a result, faculty started employing FA outcomes during the spring-2020 to guide impromptu adjustments to their teaching and assessment in attempt to mitigate this paradox.

Addressing Assessment Requirements Under Lockdown

Assessment in the HCT context was addressed for the emerging requirements of the lockdown. Requirements addressed were at the academic and the technology and assessment deployment levels while tackling the vulnerabilities.

Assessment in HCT Context – Historical Background

HEIs declare key learning outcomes and teaching and assessment processes associated to provide stakeholders with clear accounts about claims and warrants of student attainment (Knight, 2002). Each program in HCT has program learning outcomes (PLOs) which are aligned with the institutional graduate learning outcomes, and accreditation entities. Each PLO cascades down to aligned course learning outcomes (CLOs). In enhancing the educational process, assessment is effective when CLOs and PLOs are aligned (Abdeljaber & Ahmad, 2017). Apparently, alignment of assessment with curriculum objectives gives students a sense of security, which enables deep learning activities (Al-Kadri et al., 2011).

The HCT's 73 academic programs are offered in a multi-campus/multi-faculty course delivery model. In such models of delivery, consensus and common understanding about priorities and expectations are of paramount importance (Banta & Palomba, 2014). While faculty need to agree about the way the CLO attainment will be tested, students also need to be well informed about their performance expectations. To ensure inclusiveness and equal opportunities, course syllabi are made available for all faculty teaching a course, and for all students enrolled. Course

syllabi outline assessment plans specifying information, such as CLO mapping, time, grades and types of and tool for each assessment activity. This plan is developed and reviewed by faculty every semester, paving the way for consensus and common understanding of expectations.

Students' final grades should be a representation of combined outcomes of several and different assessment methods (Iannone & Simpson, 2017). Institutional HCT assessments come in a variety of types and are spread out across the semester. Moreover, warranting achievement based on different and recurrent instances provides more dependable inferences of attainment levels (Knight, 2002). Also, for an effective assessment approach, FA and SA should be aligned so FA is not undermined by the known summative pressures (Black& Wiliam, 2003).

Therefore, HCT programs have a balanced number of assessment instances carefully planned so assessments have an acceptable pattern of occurrence. Coursework (CW) assessments are several formative assessments ranging from 4 to 12 assessment instances and are deployed to assess one or more CLO. Coursework is characterized with the provision of improvement-centered feedback and accounts for 70% of the total marks. Additionally, summative assessments in the form of identical final exams across all 16 campuses, referred to as faculty wide assessments (FWAs), are indicative of the comprehensive modular attainment prompting progression to the next level and are used as cumulative program learning outcomes attainment. For the vast majority, FWAs assess all CLOs in a single instance to confirm the comprehensive attainment of course objectives. FWAs are high-stakes assessments worth 30% of total course grade.

Before the pandemic, over 20,000 students were enrolled in approximately 700 multiple offering courses, with 400,000 CW assessments being conducted throughout a typical semester. At the end of each semester approximately 650 courses have FWAs. Written CWs and FWAs are conducted online or paper based with physical proctoring as a requisite (AlShamsi & El-Farra, 2021). This configuration provided a baseline in preparation for the off-campus assessments, delivered during the imposed lockdown described in the following section.

In response to the lockdown, assessment adjustments were carried out at the academic level through modification of assessments designs, to address risks associated with e-proctoring, while maintaining curricular alignment. In addition, several technology tools were deployed to facilitate improved exam security conditions.

Assessment Design Adjustments

Theoretically, if the existing curricular alignment remains preserved, HCT can defend allegations of learning outcomes attainment, but SAD under e-proctoring conditions remains a challenge. Despite a lack of agreement amongst scholars about the relationship between e-proctored assessments and SAD rates, during planning the "out of an abundance of caution" position was adopted based on reported concerns over e-proctoring entailing potential SAD increased rates (King et al., 2009; Mellar et al., 2018). Notwithstanding SAD risks, pedagogy plays an essential role in SAD rates, so HCT academics meticulously reviewed assessment design and conditions to curb students from committing SAD as suggested by QAA (2018).

