Ensuring academic integrity and assessment security with redesigned online delivery

Centre for Research in Assessment and Digital Learning
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The following guide is designed to assist unit chairs with redesigning assessment, to suit fully online delivery, without invigilated exams.

Some assessments can easily move to online delivery or submission some assessment will need to be redesigned to ensure that quality and rigour are maintained.

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The research

The CRADLE team have conducted a range of projects on assessment security and academic integrity, including work on detecting contract cheating (including a CRADLE Suggests resource [link]), the quality of contract cheated work, and the security of online examinations.

The following advice comes from CRADLE research as well as other cited sources from the literature.


The authors thank Rola Ajawi and David Boud for their helpful comments on draft versions of this document.
1. Academic integrity, assessment security and digital assessment

What is academic integrity and assessment security?
With a rapid shift to online learning, many educators have raised concerns about student cheating. To address this, we need to address academic integrity and assessment security. Academic integrity focuses on equipping learners with the capabilities and values necessary to conduct ethical scholarship. In contrast, assessment security focuses on hardening assessment against attempts to cheat, and on detecting any cheating that has occurred. These different missions are both necessary to ensure that students who complete university degrees have met the required outcomes.

Don’t assume that digital assessment is less secure
No assessment is immune to cheating. While in-person examinations are often thought of as more secure, recent large-scale survey research suggests that exams are the site of both more cheating, and more undetected cheating, than take-home written tasks (Harper, Bretag, & Rundle, 2020). The types of assignments students say they are least likely to cheat on are reflections on practicums, vivas, personalised and unique tasks, and in-class tasks (Bretag et al., 2019). Some of these are translatable into digital modes.

Focus on securing high-stakes tasks that matter programmatically
Securing every act of assessment is infeasible, and would likely lead to poor learning experiences for students. When choosing which tasks to focus on, those that contribute to degree outcomes matter most. If a particular outcome is assessed at first, second and third year, it is probably much more important to secure the third-year task. More resource-intensive approaches like vivas might be feasible if applied sparingly to these programmatically high-stakes moments of assessment. While cheating should not be ignored in any task, lower-stakes tasks may provide opportunities to instead focus on building cultures of integrity and trust.

Reconsider the need to assess low-level outcomes and tasks with one right answer
Assessing recall of facts requires students to not have access to those facts. Tasks with ‘one right answer’ rely on restricting access to that answer, this is not possible in unsupervised digital quizzes. While there are some circumstances where these types of assessment are essential, if it is possible to substitute them with tasks involving higher-level outcomes these may be vulnerable to fewer types of cheating.

Vivas might improve assessment security
CRADLE recently conducted a study where we paid students to cheat in a viva. We have not tried to publish this study yet because the results look too good to be true: the Deakin sessional markers we employed were able to spot cheating, every time. We present this result with caution because we wish to replicate it before we publish it. But there may be some benefit to vivas or similar conversations with students about their work as a way to improve assessment security. This includes formal vivas, conversations over Zoom about an assignment a student has submitted, or teacher-student interactions that are integrated throughout the task.
Talk with teaching teams about cheating and integrity in digital assessment
Panicking about cheating in digital assessment is unproductive and not based in evidence. However, it is worthwhile having a think and a chat about the different ways that integrity can be promoted online, and the types of cheating to look out for. CRADLE research has repeatedly found that being alerted to the possibility of cheating is one of the most effective interventions available at increasing detection rates (e.g. Dawson & Sutherland-Smith, 2018, 2019). As sessional staff often do much of the marking it is important to involve them in these discussions.

Talk with students about the dangers of cheating
In addition to the usual academic integrity conversations you might have, students also need to know about the risks to themselves of cheating. Assignments bought online are often poor quality, with one CRADLE study finding most purchased assignments were not even of pass quality (Sutherland-Smith & Dullaghan, 2019). Universities take cheating very seriously, and penalties can include exclusion. Even worse, students are sometimes blackmailed by cheating services (Yorke, Sefcik, & Veeran-Colton, 2020). In addition to educating students about the benefits of academic integrity, students also need to know about the dangers of cheating.

References
2. Three key questions to guide redesigning exams for online delivery

The following three prompts may help explain some of the decisions facing you in moving from an invigilated exam to a new digital assessment task. Refer also to the Redesigning exams decision helper (see next section). They focus on how small changes can maximise quality and assessment security, so that new tasks can be run in online formats without invigilation.

Is this exam particularly critical?
Essential exams primarily take place in final years, and assure that the student has met some critical course learning outcomes. If you think your exam is absolutely critical for this purpose whereby the student will not be able to practice as a professional without doing a version of this exam before graduation, then we suggest you contact your ADTL to make a case for an invigilated online examination. This is for exceptional circumstances only.

