

e-Exam System Overview

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Get the demo and user guides

<http://transformingexams.com>



Acknowledgement

Support for this project has been provided by the Australian Government Office for Learning and Teaching. The views in this session do not necessarily reflect the views of the Australian Government Office for Learning and Teaching or participating institutions.



Rationale: About e-Exams

Targeting...

- Supervised
- High stakes
- On campus
- Large scale



(image credit: Dr Fluck UTAS)

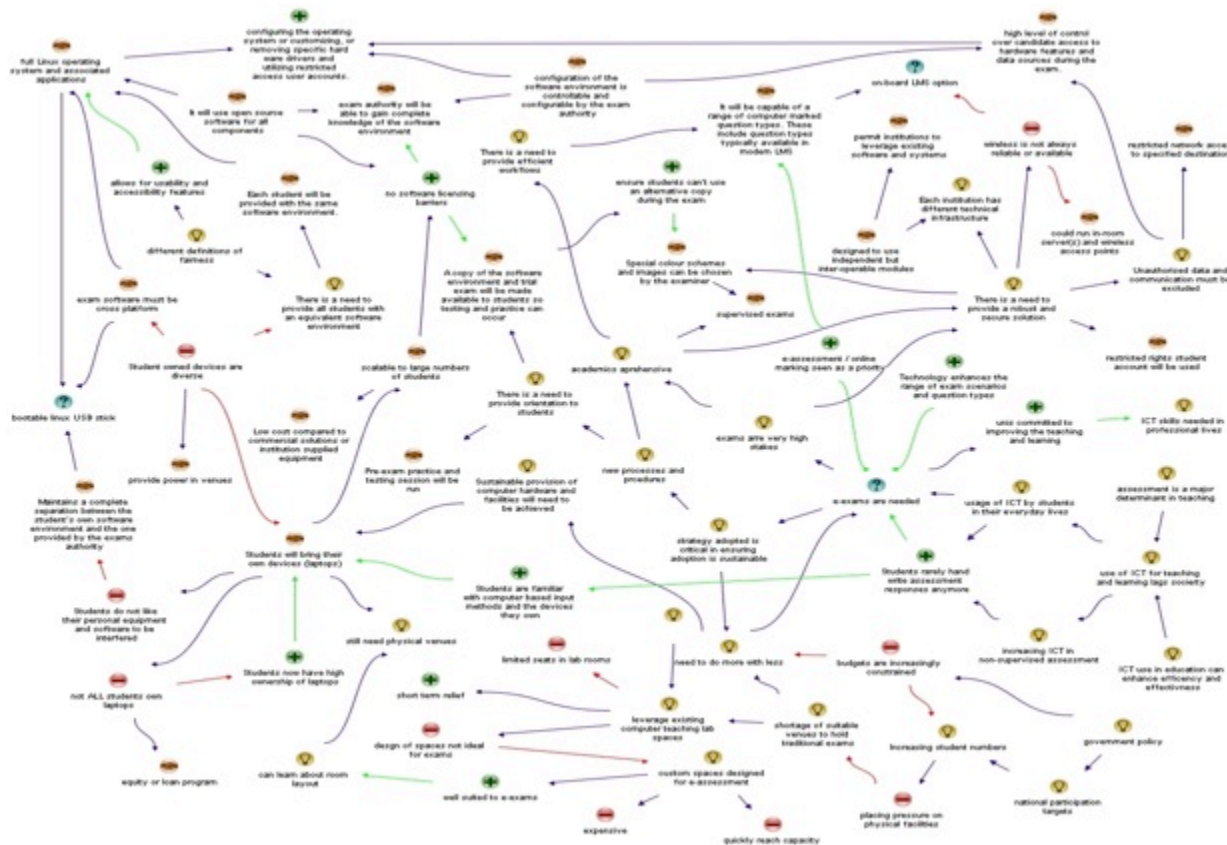
*What we are **not** specifically addressing here is off campus, online only, distance education, cross institutional students – there are some existing e-solutions to address these needs.*

Why e-Exams?

Rationale

Hillier, Mathew and Fluck, Andrew (2013). Arguing again for ICT for e-exams in high stakes examinations. In: H. Carter, M. Gosper and J. Hedberg, Electric Dreams. Proceedings of the 30th ASCILITE Conference, Sydney, Australia, (385-396). 1-4 December. <http://www.ascilite.org.au/conferences/sydney13/program/papers/Hillier.pdf>

Concerns, drivers, solutions for e-Exams (a 'wicked' problem!) – a clear need to take a whole of system approach – not just software!



bit.ly/eexam-map



So?

Essentially...

