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# Towards a framework for designing and evaluating online assessments in business education

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## ABSTRACT

With the recent and rapid transition to online teaching and learning in higher education, this explanatory study investigated the key design considerations used by business educators designing assessments suitable for online delivery. From a comprehensive literature review, we identified five key design considerations for online assessments: they must (1) assure academic integrity; (2) allow for provision of quality feedback; (3) support a positive learning experience for students; (4) assure the integrity of student information; and (5) ensure all students have an equal chance to complete the assessment successfully. An additional consideration (authenticity) was identified through a survey of educators and four focus group discussions. Our analysis confirmed that scale of delivery and resource limitations, along with institutional policies and accreditation requirements, are broader and interrelated contextual factors that influence practices and decisions about assessment design. Focus group participants also identified constraints and trade-offs they negotiated in designing, evaluating and implementing online assessments. Based on our findings we propose a framework to assist educators in best-practice decision-making about online assessment design and contribute to the discourse between educators, higher education providers and professional accreditation bodies regarding online assessment.

## KEYWORDS


Online assessment;  
business education;  
academic integrity;  
invigilation

## Introduction

In response to the COVID-19 pandemic, higher education providers had to transition rapidly to online teaching and learning so that students' participation and progress were not disrupted. This had substantial impacts on staff workloads and student experience (Kharbat and Abu Daabes 2021; Lloyd, Sealey, and Logan 2021), and multiple challenges emerged, including concerns about academic integrity, and expectations of professional accrediting bodies regarding invigilated assessment (Holden, Norris, and Kuhlmeier 2021). Business education was particularly affected due to professional accreditations.

In Australia, the rapid, large-scale transition to online delivery in higher education was supported by research aimed at ensuring quality online learning, teaching and assessment. For

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example, the Australian national higher education regulator established a repository of resources to guide quality online delivery (Tertiary Education Quality and Standards 2022). Many providers replaced invigilated on-campus examinations with alternative online assessments supported by evidence of pedagogical benefit (Butler-Henderson and Crawford 2020). However, online delivery and assessment in accredited business qualifications was constrained prior to COVID-19 by the requirements for federal government international student visas (National Code of Practice for Providers of Education and Training to Overseas Students 2018) and accrediting bodies. For example, Certified Practising Accountants Australia (CPAA) and Chartered Accountants Australia and New Zealand (CA ANZ) required that individual student identities be confirmed with invigilation of 'at least 50 per cent of the overall assessment marks for each subject meeting the professional bodies' required competency areas' (CPAA and CA ANZ 2022).

Thus, while online assessment has been increasingly used in many fields of study over the last decade, the requirements of accrediting bodies and of international student visas limited the use of online assessment in Australian business disciplines prior to 2020. This study drew on the broad higher education literature to develop a preliminary framework of key design features to be considered when implementing quality online assessment in business disciplines. The framework was then evaluated and finalised based on findings from surveys and focus groups of business educators implementing online assessment for small, medium and large undergraduate and postgraduate cohorts. The study was part of a larger project investigating online assessments in Australian business schools (Cram et al. 2022).

## Literature review

### *Online assessment: academic integrity and invigilation*

Remote online invigilation has been used for over two decades to maintain academic integrity in online education programs with large volume enrolments (Milone et al. 2017). For higher education providers, remote online invigilation was essential for continuing to deliver, and validly assess, courses, while continuing to meet professional accreditation requirements during the pandemic. It was also a cost effective and flexible means of ongoing assurance of the academic integrity of examinations (Linden and Gonzalez 2021).

For students, online invigilation requires the release of personal information to verify identity, raising privacy and data security concerns (Selwyn et al. 2021). Concerns have also been raised about discrimination and bias with facial recognition software, and equity of access to adequate assessment conditions (Coghlan, Miller, and Paterson 2021). For higher education providers and consumers (students), delivery and invigilation of assessments across disparate locations and time zones has often resulted in sub-optimal experiences, particularly at the beginning of the pandemic when rapid increases in demand for online invigilation services exceeded vendors' capacity to provide reliable services. The additional cognitive load of learning to use new systems coupled with little time for developing assessments suitable for online delivery, preparing communication plans, and putting in place technical support required for successful outcomes, contributed to poor experiences for students (Cramp et al. 2019).