Does the exam focus on knowledge recall?
Exams that primarily test knowledge recall or have a single correct answer, such as multiple-choice questions, make cheating easy where invigilation is not possible (see CRADLE Suggests - Academic integrity, assessment security and digital assessment).

We recommend that you find alternatives for exams that test knowledge recall and/or exams with single correct answers such as multiple choice.

One alternative is to provide scheduled online tasks with timed release – but with redesigned questions which test students on their reasoning behind an answer choice. An added benefit is that these formats engage students in deeper learning. Keep in mind that students may need more time to complete these more difficult assessments and marking will take longer. See Redesigning exams decision helper for extra assistance.

Other exams will easily translate to the online environment. These include take-home or open-book/open-web exams, vivas or exam formats that involve unique answers, creativity and problem-solving. We suggest these can run as take-home exams.

How will you communicate changes with students and help them prepare?
It is important to let students know what the new tasks will entail, why you are using the new format and to provide criteria outlining expectations for achievement. Where this new format asks them to do something they may not be used to – such as a time-limited oral presentation – opportunities for practice and additional resources will be required.
3. Redesigning exams: decision helper (for a screen readable version please click here)

- **Redesign** as explanation-based questions and release as a scheduled online task with timed release. Questions now ask students to discuss/explain the reason for a single correct or incorrect solution. See provided examples.
  - **PROS:** keeps the same question topics, can test deeper understanding
  - **CONS:** marking more significant, reduces breadth of exam, assessment security concerns may persist.

- **Break down** the exam into a portfolio/series of tasks for progressive submission that may include: Explanation; application and reflective tasks
  - **PROS:** suits exams that have different components (e.g., MCQs and essay style questions) and heavy weighting
  - **CONS:** will have to manage multiple assessment items not just one. Maybe difficult to retrofit into schedule of activities

- **Reformat** the exam into a series of non-graded quizzes on the LMS. The final scheduled online task with timed release then asks students what was learnt in the quizzes and why. Video or written format can be used.
  - **PROS:** keeps same questions but increases assessment security.
  - **CONS:** timed task explaining knowledge is difficult to design so it covers all quiz learning.

- **Write new tasks:** such as 1) students produce an in-depth discussion of tasks from the unit or 2) students respond to scenarios that integrate knowledge recall with creative/in-depth solutions and/or integrate local/current information. Video or written format can be used.
  - **PROS:** can address learning objectives completely, more difficult to cheat.
  - **CONS:** harder to write and communicate to students. Time-consuming to grade.
Is the exam primarily an essay or long answer format?

What are the current exam conditions?

Is it a closed-book tightly time-restricted format? (2-3hr schedule)

Is it a tightly time restricted open-book exam? (2-3hr schedule)

Is it a take-home exam? (24-48hours)

Are the time-restricted closed book elements of the exam an absolutely key element in evaluating time pressured professional skills and knowledge recall that won't be evaluated in other units?

**YES:** use a scheduled online task with timed release. Consider adjusting the question to explicitly include acknowledgment of research process and connected reflection to prior class activities given access to broader resources in unsupervised mode.

*Because independent knowledge recall is difficult to evaluate in unsupervised digital tasks consider adding compulsory ungraded quizzes during the trimester*

**NO:** Change to take-home exam

Is the time-restricted element of the exam an absolutely key element in evaluating time pressured professional skills that won't be evaluated in other units?

**YES:** use a scheduled online task with timed release. Consider adjusting the question to explicitly include acknowledgment of research process and connected reflection to prior class activities given access to broader resources in unsupervised mode.

**NO:** Change to take-home exam

If changing to take-home exam

Longer form essays and problems designed for an exam situation can be translated to a take-home, open-book, exam but these will need to be modified to accommodate a shift from quick focused problem solving and analysis with access to limited key resources to demonstration of a more considered research-based approach and/or the ability to tackle a more complex problem. Adding layers to the problem and/or a process or reflective component can help this adjustment.
4. Examples of converting single answer correct/MCQ questions to a unique answer format

Converting a single answer correct or MCQ question to a unique answer format often extends what is being tested. In these examples, you will see that not only do the students have to recall or identify the correct answer but explain it, thereby testing their ability to analyse/synthesise knowledge and articulate this analysis to students. These two examples illustrate an easy means to convert these types of questions to a more unique answer format. Note that students will take longer to do these and that they will take longer to grade.