With acceptable trade-offs of re-allocations of weightings' contribution to the final student grade, and changes in assessment tools (as in replacing a quiz with a project). The approved assessment design adjustments ensured the following:

a) Maintaining alignment across curricular components so all CLOs are duly assessed, and students' grades can be used as a direct measure of student CLOs' attainment.
b) Maintaining a variety of assessment tactics, as suggested by QAA, (2018), which gave the faculty opportunities to cross-verify individualized student performance discrepancies in assessments that require reflection such as portfolios against an e-proctored quiz. Assessment portfolios and case studies do provide insight into the characteristics of students' performance variances, thus providing attribution evidence (Ransome & Newton, 2018; Stack, 2015).
c) Incorporating post-submission oral defense, or viva-voce as both provide valuable insight on authenticity and contribution of the students' attempted assessments (De Villiers et al., 2016; QAA, 2020b).
d) Upscaling the cognitive complexity of assessments, so assessment tasks that require lower cognitive complexities, such as remembering and understanding items which are easy to cheat using the internet were replaced by application and analyzing items as suggested by Boitshwarelo et al. (2017), Donnelly (2014), JISC (2016), and Redecker et al. (2012).

Finally, five main assessment strategies were approved for deployment namely: limited-time assignment coupled with oral verification; open-book upscaled cognitive complexity assessment; e-proctored assessments; virtual laboratories; and projects, portfolios, and presentations.

To address workload and stress issues, programs were given the option to alter the percentages of contribution by completed assessments to students' final grades prior to the lockdown, wherever feasible. Also, because the teaching schedule was not compromised, assessments were conducted on their expected times. Finally, as recommended by JISC (2016) and QAA (2018), assessment requirements, topics, deadlines, learning outcomes assessed, marking criteria, and feedback arrangements were clearly communicated with students and staff.

Technology and Assessment Deployment Adjustments

While instances of CW did not pose a serious challenge from the technology standpoint, technology was most challenged during the FWA period, as those assessments were taking place for the entire HCT cohort during the same times and dates. Also, FWAs have an inherent risk of increased SAD potential as compared with CW instances which have relatively lower contribution to the students' grade. Therefore, SAD becomes less appealing to students as compared to FWAs.

On the positive side, HCT students were sufficiently exposed to the e-assessment environment as many assessments depended on BlackBoard® prior to the lockdown. However, all written assessments were conducted under physical proctoring within campuses. Consequently, e-proctoring was deployed, preceded by a common mock exam for all students to orient them for the technology aspects of the FWA. Furthermore, assessment technology related guidelines were published, and an exam schedule was issued, taking into consideration equal distribution of concurrent test takers at any given time, while ensuring technology was not overloaded. Additionally, and in congruence with Davis et al. (2016), Mellar et al. (2018), Okada et al. (2019), QAA (2020a,2020b), and Stake (2015), HCT deployed several authentication and authorship verification measures. For example, student ID and recorded and/or live webcams were used to authenticate students' identities.

Exclusive availability of the exam to pre-enrolled students, based on institutional registry was also used to prevent unauthorized individuals from attempting the assessment for a student. Authorship verification was extended through recorded and/or live sessions, used to monitor students and the surrounding environment while flagging suspicious acts. Respondus Lockdown® was also used to disable access to prohibited materials and activities, such as accessing the internet or email. Lastly, unexpected higher grade than average performance was considered a trigger to review the assessment recordings.

Addressing Vulnerabilities

While making such a sharp turn, it was foreseeable that existing vulnerabilities might be exacerbated, and new vulnerabilities might surface. Accordingly, HCT's responses were based on risk identification and mitigation through inclusion of all students regardless of their academic performance, with special focus on vulnerable students. Governance support, academic support, and logistics and technology support were deployed to mitigate vulnerabilities.

Governance support. Unequivocally, SAD policies and procedures are needed (QAA, 2018). However, flexibility in addressing the lockdown conditions became equally essential (QAA, 2020a). Balancing between mandates and resilience, HCT has subsequently adopted a flexible application of policies and procedures to address the pandemic-imposed e-proctoring requirements. Perhaps the most obvious necessary governance response was to permit assessment strategy adjustments during an ongoing academic year, even more critical as it was almost half-way through academic semester. Academic divisions adjusted the existing pre-approved assessment strategies, while maintaining the existing grades in percentile translated into letter grades. To mitigate vulnerable student risks, HCT devised an algorithm that denotes the last academic standing cGPA for each student as a main reference so any decline in performance will not be reflected. For spring-2020 such an exemption was significantly important for students on academic probation whereby grades were only reflected if a student would experience an improved cGPA score thus protecting those students from being academically dismissed. Based on the initial guidance recommendations of QAA (2020a), students were also given the option to defer a course with no penalty. Also, the exam make-up policy was amended to accommodate cases where technology impacted assessment conduct.