### *Online assessment: frameworks*

We identified several recent online assessment frameworks that focus on the online learning process and student outcomes, including the role of the learning environment in supporting students (Padayachee, Wagner-Welsh, and Johannes 2018), assessment of active learning performance (Liu et al. 2021), and assessment of critical reasoning ability (Molerov et al. 2020). A recent study by Jaam et al. (2021) investigated design decisions for remote-learning assessments introduced during the pandemic. Using a multi-stakeholder perspective and the Assessment

Design Decision Framework, the study identified three major themes around the framework components (purpose, context, interactions, feedback processes, tasks, interactions, and outcomes): (1) impact of the transition to online on assessment design and assessment plans; (2) changing assessment environment; and (3) faculty-student assessment-related interactions, including feedback.

We build on existing frameworks, incorporating design considerations identified in recent literature. Our initial design considerations were academic integrity, quality feedback, student experience, equity of access and privacy/student information integrity. Following our research, we added authenticity, scalability and resource availability.

## ***Online assessment: design considerations***

### ***Academic integrity and authentic assessment***

Academic integrity is fundamental to ensuring that academic work, including research and student assessments, has value and credibility. The International Centre for Academic Integrity defines academic integrity as a commitment on the part of academics, students and administrators to six fundamental values: honesty, trust, fairness, respect, responsibility and courage (ICAI 2021, 4). Authentic assessment explicitly links what is learned to its application in the outside world, particularly the workplace, and is characterized by realism (knowledge linked to everyday life/work), contextualisation (the thoughtful/analytical application of knowledge) and problematisation (using knowledge to solve problems) (Villarroel et al. 2018). Academic integrity and authenticity are often considered together in the literature, with authenticity commonly proposed as a means of assuring academic integrity because it requires unique student responses (Bretag et al. 2019; Dawson 2020). In contrast, Ellis et al. (2020) argue that authentic assessment can result in cognitive overload for students and therefore encourages cheating.

Cognisant of the broad literature addressing academic integrity, from education-wide sector studies (Blankenberger and Williams 2020) to student and staff perspectives (Okada et al. 2019; Birks et al. 2020), we have focused on studies that consider the role of assessment design in assuring academic integrity (Harper, Bretag, and Rundle 2021) and the protocols in place to address academic dishonesty (Butler-Henderson and Crawford 2020). These studies suggest that academic integrity breaches are primarily due to assessment design flaws (e.g., use of generic questions), lack of surveillance or inability to control an individual's assessment set-up, and/or cognitive 'offloading' due to student dissatisfaction with highly weighted, poorly timed assessments.

### ***Quality feedback***

Boitshwarelo, Reedy, and Billany (2017) reviewed studies using online tests and concluded that online feedback should be immediate and corrective to reinforce learning, enhance learner self-regulation, and improve future assessment design. Many studies have considered the role of technology-enabled, non-text feedback (i.e., audio, video and screencast feedback) (Dawson and Henderson 2017; Rolim and Isaias 2019). Pitt and Winstone (2020) proposed that technology-enabled peer-to-peer and formative feedback using learning analytics to generate individualised feedback enhances student engagement. Feedback delivered through feed-forward action points using technology was also found to encourage student-educator dialogue and overall learning (Moscrop and Beaumont 2017). Debus and Lawley (2016) found that automated feedback programs can improve the quantity, legibility and personalisation of feedback.

### ***Student experience***

'Student experience' is a broad term referring to experience of higher education teaching, learning and assessment, as well as experience of a range of services beyond the teaching and learning environment. In the increasingly competitive and global online higher education market

the quality of the student experience is recognized as an important determinant of student choice about where and how they study (Tan, Muskat, and Zehrer 2016). Cramp et al. (2019) suggested that reduced cognitive load, convenience, technical support, examination design and availability of practice tools, such as unlimited assessment attempts and practice with non-weighted assessment (see also Apps, Beckman, and Bennett 2020; Bearman et al. 2020) all enhance students' experience of remote invigilated online examinations. Bin Mubayrik (2020) noted that motivation, classroom participation, task understanding, depth of learning, self-regulated learning and self-monitoring are key factors to be considered when designing online assessment, and relationships between online assessment experience and assessment format, higher-order cognitive engagement, and student motivation and career-orientation have also been reported (Rolim and Isaias 2019; Curtis et al. 2021).

