


Rewriting the (Exam) Script? Assessing Student Learning in an Unusual End-of-year Context.

Jonny Johnston ¹ 

Ciara O'Farrell ²

¹ Trinity College Dublin, jonny.johnston@tcd.ie

² Trinity College Dublin, cofarre@tcd.ie

Abstract.

This rapid response documents an institutional development project focused on enabling a transition to open-book assessment practices at the authors' institution. The case study outlines curricular and institutional context, before engaging in an in-depth review of development methods focused on supporting the transition to open-book examinations mandated by the emergence of COVID-19 in Ireland. Its main output is a reference resource outlining potential methods for repurposing exam questions already pre-rated by external examiners for closed-book purposes, for novel use in open-book contexts. It also outlines potential implications for future practice in assessment.

Keywords: Assessment; Academic development; COVID-19 response; Open-book examinations.

1. Introduction.

This article documents an institutional development project focused on enabling a shift from traditional examinations to open-book assessment practices at Trinity College Dublin during the COVID-19 'lockdown'. We first outline our institutional and curricular context before discussing the project in detail. We conclude by considering post-pandemic implications for assessment practice.

2. Curricular and Institutional Context at the Onset of the Pandemic.

In recent years Trinity has been engaged in the design and implementation of a pedagogical institutional reform project. The Trinity Education Project (TEP) champions a rejuvenation and re-articulation of the university's commitment to student learning. In May 2016 the programme-

focused Trinity Assessment Framework ('TAF') was approved by the University Council. The TAF, developed under the guidance of the Head of Academic Practice, proposes a shift away from a sole or overreliance on end-of-year formal examinations as an assessment strategy in favour of a more evenly distributed assessment regime across the academic year. Advocating for fewer, yet more meaningful, assessment to feature in the assessment diet at Trinity, the TAF's influence on assessment practices at Trinity is particularly relevant to this project.

3. Pivots and Practice Modifications.

In line with governmental COVID-19 response, Trinity's physical campus closed to students and non-essential staff on March 12th. The decision was accompanied by an announcement of an emergency pivot to fully remote teaching and learning, with the transition taking place in the seventh week of the 11-week long teaching semester. The Centre for Academic Practice, looking ahead to the imminent assessment period, recognized the imperative to develop a suite of resources focused on end-of-year and end-of-semester remote assessment practice. These concentrated on offering pragmatic, practical, and pedagogic advice on the best use of alternative assessments, multiple-choice questions, and particularly on the re-design and re-purposing of assessments previously planned and ratified by external examiners for in-person delivery; these resources are available for open-source review on the Centre's webpage.

TAF interventions have reduced the number of traditional closed-book examinations at Trinity. Prior to the outbreak of the pandemic, however, they had not curtailed their prevalence. Lockdown precluded any possibility of in-person examinations taking place. Academic leaders from across the institution, including the Head of Academic Practice, were quick to acknowledge the urgent need to assess students without using such examinations. Our Academic Practice team was tasked with designing an intervention to assist colleagues as they made the changes required to enable students to complete the academic year under pandemic constraints: how might students demonstrate their achievement of learning outcomes if not in traditional examination contexts? Senior leadership in the university outlined three major option pathways. Colleagues could: 1. Choose to pro-rate a student's grade where learning outcomes could be deemed to have already been met through assessment completed elsewhere in the year (at least 50%); 2. Provide an alternative assessment to enable students to demonstrate their achievement of learning outcomes (e.g. an open-book remote assignment, a real-time online open-book exam); 3. Take a real-time proctored online exam. This final option was reserved

only for cases where a re-purposing or re-design of an assessment into an alternative form was deemed absolutely necessary by Schools, i.e. where academic integrity was deemed to be at risk.