We are faced with a growing disconnect between the way high stakes testing is conducted using pen on paper exams and students' everyday experiences.

e-Exam System Affordances

Pertinent Features	Affordances
A 'Whole computer' environment (OS, LMS, applications...) on a stick.	Vastly expanded pedagogical scope over that of a browser window.
Typed student responses via Word processor, constructed via apps (human marked) or on-board learning management system quiz (computer marked).	Caters for introduction to advanced uses. Components added/removed to suit. Electronic collection facilitates analytics, item response analysis...
No live network required during exam, even for LMS questions.	Robust. Greater control. (network could be used for admin)
Student owned equipment used as host and left untouched.	An ethical approach to scalability (no invasive software to install)
Modular, open source code base and commodity 'off the shelf' components.	Leveraging popular and sustainable projects for better efficiency. Fully 'known' (no 'blackbox'). Available!
One version works on most Intel based laptops - Apple, 'windows', Linux, that have a USB port.	One software version can serve all. Streamlines development and maintenance.



Bootable
'live'
USB
drive



Current e-Exam System v5 Demo

Four-in-one demo system (desktop shown below)...

1. Word document based exams (paper equivalent / intro use **S1 & S2 2014**)
2. Word doc + multimedia + 3rd party software tools (more trials soon...)
3. LMS (Moodle) based exams (computer marked questions - TBA)
4. Remote (serves as a restricted gateway) to networked LMS.



Word doc exams

On-board LMs exams

UQ 2014 Trial: Paper equivalent exams

First stage: Paper 'equivalent' via on-board word processor.
This was used for Semester 1 and 2 2014 Trials.

To start an e-Exam:

1. Student boots laptop with USB
2. Students type ID, name & click 'Start Exam' button
3. Student can now start typing

Note: Automated background processes...

The system copies Question file and renames it with the supplied ID.

File is opened ready for the student to start (cover page info to be automated soon too!)

The diagram illustrates the process of starting an e-Exam. It shows a laptop with a USB drive on the left. An arrow points to a screenshot of the 'e-Exam Starter' application window. The window contains input fields for Student ID (12345678), First Name(s) (Joe), and Surname (Bloggs), and a 'Start Exam' button. A second arrow points down to a screenshot of the exam document in LibreOffice Writer. The document is titled '12345678_practice_examSp.doc - LibreOffice Writer' and contains exam information for The University of Queensland, Australia, including a table for 'All students to complete' and exam conditions.

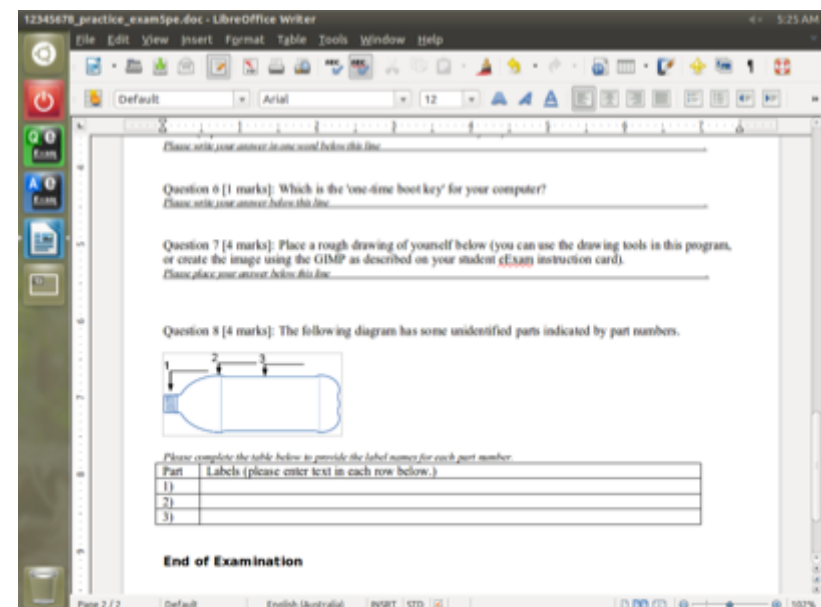
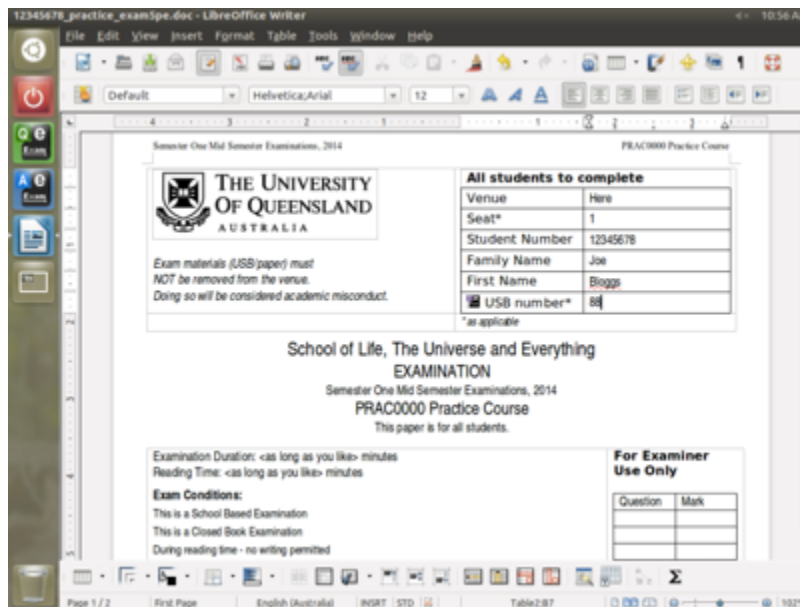
All students to complete	
Venue	Here
Seat*	1
Student Number	12345678
Family Name	Joe
First Name	Bloggs
USB number*	88
*as applicable	