Several authors have identified factors resulting in negative student experiences with online assessment, including anxiety and technological problems, and suggest remedies such as technical support during assessments, auto-saving features on assessment portals, and open-book online examinations (Butler-Henderson and Crawford 2020; Linden and Gonzalez 2021).

### ***Equity of access***

Concerns have been raised about fairness and equity of online assessments, related to suitability, cost and availability of technology, and to variation in environments where assessments are undertaken (Kharbat and Abu Daabes 2021; Linden and Gonzalez 2021). Students with disabilities had additional challenges with the rapid move to online delivery and assessment, including access requirements, lack of adequately trained staff to support students, and, more broadly, disproportionate experiences of isolation and financial pressure (Australian Disability Clearinghouse on Education and Training 2020; Austin, Ford, and Glencross 2021). Tai et al. (2022) reported that students with disabilities, and students from regional/remote areas, low socio-economic status and first-in-family to undertake tertiary education, are positively impacted by strategies to improve access, such as increased numbers of student-support staff, simplified special consideration processes, flexible submission timing, and open-book and/or authentic assessment. Other reports highlight that early contact with educators, presenting information in multiple ways, and/or implementing early formative assessment can improve accessibility (Stone 2017; Lloyd, Sealey, and Logan 2021).

### ***Privacy/student information integrity***

Student experience appears to be adversely affected by privacy concerns with online proctoring (Milone et al. 2017; Kharbat and Abu Daabes 2021; Linden and Gonzalez 2021). Using artificial intelligence for remote invigilation of online examinations requires provision of personal and/or biometric data susceptible to security breaches (Okada et al. 2019). Coghlan, Miller, and Paterson (2021) discuss the ethics of examination supervision technologies, specifically the possibility that personal and/or sensitive information may be shared with third parties.

### ***Online assessment: contextual factors***

In addition to design considerations, several overarching contextual factors moderate decisions about assessment design for online environments, particularly scale of delivery and resource availability.

### ***Scalability***

The online environment offers both benefits and challenges in relation to assessment scalability. Online marking platforms have successfully enabled scaled-up feedback and grading (Bearman et al. 2020) though not all scaling is beneficial. A literature review of automatic feedback in

learning management systems found that almost half the studies showed no evidence of reduced staff workload (Cavalcanti et al. 2021). Other downsides include the possibility of failures in automated marking tools (Steel et al. 2019), and student dissatisfaction with lack of personalization of automated feedback (Khan and Khan 2019).

### **Resource availability**

When designing assessments the time and cost of assessment handling, marking and grade processing are important, and therefore student cohort size impacts assessment design decisions. Availability of resourcing is a primary constraint to achieving robust academic integrity and assessment authenticity in scaled-up online programs (Cramp et al. 2019; Apps, Beckman, and Bennett 2020; Birks et al. 2020; Ellis et al. 2020). Holden, Norris, and Kuhlmeier (2021) noted that automated invigilation is preferred to live online invigilation due to cost considerations. There is evidence that insufficient resource provision for staff training constrains the efficacy of online assessment (Okada et al. 2019; Rolim and Isaías 2019).

### **Methods and data collection**

This explanatory study (Gregor 2006) seeks to contribute to the theoretical understanding of factors shaping the design and evaluation of online assessments, a topic that has received little attention in business education literature.

Based on Allan's (2020) definition of online examinations, we conceptualise online assessment as follows: assessments (including non-graded hurdle tasks) mediated/facilitated by digital technologies and delivered online. We also make the reasonable assumption that all assessments are aligned to the intended learning outcomes of the course/programs where they are used (constructive alignment, see Biggs 1996). Henceforth, when referring to design considerations and contextual factors that shape the foundations for our framework, we use the term 'framework elements'.

To develop our framework we sought to validate the inclusion of framework elements from the literature review by assessing their relevance to the design and evaluation of online assessments in business disciplines. We collected data through an online survey and four focus groups of academics and educational specialists employed in business faculties across Australian institutions. This study was approved by the University of Sydney Human Research Ethics Committee (HREC) #2021/800. Participants were recruited by email invitation for the survey and self-nomination (via the last question of the survey) and through the researchers' networks for the focus groups.