Our development team focused on the second assessment pathway outlined by the university's leadership team, supporting colleagues as they reviewed existing assessments and considered alternatives. To gauge the level of development need across the institution, the Academic Practice team arranged a virtual interactive webinar with lecturers from across the disciplines to capture the practitioner voice. We adapted this practice from the f2f model of a focus group: we have found this approach particularly beneficial in the past, talking to 'critical friends' with both disciplinary and pedagogical expertise to develop insight into specific support needs. In this semi-structured interview approach, colleagues were asked to talk the developer team through a series of questions like: What does a typical exam look like in your home discipline? What might this typical exam look like in your own home? What are the key challenges you anticipate in transitioning to online assessment? What are the challenges you see for students in completing exams remotely?

Drawing on the practitioner voice captured during the webinar, we undertook an initial scoping of past papers across the disciplines, going on to collate and analyse examination questions. These questions were then further interrogated, and sample questions redeveloped as a reference point for colleagues as they engaged in their own rewriting of examination questions. Our development project coalesced around one key question: how might existing assessment activity best be redesigned or repurposed for a remote context? The supporting resource for faculty that emerged ('Appendix 1'), while neither exhaustive nor prescriptive in its reach, demonstrated significant potential to assist staff with the redesign of high-stakes assessment activities for the academic year 2019/2020.

As a development team, our role within the institution is that of change agent, provoking and enabling academics to reflect on how they might enhance their own practices in teaching, learning, and assessment, rather than cleaving to a directive role. Accordingly, this does not afford the resource we produced universal uptake or reach; as with all faculty professional development activities, caveats around engagement apply. We envision remote open-book assessment becoming more normalized as universities plan for increased remote delivery of teaching and learning as practices adapt further to the new COVID-19 paradigm and anticipate the resource to impact positively on assessment modification at Trinity and across the sector.

4. Reorienting the Functionality of End-of-year Assessments and Encouraging a Redraft of Exam Scripts.

Examinations control what and how students learn. The ceremonial, secretive, authoritarian and anxiety-inducing forms of traditional university examinations [...] involve[e] a strong disciplining of the students [...] To many students, assessment is still experienced as a threat, rather than as an incitement to learning. (Kvale: 2007, p. 63).

It is no longer assumed in higher education that assessment equates to examinations, recognizing that examinations are rarely fit for purpose when preparing students to engage with the increased complexity of learning required for the 'supercomplex' world after graduation. The lack of evolution in assessment practice accentuates the dissonance between contemporary student experiences of learning (e.g. strongly socially constructed in lectures and tutorials) and how they experience the assessment of their learning under closed-book exam circumstances (e.g. sole production from memory in silence). Despite an increasing focus on the impact of formative and evaluative assessment modes on student learning, however, elite institutions have typically been slow to shift away from high-stakes summative assessment under examination conditions and closed-book examinations remain broadly accepted as a necessary evil.

Examination procedures at Trinity are well established. Students are expected to sit proctored exams undertaken in silence with strict adherence to the published College guidelines for students on what to expect during exams which take place at Trinity. The cost of proctoring to the institution is significant, as is the additional cost of external venue hire in light of capacity challenges. While TAF interventions have reduced the number of examinations, traditional closed-book examinations have remained popular with many academics. This is arguably aligned with an understanding of equity of experience, or sense of 'fairness' for all participants when promoting the use of closed-book examinations: traditional exam conditions provide a shared quiet space for all those who sit them; proctoring mitigates against the risk of cheating and/or plagiarism; and providing time limits on exams encourages students to be selective with how they demonstrate their learning.

Bringing students together for exam conditions was, and remains, impossible for the foreseeable future. The reality of students sheltering with family during the unprecedented global shutdown and the inability to guarantee student access to stable internet or (quiet)

workspace for the duration of an exam precludes any potential of real-time proctored examinations providing students with any equity of experience. Rather than a fruitless attempt at replicating closed-book conditions remotely, we therefore promoted engagement with open-book remote online assessment modalities.

