REshaping Assessment Excellence: COVID-19 and the New Now at the University of Bath

James H. Davenport & Tom Crick

J.H.Davenport@bath.ac.uk & Thomas.Crick@swansea.ac.uk

University of Bath & Swansea University

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Context and Scope

A common remark in commercial IT circles is that Covid did more for "digital transformation" in a month than cohorts of Chief Information Officers etc. had accomplished in a decade.

Many businesses are not going back to "five days a week", with some research [Bin22] suggesting that "two days is optimal". There are many changes in Higher Education as well, which are not going to be reversed [Cri21, CKWG20]: we look at one area: assessment, and in particular the written examination.

Assessment pre-Covid: a frozen object?

Indeed, the final examination is a university institution that would appear to be off-limits as far as innovation is concerned. To put this into context, while faculty and students alike will not stray too far from a computer as they go about their daily business, it is still the norm for examinations to be conducted using pen and paper. Does this imply, therefore, that some element of modern learning theory might be sacrificed if it were abandoned in favour of some alternative instrument? Or, given it is still the most commonly administered summative assessment instrument in universities today, is there some other special intrinsic value attached to a closed-book, invigilated exam that justifies its continued use? [WW09]

Forms of Examination (Partial)

Trad-C Invigilated in an "examination hall". JHD has used this.

Trad-OR As above but students can bring in specified paper resources: often called "open book". JHD has used this [BDF$^+$19] to reduce "memorisation".

Trad-OU As above with no restrictions on what can be brought it (on paper).

TakeHome-OU In a take-home examination, the student is given the question paper, and has to bring the answer back later (generally 24-hours). JHD had used this.

Interim Use a VLE to deliver an examination paper, and collect answers. There are no technological constraints on the help students could acquire.

Electronic-C A university-managed examination, generally using specific software. How is "Closed" monitored?

Electronic-OU As above, but the students are allowed to use any Internet resources.

The Bath timeline

Prior
: Two hour Trad-C or Trad-O. TakeHome-OU disguised as "coursework".

May 2020
: **Interim**. All students were given a 24-hour window in which to do them.

January 2021
: **Electronic-O**, still with a 24-hour window. Maths took the option to insist that students only had three hours (2 hour exam+1/administration).

May 2021
: Success, and greater familiarity with Electronic-O, meant many more departments moved to the three-hour limit.

January 2022
: three-hour (still thought of as 2+1) examinations for all, but now fixed the start time.

May 2022
: Following very substantial pressure by the academics, the university allowed some **Trad-C** examinations in first-year subjects.

Future
: Some Trad-C, mostly Electronic-O, experiment with Electronic-O in an invigilated setting.

The student verdict (at Bath)

This has been overwhelmingly positive among final year students (as captured by National Student Survey). One of many (22 in Maths, 13 in CS):

> *Online exams - the exams work better when they use problems to check your understanding instead of your memory.*

The students show appreciation of the different things that open-book examinations test,though they assume "online"="open book" — it was for them. The rare (N=2) negative ones are worth noting.

> *I absolutely would not want to keep online exams, in person is much better due to an abundance of cheating. [Maths]*

> *Certain exams are more relevant in open-book, online format, but not all. [CS]*

Academic Misconduct?

[Dic22] reports a small (N=900) survey [Alp22] of UK students.

> *The numbers suggest that 1 in 6 students in the UK have cheated in online exams this academic year. Over half of those surveyed knew people who had cheated in online assessments. Almost 8 out 10 believed that it was easier to cheat in online exams than in exam halls, and the methods for cheating were often laughably rudimentary – including calling or messaging friends for help during the exam, using google to search for answers on a separate device, or asking parents to read through answers prior to submission.*

The University of Bath has certainly experienced an increase in detected use of "unfair means". There is probably a larger increase in undetected use of unfair means.

[Wil22] also reports a worrying rise, but data come from an online proctoring company.

Academic Misconduct: JHD's experiences

- JHD has sat on misconduct judgement panels, and his subjective view would be that much of this has been extempore abuse, as students get tempted in the stress of the examination, rather than pre-planned (as cheating in Trad-C examinations has to be).

- One of JHD's final year examination papers (in the 24-hour setting) was posted on Chegg. No responses were detected.

- But it might be very different for first-year examinations, and Maths (staff and students) really wanted **Trad-C** here.

- "I have an online Statistics Examination from 08:30 to 11:30 next Friday. Is anyone familar with "Definition of continuous random variables (RVs), cumulative distribution functions (CDFs) and probability density functions (PDFs). ... [a screenshot of what was obviously a 1st/2nd-year syllabus]" please bid to help me.
[https://www.freelancer.com/jobs/statistics/].

Challenges of Online Exams

- **Setting**. Open-book exams are very different, and it takes practice to get the difficulty and duration right. The entire community (examiners, mentors, externals) have had to adjust very rapidly: "blind leading blind".
- **Misconduct** — note that "AI proctoring" has problems, from legal [(Un22) to practical [New22]. "Automation bias" training is probably essential.
- **Authenticity** — is that the student the person we think? Some Italian universities, even pre-Covid, insisted on (short) oral examinations for the teacher to confirm identity and some knowledge. Expensive, though.
- **Stress** on students' ethics — do we prepare them for this? We have seen nothing written on this.
- **Definition** of proper/improper online resources. We haven't seen a good definition that will allow Wikipedia searches but not tools that write programs [FADB$^+$22], say. JHD says "non-interactive Internet resources": this hasn't met a lawyer.

Concluding remarks

Q1 [WW09] ask "is there some other special intrinsic value attached to a closed-book, invigilated exam that justifies its continued use"?

A1 The relative ease of detecting misconduct, and the lack of opportunity for extempore misconduct, are non-trivial factors.

Q2 Won't more testing open-book exams be disliked by students?

A2 Not on Bath's evidence, or nationally [(Un22].

Q3 Won't more testing open-book exams be harder to set?

A3 Different, certainly, and the speed of the move caught most unprepared. But the system seems to have adjusted.

Q4 How to define "allowed Internet usage" (?and police it)?

A4 Good question!

Q5 Are these "better" examinations?

A5 How to measure? But see [JMW$^+$14] "The assessment level incorporated into the course had a significant impact on students' conceptual understanding and final achievement scores".

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