### **Survey**

There were 97 respondents from 15 business discipline areas. Accounting had the strongest representation, followed by management, finance, human resources, marketing and economics. Respondents held roles ranging from tutor (n=32; 33%), to program coordinator (n=36; 37%) and education developers/learning designer (n=15; 15%), with the majority being coordinators (n=85; 88%) and/or lecturers (n=69; 71%). The survey gathered data on the following:

- demographic information
- online assessment types used
- factors considered when designing online assessments
- exemplars/well-designed online assessments
- ranking of framework dimensions using exemplars

We present descriptive statistics of the survey data (for detailed analyses using inferential statistics see Cram et al. 2022; Huber et al. 2022). Qualitative survey responses from this study

were coded independently by two members of the research team with the coding verified by two independent members (Cram et al. 2022).

### ***Focus groups***

The focus groups sought a deeper investigation of online assessment types against our framework elements. Each group had four to six participants (total  $n=19$ ) with balanced representation across genders, Australian states/territories and 14 universities. We asked participants to discuss the framework elements in turn based on a particular assessment type with questions such as: 'In what ways are equity of access considered?'; 'How do you assure academic integrity in this example?'; and 'How is student data protected?'

Focus group recordings were transcribed and analysed to identify themes. In the first phase each transcript was analysed by two researchers, with one researcher conducting an initial coding (Saldana 2009) analysis with reference to the preliminary framework dimensions and to identify additional themes, and the second researcher independently reviewing the first analysis, with differences resolved through discussion. All authors contributed to this phase. In the second phase, one researcher reviewed the findings from all focus groups and identified trade-offs between dimensions when online assessments were developed and implemented in practice. In the third/final phase, the research team added contextual statements from participants to exemplify trade-offs (in vivo coding, Saldana (2009)), and synthesised the output as a matrix (see supplementary online materials).

## **Findings**

### ***Online assessment in business: survey insights***

This section presents respondents' perceptions of what is important when considering online assessment.

#### ***What is important for choosing online assessments: open-ended responses***

Of the 97 respondents, 69 (71%) answered this question listing multiple items. The count represents the number of participants mentioning each item in their responses (see Table 1).

Addressing subject requirements and learning outcomes ( $n=19$ ; 28% of responses) was a commonly mentioned consideration in the open-ended responses. We had not included it in our framework because our implicit assumption was that this is an essential element of assessment design decisions. This was not made explicit in the survey, but our respondents indicated that it needed to be included. Authenticity was often described by respondents independently of academic integrity, suggesting that academic integrity and authenticity may be distinct constructs in online assessment design.

#### ***What is important for choosing online assessments: ratings***

We subsequently asked survey respondents to rate the importance of our suggested design considerations (academic integrity, quality feedback, student experience, information integrity and equity of access), contextual factors (scalability and cost effectiveness, and aligning with institutional assessment culture) as well as the key underlying principle of assuring learning outcomes. Participants rated a series of statements using a Likert scale ranging from 'not important at all' (1) to 'very important' (5).

Figure 1 presents the responses for each design consideration, showing the proportion of respondents rating each item by the five levels of importance. Responses are grouped in boxes,

**Table 1.** Categories from open-ended responses to ‘What is important to you when you adopt an online assessment?’

Category	Count (% of responses based on 69 respondents)
Academic integrity	32 (46%)
Authenticity	23 (33%)
Student experience	21 (30%)
Addressing subject learning outcomes	19 (28%)
Assessment is varied, randomized	16 (23%)
Equity	16 (23%)
Staff experience/ marking	11 (16%)
Assessment is time restricted	8 (12%)
Institution	5 (7%)
Technology	5 (7%)
Accreditation	4 (6%)
Student Information Integrity	4 (6%)
Quality Feedback	2 (3%)

where the top box indicates intended learning outcomes, the next box includes our original five design considerations, and the final box includes additional considerations.