The list of students with disabilities was reviewed again on a case-by-case basis, allowing further submissions and adjustments to be in place, thus avoiding inadvertently creating new barriers for students (QAA, 2020a). The only relatively new encountered situation was for those students with visual impairment, who would usually require large font prints. In this case HCT has provided those students with large monitors to complete the exams at home. Finally, student awareness campaigns were initiated to provide guidance on SAD. Moderated discussion forums, mental health and wellbeing activities and tips on managing student life were also extended through activities, such as virtual advising.

Academic support. During the lockdown, faculty were the most influential communication conduit. Supporting students for assessment is a critical component of quality in HEIs (QAA, 2020b). Therefore, more than 1.1 million hours of recorded pedagogical activities using video conferencing platforms were delivered to preserve the intended teaching schedule plans and class times, with no down-time. Full curriculum delivery not only enhanced the learning opportunities but also warranted no compromises to the timely assessments. Faculty used class times to clearly communicate the adjusted assessment expectations. They also offered several

off-campus practice exams, so students were better oriented with e-proctoring, as advised by Davis et al. (2016).

Logistics and technology support. Between May 10-19, 2020, 19,614 students, sat for 59,357 final e-assessments, for a total of more than sixty-six thousand concurrent exam hours. A key logistics strategy to ensure students were not encumbered by technology issues during the assessment process was the deployment of "Emergency Response Teams" at each campus. Students were able to receive live, online support from respective campuses with a recorded average response time of two minutes. Less than 4% of the total 59357 assessment sessions experienced technical difficulties (AlShamsi & El-Farra, 2021). To mitigate the risks, various SAD detection tactics were deployed such as reviewing recordings and comments by an internal auditor who would flag suspicious observations for review.

An Outcome-based Evaluation

To evaluate the efficacy of the employed intervention, we investigated SAD rates, make-up rates, grade and cGPA trends, and graduation rates as student performance indicators and stakeholders' surveys as satisfaction indicators.

Student Performance Indicators

We investigated SAD rates as the main risk of off-campus assessment. Exam "make-up excuses" were also analyzed as an attribute to behavioral reasons, rather than honest ones (Abernethy and Padgett, 2010). Grade comparison is reportedly a useful tool to measure the effectiveness of pedagogical interventions (Jaggars and Xu, 2016), and in a recent literature review (178 journals) 63% referred to cGPA as a performance indicator (Zughoul et al., 2018) so grades and cGPA trends were evaluated. Additionally, grades are reportedly used to empirically explore SAD patterns (Daffin & Jones, 2018; Davis et al., 2016; Hylton et al., 2016; Stack, 2015). Finally, graduation rates were also reviewed as a drive for the intervention.

Student academic dishonesty. During assessment, suspicious actions were identified by the e-proctoring staff (live or retrospectively). Faculty and internal auditors also analyzed educational data forensics such as abnormal student performance. In spring-2020, 0.4 % of the total number of students (85 /20,461), compared with 0.5 % of (111/20,722) reported in fall-2019 were found guilty of SAD. Grade analysis findings, in addition to the subtle decline in the SAD percentages are a confident indication of absence of major exam security breaches (AlShamsi & El-Farra, 2021). Table 1 outlines spring-2020 and fall-2019 SAD statistics.

Table 1: Spring-2020 and fall-2019 SAD trends.

Semester	Spring-2020	Fall-2019
Numbers of SAD instances	85	111
Total number of students enrolled	20,461	20,722
Percentage of SAD	0.4 %	0.5 %

Make-up rates. Assessment make-up rates for spring-2020 had an insignificant 0.5% decrease, compared with the preceding semester. There was a decline by 32.8% of the make-up for sick excuses, and a drop from 30.4 % in fall-2019 to only 1.8% in spring-2020 for being late for the exam. Make-up rates, due to technical issues, have spiked from none in the preceding semester to 397 instances (71.9%) of all make-up cases in spring-2020. AlShamsi & El-Farra (2021) concluded that the favorable decline in the make-up rate could be attributed to fixable policies

and/or to taking exams from home without travelling to campus, thus entailing less stress levels. Table 2 depicts the make-up trends for the spring-2020 and fall-2019 semesters.