For Examiner Use Only	
Question	Mark

UQ 2014 Trial: Paper equivalent exams

UQ trials, Semester 1 and 2 2014 : The aim was to explore the idea of BYOD e-exams, logistics, student impressions.

- Paper 'equivalent' exams, computer optional, students choose pen or keyboard.
- Mid term exams ~ 15% of grade.
- Question types used: essay, short answer, limited MCQs (type 'x' in a box), label a diagram/image (fill in a table; basic drawing features were available but not used by students). All manual marking – but at least it was typed text!



UQ 2014 Trial: Paper equivalent exams

Responding to questions in-line in the word processor
(note – the system keeps a read-only backup of the questions!)

Type where indicated....

Simple drawing tools...

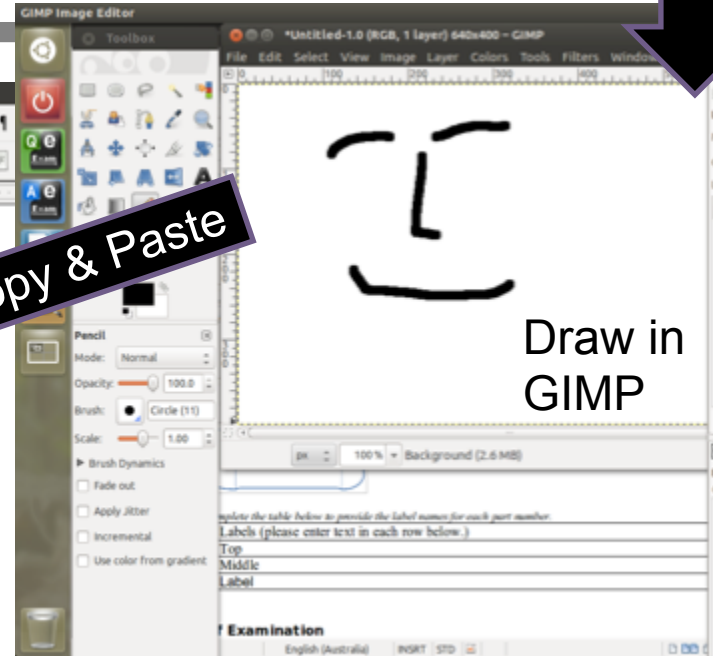
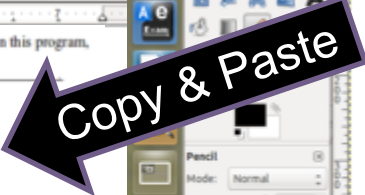
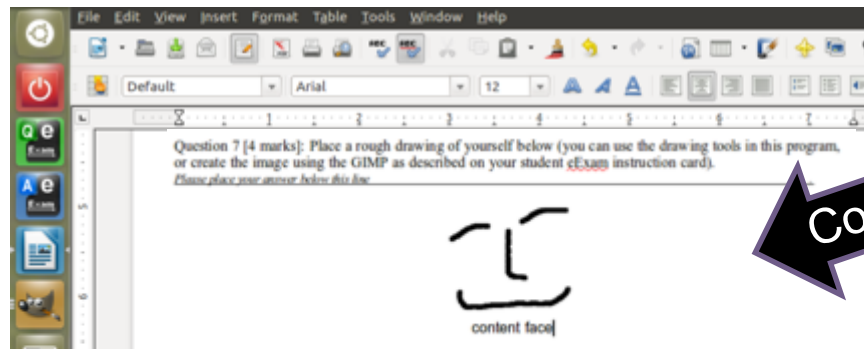
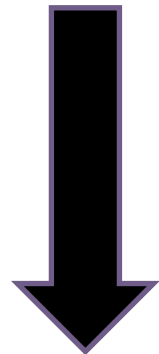
Label a diagram...