Example 1: Knowledge recall multiple choice or single correct answer

**Original multiple choice question**
The strongest and most resilient connective tissue is
A. adipose tissue
B. reticular connective tissue
C. fibrocartilage tissue
D. elastic connective tissue
E. areolar connective tissue

**Original single correct question**
What is the strongest and most resilient connective tissue?
Answer: fibrocartilage tissue

**Alternative questions, focussing on explanation:**
Why is fibrocartilage tissue the strongest and most resilient connective tissue?
Comparing adipose tissue and fibrocartilage tissue, discuss reasons for relative strength and resilience of these connective tissues.

Example 2: Analytic style multiple choice question or short answer

**Original multiple choice question**
In a study aimed at identifying factors associated with risk of developing dementia, a group of elderly people with a formal diagnosis of dementia were compared with a group of elderly people without dementia for a range of factors related to health, lifestyle and occupation. The patients with dementia were matched with those without dementia by age, sex and area of residence. Data collection was by interview. For the patients with severe dementia, where the dementia interfered with data collection, surrogates (usually a family member) assisted with data collection. This study is a
a) Case-control study
b) Cohort study
c) Cross-sectional survey
d) Field study
Original single correct question
In a study aimed at identifying factors associated with risk of developing dementia, a group of elderly people with a formal diagnosis of dementia were compared with a group of elderly people without dementia for a range of factors related to health, lifestyle and occupation. The patients with dementia were matched with those without dementia by age, sex and area of residence. Data collection was by interview. For the patients with severe dementia, where the dementia interfered with data collection, surrogates (usually a family member) assisted with data collection. What type of study is this?

Answer: case-control study

Alternative questions, focusing on explanation:

Harder
In a study aimed at identifying factors associated with risk of developing dementia, a group of elderly people with a formal diagnosis of dementia were compared with a group of elderly people without dementia for a range of factors related to health, lifestyle and occupation. The patients with dementia were matched with those without dementia by age, sex and area of residence. Data collection was by interview. For the patients with severe dementia, where the dementia interfered with data collection, surrogates (usually a family member) assisted with data collection. What type of study is this? Why do you think this?

Easier
In a case-control study aimed at identifying factors associated with risk of developing dementia, a group of elderly people with a formal diagnosis of dementia were compared with a group of elderly people without dementia for a range of factors related to health, lifestyle and occupation. The patients with dementia were matched with those without dementia by age, sex and area of residence. Data collection was by interview. For the patients with severe dementia, where the dementia interfered with data collection, surrogates (usually a family member) assisted with data collection. What makes this a case control study?

Acknowledgement for original multiple choice questions: Jennifer Lindley, Monash University.
5. Tips for moving practical exams or assessments to online equivalents

Types of practical assessments include:
- Laboratory-based practicals (e.g., chemistry, physics, health sciences etc).
- Performance-based assessments (e.g., fine arts, dance, etc).
- Physical artefact development (e.g., engineering, fine arts etc).
- Psychomotor skills (e.g., physiotherapy, nursing and other health professions etc).
- Interpersonal skills (e.g., medicine and other health professional consultation skills etc).
- Language skills (e.g., vivas).

Suggested alternatives:
- Video-based uploads of tasks performed in home environment using CloudDeakin.
- Online simulation-based tasks (e.g., pre-existing computer-based sims) – might be worth coordinating with other universities to share simulation resources.
- Providing a portfolio rather than making a single piece of work in a scheduled time frame (e.g., a series of videos showing development of an artwork/artefact).
- Critique and explanation of video practice – need to find or make videos and post online plus design a critique task for students.
- Real time observed practicals/vivas (very resource intensive) – zoom or BBcollaborate.

In some cases, it may be necessary to defer assessment until a later point in the course.

Please refer to Faculty teams who can create videos and provide advice on file formats and support documentation for both students and staff.
6. Tips for moving complex unique response exams (eg essay style) to online equivalents

Types of exams include:
- Essays (eg history, English, visual arts, most arts based subjects etc).
- Problems with individualised solutions (eg computer science programming, some mathematical problems, engineering etc).
- Paper-based authentic artefact development (eg marketing plans, legal response).
- Take-home (open book) exams (eg law).

These exams are relatively easy to translate to online environments. Some suggestions:
- Take home exams can be easily transferred online – these do not need to change.
- Longer form essays and problems designed for an exam situation can be translated to a take-home, open-book, exam but these will need to be modified to accommodate a shift from focused analysis and application to demonstration of a research-based approach. Adding a process or reflective component can help this adjustment.
- Other tasks may need to be rewritten so that they can still work to ensure the student has access to all resources.
- If keeping as scheduled on-line task with timed release. Add reflective components to help avoid cheating: eg ask students to upload videos explaining their answers and grade these; ask students to reflect on an online discussion that has been had exclusively in class.
- If able to resource an online viva format using zoom or collaborate may work, where students are asked questions and respond on the spot – feedback and grades can be done in real time to reduce time in grading.