Table 2: Spring-2020 and fall-2019 make-up statistics comparison (AlShamsi & El-Farra, 2021) – adjusted

Semester	**Total enrolled students**	**Reasons for make-up**			**Total make-up cases**	**% of Students approved for Make-up**
		Sick	Late for exam	Technical issues		
Fall-2019	20,990	315 (46.7%)	205 (30.4%)	0	674	3.2%
Spring-2020	20,461	76 (13.8%)	10 (1.8%)	397 (71.9%)	552	2.7%

Grade and cGPA trends. HCT adopts the letter grading of A through F with an A letter-grade representing scores above 88% and corresponding to distinguished achievement, and an F letter-grade representing scores below 60% and corresponding to failure of assessment/course. HCT documents historical data on performance variances and inconsistencies like students who achieve a distinguished A or B (A/B) letter-grades in CW but paradoxically achieve an F or D (F/D) letter-grade in FWA as a tool to ensure assessment quality.

In the absence of a grades baseline under e-proctoring conditions, five student performance letter-grade inconsistencies were alternatively compared with the preceding semester, those are: students failure rates in high-stakes FWA as compared to the FA accumulation of low-stakes CW; percentage of HCT students achieving CW and FWA letter-grades that are within the same letter-grade range for example, scoring a C in CW and a C+ grade in FWA); percentage of HCT students achieving higher letter-grade in CW than in FWA; percentage of HCT students achieving A/B letter-grade in CW, while scoring D/F in FWA; and percentage of HCT students achieving D/F letter-grade in CW, while scoring A/B in FWA. Results of letter-grade discrepancies of spring-2020 as compared to fall-2019 are:

1. failure rate in FWA has decreased to only 2½ times higher than CW as compared to 6 times higher in fall-2019,
2. percentage of students scoring within the same letter-grade range across CW and FWA favorably increased from 14.4% to 17.8%,
3. percentage of HCT students achieving higher letter-grade in CW than FWA have significantly and favorably declined from 20% to 6%.,
4. percentage of HCT students achieving A/B letter-grade in CW, while scoring D/F in FWA has significantly and favorably declined from 24% in fall-2019 to 14% in spring-2020,
5. percentage of HCT students achieving D/F grade-letter in CW, while scoring A/B grade-letters in FWA has exhibited an unfavorable slight increase from 1% to 3%. This slight decline evident by a 2% increase in the percentage of students scoring D/F in CW while their FWA letter-grades were in the A/B range.

The improvement in the four discrepancies can be attributed to the cognitive complexity upscaling and adjustments to incorporate more reflective assessments like projects, portfolios, and the introduced oral verification which gives students better opportunities to exhibit their comprehension thought discussions and reflections. Also, as non-native English speakers, oral

discussions give students an opportunity to better express their comprehension compared with written responses that might irreversibly fail them in the translations. Because both FWA and CW were only approved with pre-existing rubrics to be used across all campuses, leniency in grading can be excluded.

The factors that might have contributed to the unfavorable higher gap in the fifth discrepancy are:

a) Coursework only assesses fragments of the course, so it is common for student to score higher grades than in FWAs. The trade-offs of weightings' contribution to the final student grade made it mathematically easier for students to achieve a higher overall course grade.
b) In congruence with the established relationship between assessment and student behavior, allocating lower weight to FWAs and the devised cGPA algorithm, made it less appealing for students to perform well in the FWAs because their achieved A/B grade in CW would grant them an A/B final course grade even with poor FWA performance and, if not, a student could opt for fall-2019 cGPA freeze.
c) Subjectivity in grading non-exam assessments, such as projects and presentations. Although all assessments are only deployed if they have corresponding rubrics to ensure consistency, the grades for traits such as soft skills are rarely void of subjectivity. Table 3 summarizes letter grade inconsistencies trends across the spring-2020 and fall-2019 semesters.

Table 3: Summary of letter grade inconsistencies performance for the spring-2020 as compared to fall-2019.

Spring 2020	Fall-2019	Description of inconsistency	
Failure rate in FWA is 2½ times higher than CW	Failure rate in FWA is 6 times higher than CW	Overall student failure rates in FWA compared to CW	
17.8%	14.4%	Percentage of students who scored grades within the same letter grade range across CW and FWA	
6%	20 %	Percentage of students who scored higher CW grade than FWA	
14%	24%	Percentage of students with A/B in (CW)	Percentage of the same with D/F in (FWA)
3%	1%	Percentage of students with D/F in (CW)	Percentage of the same with A/B in (FWA)

HCT adopts the 4-point cGPA with scores less than 2.0 corresponding to unsatisfactory academic performance, and scores between 3.5 and 4 corresponding to distinguished academic performance. In the spring-2020 semester, students were given a limited time option to request a previous semester cGPA freeze if their results had disadvantaged them. A normal distribution was evident in the spring-2020 overall cGPA scores. The percentage of students with cGPA below 2.0 was 20% (3,799/ 19,614), 72% (14,170 /19,614) students have achieved a cGPA between 2.0 and 3.49 points, and 8% (1,645/ 19,614) students have scored cGPA between 3.5 and 4 points. Table 4 summarizes spring-2020 semester cGPA distribution as an indicator.