We found that each key design consideration in our initial evaluation framework (academic integrity, quality feedback, student experience, student information integrity, equity of access) was ranked highly, and all had mean ratings above 4.00 (“important”). Taken together with the open-ended responses, these survey responses provided a preliminary validation of the elements we included in our framework. Not surprisingly, ‘mastering intended learning outcomes’, fundamental to assessment design decisions, was also rated as important by participants ( $M=4.44$ ). Additional contextual factors concerning scale of delivery, resourcing and institutional policy were all ranked below 4.00 (mean ratings ranged from 2.79 to 3.66; see [Figure 1](#)).

Also noteworthy is the variation between the responses to the prompted question ([Figure 1](#)) versus the open-ended question ([Table 1](#)). Some criteria were rated as important when prompted but were not mentioned in the unprompted responses. These included quality feedback, student information integrity and equity of access. Authenticity was commonly ranked as important when unprompted, although it was not an explicitly prompted option in the survey. This led us to include authenticity as an element in our framework.

### **Focus groups findings**

Findings from the focus groups highlight the key trade-offs that educators reported between the assessment design considerations and contextual factors. The relationships between these elements are complex, often including multiple trade-offs against one consideration. As part of the process of coding and synthesizing the data, we tabulated the findings in [Table 2](#) which demonstrates an example of the mapping of ‘student experience’ against other design considerations. The full analysis is in the online [supplementary materials](#).

Overall, we found the online environment adds complexity to quality assessment design. It is possible that the findings are specific to the online environment, but they may extend to all assessment as this was not specified in the focus group discussions.

The main point of discussion across focus groups was academic integrity, with trade-offs noted against invigilation, student experience and scalability. For example, whilst reflective exercises may be more authentic and provide an engaging student experience, one participant highlighted that “they’re really rife areas for academic integrity issues... you do have to actually be very specific to students, [tell them] you need to be reflective of your own experience” (FG2). Another participant (FG3) believed that it was easier to catch students out if they plagiarised in a reflective piece because they were not discussing what happened in class. This circles back to perception that it is ‘easy to get away with plagiarism’ when assessment and learning