5. Supporting the Transition to Open-book Assessment.

Twelve past paper questions were collated from across the disciplines, aligned with prompted considerations for academics to bear in mind when re-drafting their own questions for use in open-book contexts. Minimal editing took place to the initial questions, other than rewriting for brevity. We decided to disclose the source faculty for each question, but not the disciplinary paper from which the question had originated. This sought both to somewhat anonymise the question source and also to emphasize the transferability and transdisciplinary focus of the resource, with the intention of avoiding calls of 'oh that wouldn't happen/work in my discipline'. The vast majority of modifications suggested in the appendix are applicable to many disciplinary contexts and take into account both pedagogical and technological tools as means to promoting academic integrity.

In an open-book environment, tasks assessing recall alone do not enable an adequate assessment of student learning. A recurring consideration when engaging with past papers and looking at the presentation of the questions was simply: 'can students use a search engine to solve this'? Although beyond the scope of this rapid-response paper, it was striking how many of the examination questions extracted from past papers across the faculties focused on assessing memory and recall alone; a future investigation might consider an analysis mapping examination questions against Bloom's taxonomy to evaluate levels of cognitive complexity in typical examination practices at Trinity, or indeed at other 'elite' institutions. Our work clearly indicated that too many examination questions promote strategic surface level learning, rather than deeper engagement with the subject. Magnified by the newly remote context, this tendency to assess lower levels of learning in examination practice is particularly, but not exclusively, prevalent in multiple-choice question settings. Our resource needed to demonstrate unequivocally that many examination questions would require significant re-drafting for the new COVID-19 assessment context.

Framing the resource was not without challenges: we needed to find a way to encourage

reflection and insight into the need to re-design and reframe questions without being either prescriptive or risking being perceived as directive in our advice to disciplinary academics. We achieved this by providing questions prompting direct engagement with specific exam style questions and also by providing multiple potential modifications for better use. The suggestions made on the pedagogical side typically involved: limiting word count to add cognitive stretch and mitigate against copy-paste plagiarism; encouraging or requiring students to submit imaged artefacts such as evidence of calculation, again to mitigate against plagiarism; encouraging colleagues to consider whether a search engine could identify ready solutions; providing a limited source set to students with which they could work; redrafting to orient towards scenario-based questions. On the technological side, suggestions included using the Blackboard virtual learning environment (VLE) to manage submissions administratively; using a VLE feature to run similarity reports and flagging this feature to students to discourage (accidental) plagiarism; and advertising the potential for follow-up remote vivas using technological solutions. Although far from exhaustive, we believe this open-source resource offers colleagues across the sector an excellent point of departure for similar redevelopment of high-stakes assessment tasks for remote undertaking.

6. Conclusion and Implications for Future Practice.

At the time of writing there is a significant and acknowledged risk of future lockdown in the event of further COVID-19 peaks. We face into a likely recession, if not depression. Once again it is likely that academic institutions will be asked to do more to further student learning, with less. Championing an approach viewing examinations as an additional mechanism to drive learning, rather than investing finances proctoring and facilitating closed-book exams that predominantly probe student capacity to recall information, might assist us to do so.

Early anecdotal data captured from the student voice strongly suggests open-book assessments have impacted highly positively on student learning. Looking ahead, our assessment practice needs to align constructively with the new reality of socially-distanced teaching and learning. We suggest the pandemic-mandated shift to remote open-book assessment will herald a holistic transformation of examination practice, driving a deep engagement with disciplinary content rather than promoting strategic/shallow to-the-test learning.

7. References.

- Elton, Lewis and Johnston, Brenda. (2002). Assessment in Universities: a critical review of research. LTN Generic Centre. Available: <https://eprints.soton.ac.uk/59244/1/59244.pdf>
- Kvale, S. (2007). Contradictions of assessment for learning in institutions of higher learning. In: D. Boud & N. Falchikov (Eds) *Rethinking assessment in higher education: learning for the longer term*. Oxon: Routledge. pp. 57-71.
- McIntyre-Bhatty, T., & Bunescu, L. (2019). Learning & Teaching Paper #3: Continuous Development of Teaching Competencies, Thematic Peer Group Report. European Universities Alliance. Available: <https://eua.eu/downloads/publications/eua%20tpg%20report%203%20-%20continuous%20development%20of%20teaching%20competences.pdf>
- Share, M, & O'Farrell, C. (2017) Can you teach an old dog new tricks? Institution-wide pedagogical reform at an elite university in Ireland. *Student Success*, 8(2). doi:10.5204/ssj.v8i2.384
- Trinity College Dublin (2020). Teaching, Learning, and Assessment Under Covid-19 at Trinity. Available: <https://www.tcd.ie/CAPSL/TLAC/>
- Trinity College Dublin (2020). The Trinity Assessment Framework. Available: https://www.tcd.ie/TEP/assessment_framework.php