Table 4: Spring-2020 semester cGPA distribution.

Spring-2020 cGPA	Student count (percentage)
Less than 2.0	3,799 (20%)
2.0 to 3.49	14,170 (72%)
3.50 to 4.0	1,645 (8%)
Total	19,614 (100%)

Graduation rates. On-time graduation is a long-term key performance indicator for HCT which monitors the graduation of a student within the prescribed program duration (for example, four years for a bachelor's degree). Graduation maturation periods are measured in years, so they are used as an indirect indicator within this context. If HCT have opted to put assessment on hold for the spring-2020, students in their last semester would have at least experienced a semester long delay in graduation. Although the percentage of graduating on time for the academic year 2019-2020 was 93% compared to 73% for the preceding 2018-2019 academic year, this statistically significant improvement cannot be solely attributed to the decisions taken to address the pandemic. However, the fact that graduation rates did not drop supports the claimed efficacy of the intervention.

Stakeholder Satisfaction Indicators

Surveys are useful formative tools which provide feedback that guides curricular adjustments (Peterson, 2016). At the end of the semester, students and faculty, were surveyed to measure the levels of acceptance and success. Also, employers were surveyed as part of the bi-annual institutional performance monitoring, a synopsis of the surveys' results is provided below.

In addition to the bi-annual surveys, extensive ad hoc surveys were carried out to monitor student and faculty satisfaction for the semester. A total of 5,744 faculty and 19,601student responses showed that faculty had an 87% overall satisfactory e-delivery experience, while students' overall experience satisfaction rate was 77%. The survey covered five categories: online learning readiness; content evaluation; instructor delivery method; overall experience; and class preference. Faculty confirmed that the orientation sessions have sufficiently enhanced their online pedagogical skills. Furthermore, faculty reported witnessing students presenting higher levels of responsibility and ownership of their learning. Additionally, the bi-annual surveys have revealed an upward trend of student satisfaction with their academic journey from 78% in the 2018-2019 academic year to 86% in 2019-2020. Finally, 71% of the respondents were satisfied in response to a survey of HCT faculty members to review their satisfaction with adjusted assessments.

Moreover, HCT deploys bi-annual surveys to monitor industrial satisfaction, the percentage of employer satisfaction with applied programs industry relevance have registered a slight improvement from 90% in the 2018-2019 academic year to 93% in 2019-2020. Table 5 summarize surveys outcomes. A sample of the surveys is provided in the appendix.

Table 5: Surveys outcomes for faculty, students, and industry.

Criteria	Faculty	Students	Industry
e-delivery satisfaction	87%	77%.	
Student academic journey satisfaction		86%	
Adjusted assessments	71%		
Industry relevance satisfaction			93%

Limitations

The novelty of the circumstances imposed a lack of reference data to constitute student performance comparisons, and a lack of previously published literature limited our findings and literature review comparisons. Further work is required to study the performance, per the type of assessment adjustment and to establish links between other variables, such as demographics.

Conclusion

This paper provides evidence on the importance of assessment as an integral part of the HEIs pedagogy. Maintaining HCT curricular alignment, incorporating assessment tactics that provide personalized authorship evidence, supplementing written assessments with oral presentations, upscaling assessment cognitive complexity, and addressing vulnerabilities of off-campus graded assessment were interventions used to maintain accountability and transferability of HCT credentials, support students' self-efficacy and motivation, and to guide the "new" online teaching methodology imposed by the lockdown. Student performance and satisfaction of stakeholders used to evaluate the efficacy of HCT's intervention as described indicate HCT successfully achieved the objectives, as outlined.

The intervention defined in this paper is of value for future considerations when HEIs are challenged by disruptions such as the COVID-19 pandemic.

References

AlShamsi, A., Mohaidat, J., Al Hinai, N., & Samy, A. (2020). Instructional and business continuity amid and beyond COVID-19 outbreak: A case study from the higher colleges of technology. *International Journal of Higher Education, 9*(6), 118–135. https://doi.org/10.5430/ijhe.v9n6p118

AlShamsi, A., & El-Farra, S. (2021). Assessment in higher education, successful response off-campus student assessment model (OCSAM) to catastrophes and pandemics. *Educational Assessment, Evaluation and Accountability*. Under revision.