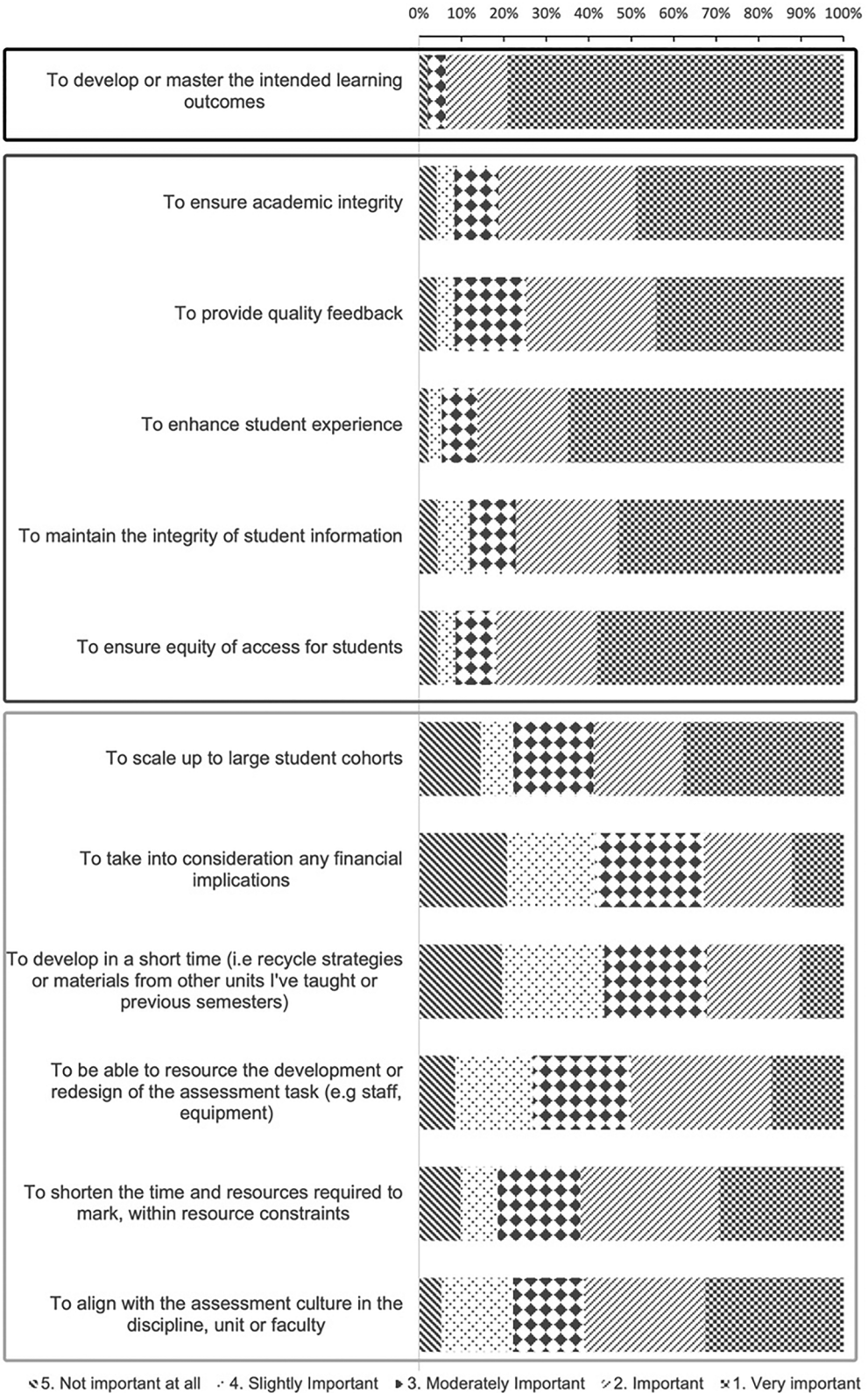


Figure 1. Percent ratings of criteria used when deciding which online assessment(s) to adopt.

**Table 2.** Snapshot of trade-offs and design considerations for student experience of quality online assessment.

Academic integrity	Feedback	Equity	Privacy	Authenticity
Student experience may be undermined by the assessment formats designed to ensure their identity or participation (e.g., hybrid or hyflex).	Student experience is enhanced by getting timely feedback, but this may be at the expense of quality feedback.	Student experience is undermined by requirements to ensure equity in assessments, particularly when face to face modes and online modes are mixed. Cultural and other differences can make assessments designed to enhance the student experience less equitable (e.g., presentations that require skills that vary by culture, gender, personality, etc.)	Student experience may be enhanced by the assessment design, but it may undermine student privacy, such as when being recorded. Introduction of innovative tools that may enhance the student experience, may not be on the institution's approved list of technologies and therefore may compromise student data.	Student experience can be negatively impacted as more authentic or real-life assessments can be complex and ambiguous.

activities are not linked to personal experiences or are not updated annually. Scale can have additional impact on time, resourcing, reliability and consistency.

Examples of assessments that may overcome issues of equity, authenticity and academic integrity were three-stage assessment: (1) shorter individual examination; (2) same day small groups discuss their individual solutions to the problem and discuss the solution (group consensus); (3) reflect on individual experience due three days later (FG4), highlighting that an inter-linked design and timeliness of assessment are key to addressing academic integrity.

The other main finding from focus group discussions centred on participants' concerns that alterations to assessment can have repercussions not only on their promotion or career prospects, but also on job security. One participant mentioned an example of student grades being questioned in court, leading to less authentic feedback because "in the higher education [sector], we're dropping like flies... We have a concern regarding our careers as well" (FG2). The study was conducted during the pandemic and it was not surprising that participants were anxious about the future of education and their roles within the rapidly changing sector. Participants reported that issues and changes to assessment in large classes are likely to be more 'visible' (both to students and institutions). Innovation was perceived as riskier to the academic: "you are much more visible when you are a strategically important unit... it's so important to the uni that it runs well and so when [unit code] does anything, people are looking at it... there's a greater level of risk associated with innovation in something that has more visibility" (FG3). Some participants accepted this, "scalability is going to be an issue [for innovative assessment], unless the university is willing to hire and train great markers for this type of assessment... if you're looking at 1000 students it's time-consuming to grade this but we accept that" (FG4).

