eExam Trial Report

The eExam Trial conducted by uImagine explored the use of online invigilation services to facilitate a supervised online exam across a number of subjects.

Aims

The aim of this trial were:

1. Evaluate the use of online proctoring services to replicate current exam conditions.
2. Evaluate the viability of these services from a technical aspect and highlight any problem areas or considerations that need to be made.
3. Evaluate the use of Blackboard to provision eExams for students and replicate common exam questions.
4. Evaluate the perceived improvements for the Exams Centre and the effect on the Student's Experience that eExams may have.
5. Explore the potential and possible application of these services and their applicability to broader concepts of online assessment.

The trial tested the platforms of two companies ProctorU and bVirtual. Both vendors products were reviewed initially by a grouped from DIT and DSL and it was decided that both platforms should be tested. The contracts from both companies were thoroughly

reviewed by CSU legal to ensure compliance with required privacy and personal information protections for students and staff.

Pilots Conducted

Pilots were conducted in both 201630 and 201660 Sessions. An initial test of the Proctor U system was ran with BMS240 during an unofficial mid-session exam. The subjects included in the trial included:

- AGB165
- BMS240
- HIP100
- ITI581
- ITE513
- EED308
- BMS255
- MGT512
- APS401
- ITE514
- MGI512
- BIO432

Exam Setup

The eExams were replicated from the paper exam as Blackboard Tests. Questions types were limited to what was possible to recreate in the current Blackboard system and exams were reviewed to ensure that this was possible. This meant that most exams were a mixture of multiple choice, short answer and essay answer questions but Fill in the Blank questions were also used in some exams. Full colour and high resolution images were able to be included in questions.

Exams were recreated in Blackboard by uImagine staff member Tim Klapdor, and during the 201660 session they were also QA'd and checked by a member of staff from the Learning Resource Unit.

Exams were scheduled to be made available to students using the time release function in Blackboard and were also password protected. A menu item was added to the Subject sites navigation panel, and a direct link and password provided to the invigilator in their respective scheduling system.

Scheduling Exams

All eExams were scheduled to run in the 24 hours before the paper based exam. The students exam centre place was still made available to them so that if there was any technology failure students could still take the exam without having to resit a make-up exam. Failures could be reviewed with the vendors technology to ensure no impropriety

on the student's behalf. Each vendor had their own scheduling system where an administrator would set up the exam details including:

- Time and date of the exam
- Duration of the exam
- Special instructions for the student or invigilator
- What materials and resource can be used during the exam
- Direct link to the exam
- Password to provide students access to the exam

eExams Trial Process

The full process of the exams is mapped out below:

1. Subjects Nominated to participate in trial
2. Meeting with Academics to discuss the platform, what happens and answer any technical questions
3. Academics send in current or previous exam to review questions types
4. Finalisation of participation
5. Communication to students sent via Blackboard Announcements with relevant information and asking students to test equipment and internet connection
6. Students asked to contact Tim Klapdor with any questions or queries
7. Exams recreated in Blackboard Tests and sent for review by academic
8. Exam Centre finalises dates for paper exams
9. eExams scheduled in vendor system
10. Students sent communications from Talisma that they can nominate to take eExam and where to schedule
11. Students set up account with vendor system and choose their subject from available list
12. Students are presented with available time slots within the 24 hours of the scheduled day to choose from
13. Once chosen, students are notified with the details and a confirmation email is also sent
14. Blackboard menu item and content page created. Exam added with Time Release and Password setup. A column is also added to Grade Centre that is separate from the existing exam column.
15. Link to Blackboard exam and password are added to the scheduled exam in the vendor system
16. Students are sent an email reminder from vendor in period before scheduled exam
17. Students use link sent in email or log into vendor system at their chosen time
18. Invigilator connection is established and invigilator goes through identity and room check
19. Once satisfied with their environment the invigilator will take over control of the mouse and keyboard to check the student's computer and shut down and turn off any features that may be used to cheat or capture the exam.

20. The invigilator copies and pastes the link to browser, students log into Blackboard and the invigilator then types the password for the exam
21. When students are ready they can click to begin the exam and start the time limit for the exam
22. Student complete each of the questions required, answers are auto-saved throughout
23. If the invigilator detects any irregularities these are reported and recorded
24. The student can ask any questions to the invigilator throughout the exam
25. Once completed or time is up students then click the Submit button for the exam
26. Blackboard logs the exam attempt and then makes it available to the academic for marking
27. Multiple choice and some missing blank questions can be automatically graded if answers are provided
28. Marks are auto calculated and added to grade centre eExam column once marking is done
29. In grade centre the eExam mark needs to be copied from its column over to the Exam column for student scores to be correctly calculated.

Invigilation Services

Both invigilation platforms trialled offered comparable features:

- Administration area for scheduling eExams and review uptake
- Used video and microphone to verify students identity and environment
- Used screen sharing to verify and monitor students computer environment
- Ability to share students keyboard and mouse to check computer, navigate to Blackboard and type in password
- Used video, microphone and screen feeds to monitor and record students while taking exams
- Invigilators can log any issues that are encountered with students, these include technical difficulties but also suspicious behaviours and wrong doing

There were however some difference between the level and competency of the service provided.