8. Appendix 1: Repurposing Face-to-Face Exam Questions to Open-Book Exams’.

The following table presents a range of sample exam questions from across the disciplines and outlines potential considerations for modification. They are not intended as prescriptive. Many of the modifications suggested are applicable to the majority of disciplinary contexts, e.g. word-count restrictions, addition of ‘Part B’ questions, the addition of a student (personal) artefact, and the use of TurnItIn via the Blackboard VLE to generate similarity report.

Source Faculty	Sample Exam Question	Considerations when Repurposing as Open-Book	Possible modifications?
FEMS (2018)	How is flux through glycolysis controlled?	Can students google the answer (i.e. does this only test recall of knowledge)?	Consider: <ul style="list-style-type: none"> - Rewriting as an application style question e.g. Explain flux through glycolysis in the context of [specific lecture/workshop/example provided]). - Adding in a Part ‘B’ to the question, e.g. justify your response in the context of [x]. - Requiring an annotated bibliography so students demonstrate where/how their ‘knowledge’ was acquired
	Discuss why haemoglobin exhibits a sigmoidal oxygenation curve while myoglobin exhibits a hyperbolic curve (include the oxygenation curve(s) with detailed labels of axes and give descriptions to the features of the curve(s).)	<ul style="list-style-type: none"> - Can students source the information for each curve separately from web resources? - Compare/contrast style questions require students to differentiate and identify relevant information 	Consider: <ul style="list-style-type: none"> - Adding in a strict word limit (e.g. 800 words) to prevent copy/pasting from internet sources - Using TurnItIn via Blackboard to generate similarity reports for text?

		- Might students be tempted to seek support from an essay mill/essay bank?	- Upload a personal artefact contextualising student response, e.g. a pdf image of a student's hand-drawn curve, photographic image.
AHSS (2019).	PART ONE: answer three out of four of the short essay questions; e.g. Define how Schein (1985) defines culture.	<ul style="list-style-type: none"> - Current 350 word limit (excess words penalised) on each short answer question limits copy/pasting from internet sources - How long is reasonable for a student to prepare and complete each essay? Three essays in three hours model may not easily transfer to remote open-book exam. 	<p>Consider:</p> <ul style="list-style-type: none"> - Rewriting as a compare/contrast style question which might probe student knowledge more deeply, e.g contrast [x]'s definition of culture with [y]'s. - Reducing number of questions to be answered within time frame. - Acknowledging increased expectations in depth/sophistication of student response. - Limiting the number of sources consulted and require evidence for these?
	Part TWO: MCQs.	<ul style="list-style-type: none"> - Have students done the MCQ themselves? - Have students followed the calculation process for MCQ solutions correctly, but arrived at the wrong answer? 	<p>Consider:</p> <ul style="list-style-type: none"> - Randomising access to MCQ order of questions/restricted time window for completion (<i>assumes a short time-window of student access to MCQ bank</i>). - Requiring evidence of personal engagement, e.g. screenshot/photo of calculation/sources consulted as a personal artefact.
FEMS/FHS (2019).	<p>Questions: 2 of 3 in 90 mins. Exemplar question:</p> <p>Compare and/or contrast (<i>in situ</i> and <i>ex situ</i> plant conservation) approaches.</p>	<ul style="list-style-type: none"> - Can students make use of an essay mill/essay bank to write their exam? - Question asks students to showcase and synthesise/evaluate their own knowledge gained over time. 	<p>Consider:</p> <ul style="list-style-type: none"> - Adding in a strict word limit (e.g. 800 words) to prevent copy/pasting from internet sources. - Using a strict word limit to encourage students to be discerning in what they include in their response - Requiring an annotated bibliography to help ensure that a student has done the work for this open-book exam essay themselves - Adding in a Part B to the question: e.g. Relate or contextualise your response to a specific [lecture/workshop/example etc]. - Limiting the range of the question, e.g. using specific examples of where <i>in</i> and <i>ex situ</i> conservation approaches are in place?