Banta, W., & Palomba, A. (2014). *Assessment essentials: Planning, implementing, and improving assessment in higher education* (Second ed.). Jossey-Bass, Wiley.

Bearman, M., Dawson, P., Boud, D., Bennett, S., Hall, M., & Molloy, E. (2016). Support for assessment practice: developing the assessment design decisions framework. *Teaching in Higher Education*, *21*(5), 545–556. https://doi.org/10.1080/13562517.2016.1160217

Black, P., &Wiliam, D. (2003). In praise of educational research: Formative assessment. *British Educational Research Journal*, *29* (5), 623–637. https://doi.org/10.1080/0141192032000133721

Boitshwarelo, B., Reedy, A., & Billany, T. (2017). Envisioning the use of online tests in assessing twenty-first century learning: a literature review. *Research and Practice in Technology Enhanced Learning*. *12*, 16. https://doi.org/10.1186/s41039-017-0055-7

Burke, L. (2020). As classes move online, some colleges are choosing to go pass/fail to relieve student stress. Is that the right move? https://www.insidehighered.com/news/2020/03/19/colleges-go-passfail-address-coronavirus. Accessed 22 November 2020.

Chong, W. (2018). Three paradigms of classroom assessment: Implications for written feedback research. *Language Assessment Quarterly*, *15*(4), 330–347. https://doi:10.1080/15434303.2017.1405423

Cilliers, J., Schuwirth, W., Adendorff, J., Herman, N., & Van der Vleuten, P. (2010). The mechanism of impact of summative assessment on medical students' learning. *Advances in health sciences education: theory and practice*, *15*(5), 695–715. https://doi.org/10.1007/s10459-010-9232-9

Cilliers, J., Schuwirth, W., Herman, N., Adendorff, J., & Van der Vleuten, P. (2012). A model of the pre-assessment learning effects of summative assessment in medical education. *Advances in health sciences education: theory and practice*, *17*(1), 39–53. https://doi.org/10.1007/s10459-011-9292-5

Crisp, G. (2012). Integrative assessment: reframing assessment practice for current and future learning. *Assessment and Evaluation in Higher Education*, *37*(1), 33–43. https://doi.org/10.1080/02602938.2010.494234

Daffin, W., & Jones, A. (2018). Comparing student performance on proctored and non-proctored exams in online psychology courses. *Online Learning*, *22*(1), 131–145. https://doi-org.ezproxy.hct.ac.ae/10.24059/olj.v22i1.1079

Davis, B., Rand, R., & Seay, R. (2016). Remote proctoring: The effect of proctoring on grades, *Advances in Accounting Education: Teaching and Curriculum Innovations.* Vol. 18), Emerald Group Publishing Limited, pp. 23–50. https://doi-org.ezproxy.hct.ac.ae/10.1108/S1085-462220160000018002

Deneen, C. & Boud, D. (2013). Patterns of resistance in managing assessment change. *Assessment and Evaluation in Higher Education*, *39*(5), 577–591. https://doi.org/10.1080/02602938.2013.859654

De Villiers, R., Scott-Kennel, J., & Larke, R. (2016). Principles of effective e-assessment: A proposed framework. *Journal of International Business Education*, 11, 65–92.

Dixson, D., & Worrell, C. (2016). Formative and summative assessment in the classroom. *Theory into Practice, 55*(2), 153–159. https://doi:10.1080/00405841.2016.1148989

Donnelly, C. (2014). The use of case based multiple choice questions for assessing large group teaching: Implications on student's learning. *Irish Journal of Academic Practice*, *3*(1), 12. https://doi.org/10.21427/D7CX32

Guerrero-Roldán, A., & Noguera, I. (2018). A model for aligning assessment with competences and learning activities in online courses. *The Internet and Higher Education*, 38, 36–46. https://doi:10.1016/j.iheduc.2018.04.005

Hawe, E., & Dixon, H. (2017). Assessment for learning: A catalyst for student self-regulation. *Assessment and Evaluation in Higher Education*, *42*(8), 1181–1192. https://doi.org/10.1080/02602938.2016.1236360

Hylton, K., Levy, Y., & Dringus, P. (2016). Utilizing webcam-based proctoring to deter misconduct in online exams. *Computers & Education*, 92–93, 53–63. https://doi.org/10.1016/j.compedu.2015.10.002

Iannone, P., & Simpson, A. (2017). University students' perceptions of summative assessment: The role of context. *Journal of further and Higher Education, 41*(6), 785–801. https://doi:10.1080/0309877X.2016.1177172

Jaggars, S., & Xu, D. (2016). How do online course design features influence student performance? *Computers and Education*, 95, 270–284. https://doi:10.1016/j.compedu.2016.01.014

James, R. (2016). Tertiary student attitudes to invigilated, online summative examinations. *International Journal of Educational Technology in Higher Education*, *13*(1), 1–13. https://doi:10.1186/s41239-016-0015-0

Joint Information Systems Committee. (2016). *Transforming assessment and feedback with technology*. https://www.jisc.ac.uk/full-guide/transforming-assessment-and-feedback. Accessed 20 Nov 2020.