- Significant issues were encountered with bVirtual in terms of provisioning timeslots for students. Initially for the exam none were provided and one eExam had to be cancelled. After submitting a help request timeslots were added between 12am-6am. After another round of requests more adequate time slots were provided and the eExam could occur. However, students were going back and forth with uImagine staff to troubleshoot these issues.
- A number of students and staff experienced issues with the software used by bVirtual. Links would not open correctly and the eExams had to be accessed via the support desk. One student was so inconvenienced by this he had to reschedule his exam.

- Support documentation was extremely slow coming from bVirtual and was of significantly lower quality, particularly in comparison to the speed and breadth of documentation provided by ProctorU.
- ProctorU staff made themselves more available and contactable, even when dealing with timezones and their base in the US.
- The systems from ProctorU had no issues or failures with staff or students.
- The administration system from ProctorU provided more detail and would communicate more often to ensure that information was received and acted upon. If issues were encountered they were quickly identified and acted upon.

As a result of the failure of one of the trial eExams and the negative service received in the second, the decision was made to only use Proctor U in the 201660 session exams.

Student Feedback

After completion of their exam and the sessions end students who completed an eExam were contacted and asked to fill in a survey to gauge their experience. In total there were 26 responses from the 72 students (36% response rate) who completed their eExam. A sample of the combined results are below:

- Do you think the e-Exam process was fair to all students including those who did a paper based exam? Yes 23, No 3
- Did the eExam option provide improved flexibility? Yes 25, No 1
- Did the eExam process live up to expectations? Yes 23, No 3
- Was the information on the proctoring service website and any online tests sufficient to allow you to make a correct decision about whether your hardware/software/bandwidth were adequate? Yes 24, No 2
- Was the information about the way the eExam would be undertaken on the proctoring service website sufficient and accurate? Yes 23, No 3
- Was it easy to schedule your exam time? Yes 26
- Were you able to schedule a time that suited you? Yes 23, No 3
- Were the remote proctors sufficiently skilled, knowledgeable and helpful? Yes 24, No 2
- Was the online proctoring system easy to use and robust? Yes 25, No 1
- Did receive enough information from CSU to make an informed choice about an eExam or a paper exam? Yes 26
- Was the information provided with sufficient notice? Yes 25, No 1

The comments made by students were focussed on the improvements to flexibility the eExams provided. For students this saw a dramatic decrease in travel times, greater flexibility to choose a time that fit in with students existing priorities, commitments and responsibilities, and improved the fairness for distance students.

Staff Feedback

A third party conducted an interview with staff involved in the trials and provided the following feedback:

- The participants were very positive about Tim's responsiveness to students and once he had the information communication was good
- Better communication especially at the start of the process to ensure that staff and students had enough information
- The successful trials felt that communication was fine after the initial stages but the unsuccessful ones felt there were more communication issues
- There were some issues with communicating with the invigilation companies themselves
- Participants wanted a clearer idea of the timeline for planning and implementation
- Marking and using grade book was not problematic - in fact marking was easier in many cases
- The paper exam alternative was considered fair and most participants would not want the eExam to be compulsory as internet issues are too problematic
- There was no impact on student evaluations
- In terms of communicating with students, there were some issues with the subject coordinators not being informed of and included on communication so they had to get second hand copies of emails from students
- There was some confusion with students when an eExam tab was added to Interact as this contradicted what the email about doing the eExam had instructed them to do
- The main improvements would be: better communication, more information at the start of the process and a timeline to be able to plan and increase student participation

General Assessment

1. **Evaluate the use of online proctoring services to replicate current exam conditions.**

   - Online invigilation services can provide a stable and reliable way of provisioning eExams and online assessments that require an individual to be validated and monitored to complete the task at hand.

   - The invigilation process offers equivalent security and identification protocols, and in some ways can provide enhancements to these by utilising the flag and review of recorded sessions.

2. **Evaluate the viability of these services from a technical aspect and highlight any problem areas or considerations that need to be made.**

   - There were very few technical difficulties experienced during the exams. It was clearly communicated to students both the need to test their equipment and internet connection prior to scheduling their exam.

   - Some of the technical requirements can be onerous and may place eExams outside the reach of some students, even though it may be the most suitable way of assessing them. More testing at the extremes edges would be useful to prove how viable the technology is on mobile and satellite connections.

   - Proctor U proved to be a much more reliable as a vendor to deal with and had a much more stable product over all. Their communication and service was remarked upon and they had invested in good documentation and support staff. Student had no problems with their system, testing and communication.

3. **Evaluate the use of Blackboard to provision eExams for students and replicate common exam questions.**

   - Marking of eExams was simpler in many cases as multiple choice and some other question types can be set to mark automatically based on word matching. Automatic calculations also limit possible errors that could occur in traditional exam marking practices. While not unique to Blackboard this functionality was highly sort after by academics as it improved overall turnaround time for exams and results at the end of session.