## Discussion

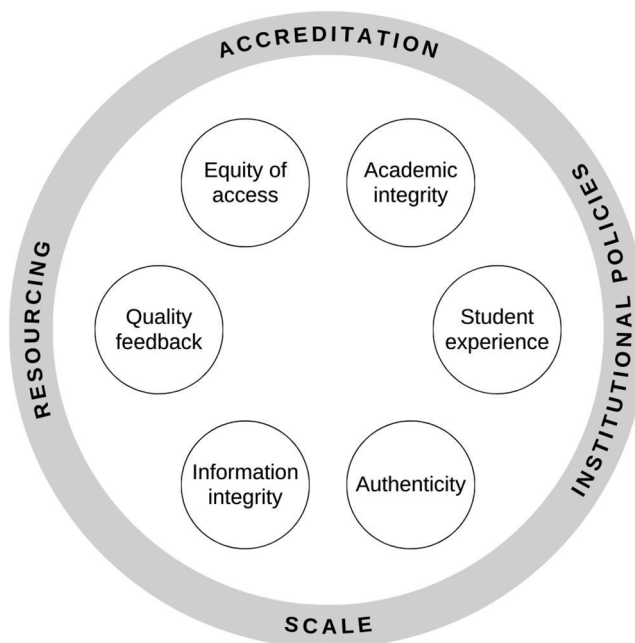
This paper focused on the key elements to be considered when designing and evaluating online assessments within business education. The initial framework elements comprised five design elements (academic integrity, quality feedback, student experience, equity of access, information integrity) and authenticity and two contextual factors (resources, scale) were identified in the

literature. We tested the initial framework with participants who design online assessments in higher education. Our survey and focus group findings further revealed the need for an additional design consideration (authenticity) and two additional contextual factors (accreditation and institutional policies). The final framework comprised six key considerations and four contextual factors integral to evaluating and creating quality online assessment designs. To facilitate ease of application of our framework by educators and, potentially, accrediting bodies, our framework is presented in [Figure 2](#).

Our survey identified assessment types in use in business disciplines within Australia (Cram et al. 2022), and our focus groups found a complex array of trade-offs that occur between the framework elements. Framework elements do not represent a “tick-box” list that can be captured or addressed in a single assessment item. Rather, they are factors that need to be considered in the unique context of each assessment design decision.

For large student cohorts, decisions about assessment design involved managing resource limitations (financial cost, staff availability, turnaround time and related metrics). Participants ‘traded-off’ key design considerations against each other, for example, prioritising student experience and deprioritising academic integrity for low weighted, formative assessments compared to more heavily weighted, summative assessments where academic integrity was prioritised. Assessment decisions for large cohorts often traded-off individual feedback to manage resource constraints. A range of technology-enabled individual and group feedback methods are available, using audio and video in addition to text (Dawson and Henderson 2017; Pitt and Winstone 2020), that can improve the provision of individualised feedback at scale. Focus group participants reported using peer feedback in group participation/between groups for low weighted tasks. This appeared to be contingent on student preparation for peer activities, including resources, training and rehearsals, and the incorporation of peer activities in learning outcomes, which then influenced the likelihood of using such approaches.

Our survey and focus groups raised issues concerning online assessment that highlight the complexity and importance of well-designed tasks. Resource availability varied widely across institutions, and focus group discussions indicated that minor policy variations had major impacts



**Figure 2.** Framework to design and evaluate quality online assessments.

on design decisions and capacity to address key design considerations. For example, variations in whether students were required to turn cameras on in scheduled classes, whether invigilated examination software was available or mandated, and differing workload models, all impacted the academic integrity of assessments. By identifying these variations, our framework provides a basis for improvements across the sector.

Innovation in assessment was uncommon among participants where traditional assessments (written reports, examinations and quizzes) were used most frequently, perhaps because they are familiar to staff and students and translate readily to the online environment. With heavy staff workloads due to short timeframes for moving assessment to fully online delivery, unpredictable staff and student absences due to illness, and institutional budget constraints and staffing changes, absence of widespread innovation is not surprising. From our focus groups, educators viewed assessment innovation as a high-stake/high-risk undertaking, with potential impacts on job security and career progression. Participants highlighted the workload impact of the rapid transition to online delivery, particularly when training in new systems was required. Innovation was a “trade-off” against student experience and pastoral care which were prioritised.