Joint Information Systems Committee. (2020). *Assessment 2020: what happened – and what next?* https://www.jisc.ac.uk/news/assessment-2020-what-happened-and-what-next-11-jun-2020. Accessed 20 December 2020.

King, C., Guyette, R., & Piotrowski, C. (2009). Online exams and cheating: An empirical analysis of business students' views. *The Journal of Educators Online*, *6*(1), 1–11.

Knight, T. (2002). Summative assessment in higher education: Practices in disarray. *Studies in HEI (Dorchester-on-Thames), 27*(3), 275–286. https://doi:10.1080/03075070220000662

Lau, S. (2016). 'Formative good, summative bad?'– A review of the dichotomy in assessment literature. *Journal of further and Higher Education*, *40*(4), 509–525. https://doi:10.1080/0309877x.2014.984600

Medland, E. (2016). Assessment in higher education: Drivers, barriers and directions for change in the UK. *Assessment and Evaluation in Higher Education, 41*(1), 81–96. https://doi:10.1080/02602938.2014.982072

Mellar, H., Peytcheva-Forsyth, R., Kocdar, S., Karadeniz, A., & Yovkova, B. (2018). Addressing cheating in e-assessment using student authentication and authorship checking systems: Teachers' perspectives. *International Journal for Educational Integrity*, *14*(1), 1–21. https://doi:10.1007/s40979-018-0025-x

Okada, A., Noguera, I., Alexieva, L., Rozeva, A., Kocdar, S., Brouns, F., Ladonlahti,T., Whitelock, D. &Guerrero-Roldán, A. (2019). Pedagogical approaches for e-assessment with authentication and authorship verification in higher education. *British Journal of Educational Technology*, *50*(6), 3264–3282. https://doi:10.1111/bjet.12733

Peterson, J. (2016). Formative evaluations in online classes. *The Journal of Educators Online*, *13*(1). https://doi:10.9743/JEO.2016.1.8

Quality Assurance Agency for Higher Education. (2018). *UK quality code for higher education advice and guidance, assessments*. www.qaa.ac.uk/quality-code. https://www.qaa.ac.uk/docs/qaa/quality-code/advice-and-guidance-assessment.pdf?sfvrsn=ca29c181_4. Accessed 20 Dec 2020.

Quality Assurance Agency for Higher Education. (2020a). COVID-19: *Initial guidance for higher education providers on standards and quality.* https://www.qaa.ac.uk/docs/qaa/guidance/covid-19-initial-guidance-for-providers.pdf. Accessed 20 November 2020.

Quality Assurance Agency for Higher Education. (2020b). COVID-19: *Supporting resources- assessing with integrity in digital delivery.* https://www.qaa.ac.uk/docs/qaa/guidance/assessing-with-integrity-in-digital-delivery.pdf. Accessed 20 December 2020.

Ransome, J., & Newton, M. 2018. Are we educating educators about academic integrity? a study of UK higher education textbooks. *Assessment & Evaluation in Higher Education*, *43*(1): 126–137. https://doi:10.1080/02602938.2017.1300636

Redecker C., Punie Y., & Ferrari A. (2012). *eAssessment for 21st century learning and skills*. In: A. Ravenscroft, S. Lindstaedt, D. Kloos, & D. Hernández-Leo. (Eds.), *21st century learning for 21st century skills*. EC-TEL 2012. Lecture Notes in Computer Science, vol 7563. Springer. https://doi.org/10.1007/978-3-642-33263-0_23

Raupach, T., Brown, J., Anders, S., Hasenfuss, G., & Harendza, S. (2013). Summative assessments are more powerful drivers of student learning than resource intensive teaching formats. *BMC Medicine, 11*(1), 61–61. https://doi:10.1186/1741-7015-11-61

Stack, S. (2015). The impact of exam environments on student test scores in online courses. *Journal of Criminal Justice Education*, *26*(3), 273–282. https://doi:10.1080/10511253.2015.1012173