   - There are a number of important limitations of developing the exams in Blackboard:

- There is no easy way to format or divide a Test into parts as is the case with most paper based exams.

- To ensure students have access to the whole exam for reading purposes it was provided as a single page, which can make it quite a lengthy web page to navigate.

- Some questions require students to draw or sketch as part of a response - this is currently not possible in Blackboard and limits it suitability, particularly in the Faculty of Science.

- Setup of exam options can be quite complicated and does require checking to ensure it is operating properly. This is required to ensure that student can't access the exam prior to their scheduled session, passwords are all correct and match and that marks get fed back into grade centre correctly.

4. Evaluate the perceived improvements for the Exams Centre and the effect on the Student's Experience that eExams may have.

- Needs input from Exam Centre - but as pilots were managed by uImagine may not be obvious.

- STUDENT ENVIRONMENT - MOre COMFORTABLE AND LESS STRESSFUL, TYPES OF VENUE

- Annectdotal feedback from students - risking their exam to new technology

- BYOD - own machine, own environment, not looking at group eExams

- The online exams provided much more scheduling *flexibility* than traditional paper based exams because it doesn't require booking a physical space or the logistic of provisioning a paper exam.

- *Typing an exam* as opposed to writing does require students to change the way they work in an exam environment. For some students typing can be quite liberating and a welcome change, for others it creates a new stress point at an already stressful period.

5. Explore the potential and possible application of these services and their applicability to broader concepts of online assessment.

- The trial focussed on testing the technology, rather than saving costs and so each student was provided with a paper exam option regardless of them opting to take an eExam. While this ensured there was a fallback, shifting to an eExam system could provide significant cost and logistic savings, in particular in areas where it is most expensive such as for international students.

- The invigilation service could also be extended beyond traditional examinations and utilised for "practice based" assessment. Instead of sitting exams students could schedule to perform specific tasks for the invigilator and recorded. The invigilator could verify the student's identity, monitor their performance, and perhaps track students performing set tasks by recording when individual tasks have been performed by the student.

Recommendations

1. **Continue with limited trials to establish a "business as usual" process between faculty, the exam centre and other required staff.** uImagine can offer assistance to develop a workflow, timelines list tasks and responsibilities. IT Masters have shown a large amount of interest in this technology and their students have been quite supportive. This would provide a focal point for further development and testing. However, staff who have already taken part may be keen to continue their use of the system.

2. **Move to a stage where all students can be offered "Online" as an exam centre option in order to to take part in an eExam.** This opt-in approach would be offer the safest and most conservative route to adoption, but it also provide time to develop capacity within CSU to work in this way and students to transition to more of their learning experience being online.

3. **Identify responsibility for creation, facilitation and support of exams as per tasks listed under the exam process.** The process needs to be mapped to ensure that responsibility is taken for the various actions and processes involved in the provisioning of eExams to students.

4. **Develop support staff capacity to create exams in Blackboard.** This could also include looking at development and template options so provide staff with a way to create both the eExam and Paper exam from the same document.

5. **Test other technology options to provision exams which may vary the type of exam questions that student can answer and how** - e.g. drawing or sketching diagrams for an answer. Blackboard does have a stable and easy to use environment, but these trials did not explore other options and so cannot say definitively that Blackboard is the best, or even most suitable solution.

6. **Further testing of the invigilation services on more extreme edge cases of connection options for our students such as mobile and satellite connections.** For CSU's vast spread of students it is those on the edges of technology that are the most vulnerable and difficult to service. Find ways that would enable them to participate more in online learning, and reduce their need for travel could be a significant cost saving as well as greatly improve the learning experience.

7. **Explore the use of invigilation technology to support disability students and increase equity and access**. The use of digital technologies in exam situations have been limited due to the exploitation that they could enable. A system like this which includes invigilation and monitoring of what is on screen reduce that risk significantly. There may also be significant benefits for students with disabilities being able to use a computer during an exam and may reduce the need for other support and assistive technologies currently used.

8. **Explore the use of the invigilation technology to conduct other assessment tasks**. The recording of video and audio could open up the service to other types of assessment other than examinations. Students could be videoed performing tasks and demonstrating skills and the invigilation environment could allow that to happen in a verified and online platform. At a meeting with ProctorU staff they also described a future service that would allow students to simply log in and use the platform to record themselves completing a task, like a test or exam, without an invigilator. University staff would instead be charged with verifying the student and if they completed the task properly and not pay for the invigilator.

Responsibilities for Additional Trials and Adoption

1. Responsibility for creation of the exam in the chosen platform.

2. Responsibility for "provisioning the exam". Setting go Live Dates and Times, Password protection and set up in Grade Centre.

3. Responsibility for administering the invigilation service. Booking in exams, providing links to exams, passwords to invigilators and directions and procedures for exams.

4. Responsibility for providing support and contact point for students undertaking exams.

5. Responsibility for integration with existing systems and processes within the Exams Office