AHSS (French (or any language), 2019)	Composez un texte argumenté (300 mots) pour répondre à l'une des questions suivantes: - est-ce que voyager nous rend meilleur? - la science se doit-elle d'être morale?	<ul style="list-style-type: none"> - Students previously had no access to dictionaries: what is the impact of access to dictionaries/web style guides on composition? - Can students make use of an essay mill/essay bank to write their exam? 	<p>Consider:</p> <ul style="list-style-type: none"> - Acknowledging increased expectations in depth/sophistication of student language where access to dictionaries etc is assumed. - using TurnItIn in Blackboard to generate similarity reports?
AHSS (2019)	Answer four questions in three hours. Qs are in the style of: "[Extended quote from source]'. Comment."	<ul style="list-style-type: none"> - Can students make use of an essay mill/essay bank to write their exam? - Scenario-based asks students to showcase and synthesise/evaluate their own knowledge gained over time. - Scenario-based question limits likelihood of google-search friendly answer. - How long is reasonable for a student to prepare and complete each essay? Four essays in three hours model may not easily transfer to remote assessment. 	<p>Consider:</p> <ul style="list-style-type: none"> - Using TurnItIn in Blackboard to generate similarity reports. - Acknowledging increased expectations in depth/sophistication of student response. - Requiring annotated evidence of bibliography/sources consulted (e.g. personal artefact). - Reducing number of questions to be answered (e.g. acknowledge that exam is not the same as a continuous assessment task). - Restricting word count to limit inclusion of external sources.
FEMS (Mathematics: SS, Michaelmas 2018).	'Credit will be given for the best three of four questions answered in three hours'; questions are scenario-based and require students to show/prove conclusions.	<ul style="list-style-type: none"> - Is there an unacceptable risk of collusion between students? - Are students likely to be able to consult an exam mill for support? - How long is reasonable for a student to prepare and complete each proof? Three proofs in three hours approach may not easily transfer to remote assessment. 	<p>Consider:</p> <ul style="list-style-type: none"> - Reducing number of questions students need to answer? - Requiring evidence of personal engagement, e.g. screenshot/photo of calculation/sources consulted as a personal artefact. - Making explicit how long students should spend on each question?
FHS (Medicine: Public Health/Primary Care, 4th, Sem 2 2019).	Section 2: MEQs. 90 min exam; 3 questions to be answered. Sample Q (multistage): 1a. Define public health practice	<ul style="list-style-type: none"> - Can any of these question elements be googled easily, i.e. do they only test recall? - Questions are drafted to assess learning from available from lectures, web lectures, seminars, and course textbooks. 	<p>Consider:</p> <ul style="list-style-type: none"> - Scenario-based question to limit likelihood of google-search friendly answer, e.g. consider asking student to answer question from e.g. patient/practitioner/policy maker/manufacture/researcher perspective. - Writing as compare/contrast style question which might probe student knowledge more deeply, if appropriate and