Stödberg, U. (2012). A research review of e-assessment. *Assessment & Evaluation in Higher Education*, *37*(5), 591–604. https://doi.org/10.1080/02602938.2011.557496

Timmis, S., Broadfoot, P., Sutherland, R., & Oldfield, A. (2016). Rethinking assessment in a digital age: Opportunities, challenges and risks. *British Educational Research Journal*, *42*(3), 454–476. https://doi:10.1002/berj.3215

Trotter, E. (2006). Student perceptions of continuous summative assessment. *Assessment and Evaluation in Higher Education*, *31*(5), 505–521. https://doi:10.1080/02602930600679506

Van de Watering, G., Gijbels, D., Dochy, F., & Van der Rijt, J. (2008). Students' assessment preferences, perceptions of assessment and their relationships to study results. *Higher Education, 56*(6), 645–658. https://doi:10.1007/s10734-008-9116-6

Williams, B., & Wong, A. (2009). The efficacy of final examinations: A comparative study of closed-book, invigilated exams and open-book, open-web exams. *British Journal of Educational Technology, 40*(2), 227–236. https://doi:10.1111/j.1467-8535.2008.00929.x

Zughoul, O., Momani, F., Almasri, H., Zaidan, A., Zaidan, B., Alsalem, A., Albahri, S., Albahri, S., & Hashim, M. (2018). Comprehensive insights into the criteria of student performance in various educational domains, *in IEEE Access*, 6, 73245–73264. https://doi:10.1109/ACCESS.2018.2881282

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Appendix

Adjusted Assessments Survey for Faculty Sample Questions

Each item was rated 1. Very dissatisfied, 2. Somewhat dissatisfied, 3. Neutral or neither dissatisfied nor satisfied, 4. Somewhat satisfied, 5. Very satisfied

Q2: Select the applied assessment tool/s (maximum three)

Assessment tool
Drop down list: 1. Limited-time assignment (short video, oral verification) 2. Open book and take home exams 3. Online quizzes and assignments 4. Virtual laboratories 5. Projects, portfolios, and presentations

E-Delivery Satisfaction Survey – Students

Total of 5 questions, randomly selected from each category, were sent to students.

1. Online Learning Readiness

Availability of online learning resources (computer and internet service)
Communication with other students during the online class
Quality of instructions during the online class
Your readiness to use HCT online learning platform (Blackboard Learn or Zoom)
MyHCT Support when I need support
Quality of network connection during the online class
Dedicated study space where you can read and work on assignments without distraction
Comfortable to switch on the camera during online class

2. Content Evaluation

The amount of material covered
The quality of the examples presented
Quality of visual and attractive material presented
Your opportunities to ask
The presented content is Interactive
The online course was easy to navigate
The e-lesson was motivating
The variety of presentation methods was used

3. Instructor Delivery Method

The instructor’s accessibility outside of scheduled class time for additional help
The instructor’s encouragement for students to participate in class

The instructor's explanation of concepts
The instructor's feedback
The instructor's lesson organization
The instructor's respect for students
The instructor's use of class time
The instructor's use of real life examples
The level of instructor's preparedness for the lesson

4. Overall Experience

Overall experience for this lesson

5. Class Preference

Do you prefer next lesson to be	1. Face to face in classroom 2. Online

E-Delivery Satisfaction Survey – Faculty

A total of 5 questions, randomly selected from each category, were sent to Faculty.

1. Online Learning Readiness

Availability of online learning resources
Comfortable to switch on the camera during online class
Impression of student as recipients of online education
My HCT-Support responsiveness when I need support
My System Course Team Leader responsiveness when I need support
PD quality sufficient to prepare you for online delivery
Quality of network connection during the online class
Quality of student engagement during the online class
Students' attendance
Your readiness to use HCT online learning platform (Blackboard Learn or Zoom)

2. Content Evaluation

Interactivity of the presented content
The amount of time for preparation for this online lesson
The extent to which planned topics were covered
The online course was easy to navigate and manage
The quality of student interactions during the lesson
The quality of the examples presented today
The use of adequate presentation methods
Your opportunities to involve students in discussions

3. Instructor Delivery Method

Homework and assignment submission
My use of class time
Polling or tallying student votes to instructor questions
Possibilities of effective and valid online testing
Refer students to additional e-Tutorials

Student's mature approach to online class
Student's mutual communication during the class
The students' respect to instructor
This lesson's organization
Use of simulations or advanced apps

4. Overall Experience

Overall experience for this lesson

5. Class preference

Do you prefer next lesson to be	3. Face to face in classroom 4. Online