While there appeared to be variations in the use of invigilation based on assessment type it was not clear how decision-making was occurring. Participants indicated a trade-off between academic integrity and concerns over privacy of student data in invigilation decisions. A widely-held view is that some accrediting bodies required invigilated examinations and there is evidence of views that in-person invigilated examinations are pre-eminent (Bryant and Ruello 2019). In an environment of uncertainty, educators may prefer to retain familiar practices, simply transposing the examination online and continuing to invigilate. As fully online delivery becomes normalised in the post-pandemic higher education environment, and the conditions mitigating against innovation decline, we predict that the appetite for innovative online assessment design will increase.

The assessment types used less frequently were collectively designated as ‘other’ (i.e. not examinations, quizzes or written assessments). These had in common that they assessed performance directly, usually requiring descriptions of how and/or why an activity should be performed. Performance-based assessments may be authentic, requiring demonstration of skills, and may also reduce the risk of academic misconduct by confirming the student’s identity. Some studies have found that authenticity alone cannot assure academic integrity (Bretag et al. 2019; Ellis et al. 2020), and students need to have authenticity scaffolded and supported which in turn requires resourcing.

Many participants were not aware of whether the courses they contribute to were accredited. This may suggest that accreditation requirements are not a major concern when designing assessments. Alternatively, accreditation requirements may not be ‘visible’ to staff designing assessments because guidelines for assessment are aligned with accreditation requirements. Institutional policies must make assessment design requirements clear to enable teachers to make consistent judgements and allow creative and innovative assessment design. Accrediting bodies require verification of the identity of individuals being assessed and we hope this work provides options to business academics to consider ‘performance’ assessments as alternatives to invigilated online examinations.

## Conclusion and future directions

Nationally and globally the COVID-19 pandemic prompted a rapid transition to online forms of assessment in higher education. We present a framework of ten evidence-based elements (six design considerations and four contextual factors, see [Figure 2](#)) for designing and evaluating quality online assessment: (1) academic integrity, (2) integrity of student information; (3) equality of opportunity; (4) provision of quality feedback; (5) positive learning experience (6) authenticity; (7) scale; (8) institutional context; (9) resourcing; and (10) accreditation.

We envisage this framework can be used in multiple ways. First, to assist academics and other educational stakeholders to evaluate existing assessments, within an individual unit or across a whole course/program. Thus, it can assure that design considerations and contextual factors included here are taken into account. Second, the framework can be used to document assessment practices and trade-offs between framework elements that the assessment requires, opening conversations about trade-offs inherent in assessment design, and pressures that exist in specific contexts. Third, the framework can be used to explain and justify the design of new online assessments or the redesign of existing ones. The framework may also support collation of exemplars to illustrate good assessment designs that rate highly across all framework elements. Fourth, the framework can provide evidence to support communication with accrediting bodies about online assessment quality. Finally, the framework can support development of principles and approaches for use in business education, thereby building a foundation for professional development concerning best practice online assessment design.

Our research shows that broad contextual factors, including scale, resource limitations and institutional policy settings, necessarily impact the decisions that academics make about assessment design. However, these elements are outside the control of individual educators designing assessments. Addressing these broader elements requires institutional and disciplinary leadership that university leadership teams and sector-wide bodies can provide. Our research also shows that most assessment design decisions are made by educators working in isolation, with proposed assessments reviewed by curriculum committees. These educators are aware of the risks and workload involved in making innovations in assessment design. Our research raised issues about what happens when the requirements of online assessment are inconsistent with meeting the needs of learners. The framework provides a guide for discussions about assessment amongst peers within and across institutions to support innovation and help lower the perceived risk involved when individuals make assessment design decisions.

This study was informed by responses from a relatively small sample. Further work might apply the survey to larger samples within business disciplines, and to other professional discipline areas. The student voice should be the focus of further work in this area. Some evidence-based practice is beginning to emerge in the literature from the past two years of assessing during a pandemic, particularly considering the perceived need for online invigilation. We recommend funding for awards and grants for work in this area, to encourage more innovation and wider dissemination of good practice.

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## Disclosure statement

No potential conflict of interest was reported by the authors.

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