	<p>1b. Give examples of differences between hospital practice, general practice, public health practice.</p> <p>1c. For 3 different categories of health information give examples using data of how health status differences between countries can be measured.</p> <p>1d. What are the characteristics of good public health policy development?</p> <p>1e. Give three examples of health inequities within countries.</p> <p>1f. What is the 'vision' for healthy Ireland (2013-2025).</p>	<p>- Can the different stages of each MEQ be integrated to require students to demonstrate and synthesis their knowledge in the area, rather than being down in a step by step manner?</p>	<p>within the frame of the stated LOs e.g. contrast [x]'s definition of public health practice with [y]'s; 'how does the strategy for vision of healthy Ireland align with [x]?'</p> <p>- Rewriting questions to assess application of knowledge or to enable students to showcase and synthesise/evaluate their own knowledge if appropriate and within the frame of the stated LOs?</p> <p>- Requiring students to submit annotated bibliographies/screen-captured images of their search histories to emphasise personal ownership of content?</p>
FEMS (2019).	<p>List and describe four environmental conditions that challenge contemporary managers.</p> <p>Draw on appropriate material from the course to examine a (managerial or organisational issue of interest to you).</p>	<p>Are students going to be able to just google answer to 'list and describe'?</p> <p>Second part of question works well as asks students to draw on material from course and asks for a personal response to it</p>	<p>Consider:</p> <p>- Adding a Part B to the first element of the question (explain/justify your choice).</p> <p>- Rewriting question with a case study/trigger to turn it into a scenario-based question.</p> <p>- Might students be asked to include a brief reflection on why they chose the organisational issue of interest? If so, wordcount might be revisited/reduced in earlier part of question to reflect extra workload.</p> <p>- Using TurnItIn to generate a similarity report.</p>
AHSS (2019).	<p>'The study of censorship is a powerful tool for analysing power and powerlessness in any given society'. Discuss.</p>	<p>- Can students make use of an essay mill/essay bank to write their exam?</p> <p>- Requires synthesis of knowledge.</p> <p>- Is wordcount appropriate for an open-book question?</p>	<p>Consider:</p> <p>- Asking students to use their notes from class to inform this answer or requiring students to provide an annotated bibliography to emphasise personal ownership of content</p> <p>- Acknowledging increased expectations in depth/sophistication of student response</p> <p>- Consider asking student to answer question in the [context] of a current [situation].</p> <p>- Consider asking student to answer question from e.g. speechwriter/public/politician/policy maker perspective.</p>

			- Writing as compare/contrast style question which might probe student knowledge more deeply, if appropriate and within the frame of the stated LOs e.g. contrast [x]'s definition of censorship with [y]'s.
AHSS (2019).	The survey on incoming and living conditions (SILC) is the official source of statistical evidence on poverty in Ireland. Write brief notes on the following concepts used in the survey: 'equivalence scales'; 'real and nominal incomes'; 'Gini co-efficient.	<ul style="list-style-type: none"> - Can students google solutions (e.g. is this testing recall alone)? - Could data from the survey be used to provide a stimulus scenario. 	<p>Consider:</p> <ul style="list-style-type: none"> - Testing the application of knowledge rather than the recall of knowledge. - Testing the interpretation of evidence or framework, e.g. align your response with specific areas of the survey? Write brief notes on how the following concepts are used in the survey. - Requiring 3-4 references to support student response as indication of sources consulted. - Consider asking student to answer question from e.g. public/policy maker/researcher perspective. - Writing as compare/contrast style question which might probe student knowledge more deeply, if appropriate and within the frame of the stated LOs e.g. contrast [x]'s definition of SILC with [y]'s.
FAHS (any)	<p>[Scenario describing an error in treatment]. Imagine you are [x] the [pharmacist/GP/OT etc]. Having reflected on the factors surrounding the error above:</p> <ol style="list-style-type: none"> (a) Describe the causes of the error. (b) Assess the risk associated with a potential future recurrence. (c) What actions will you take to prevent the error from occurring again. 	<ul style="list-style-type: none"> - Question focuses on application of knowledge. - Risk of student collusion and/or (accidental) plagiarism. 	<p>Consider:</p> <ul style="list-style-type: none"> - Restricting word count. - Adding in a Part 'B' of question, e.g. "if you can only take 2 actions, what would they be and why?" - Requiring 3-4 references to support student response. - Requiring TurnItIn submissions to generate a similarity report.

	Your answer should refer in detail to the theoretical principles and strategies of risk management.		
--	---	--	--