Question 1 [1 marks]: What is your full name?
Please write your answer in a couple of words below this line - place the cursor below this line and start typing!

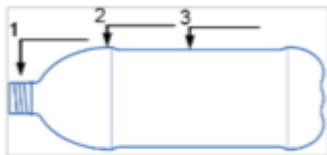
Joe Bloggs Type below the line (or in a box)

Question 2 [1 marks]: What is the Brand/make/manufacturer of your computer?
Please write your answer in a couple of words below this line

Dell



Question 8 [4 marks]: The following diagram has some unidentified parts indicated by part numbers.



Fill in table rows...
Or type 'x' for MCQs

Please complete the table below to provide the label names for each part number.

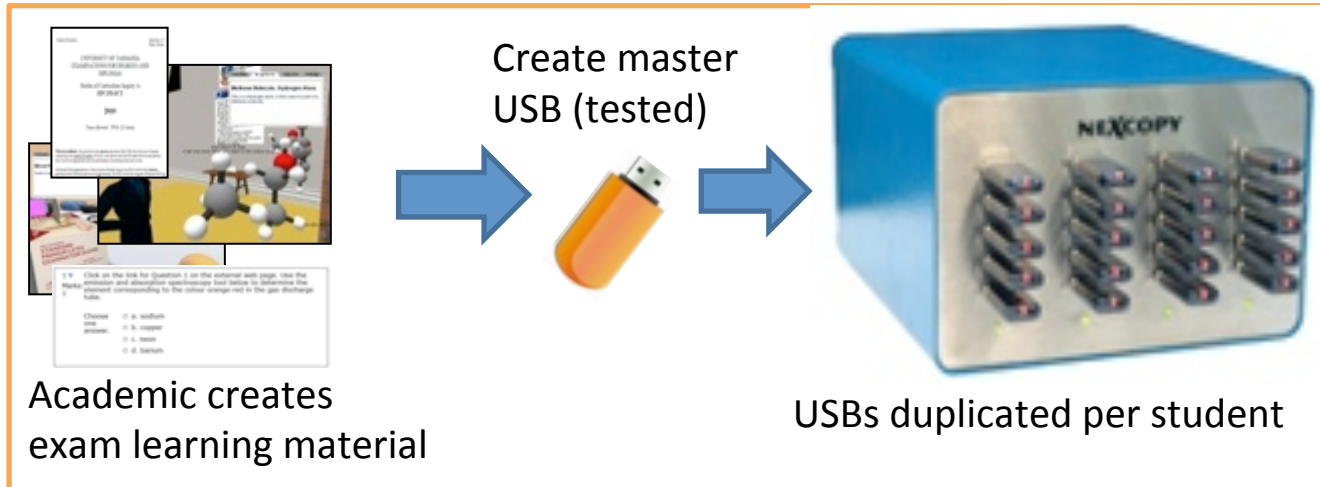
Part	Labels (please enter text in each row below.)
1)	top
2)	widest
3)	label

Note: Drawing tool was available but not used.

e-Exam System Processes

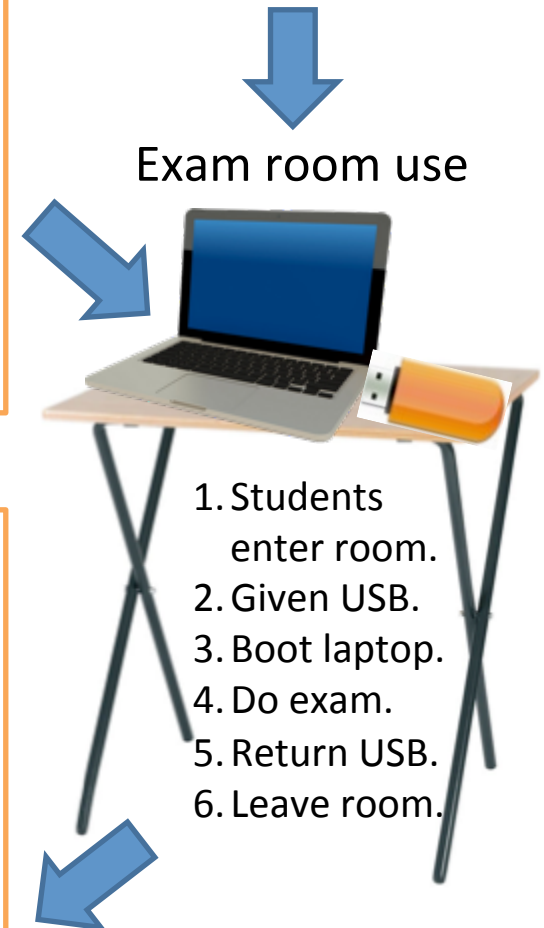
Process overview : set-up, use and assessment.

Set-up: prepare exam learning materials

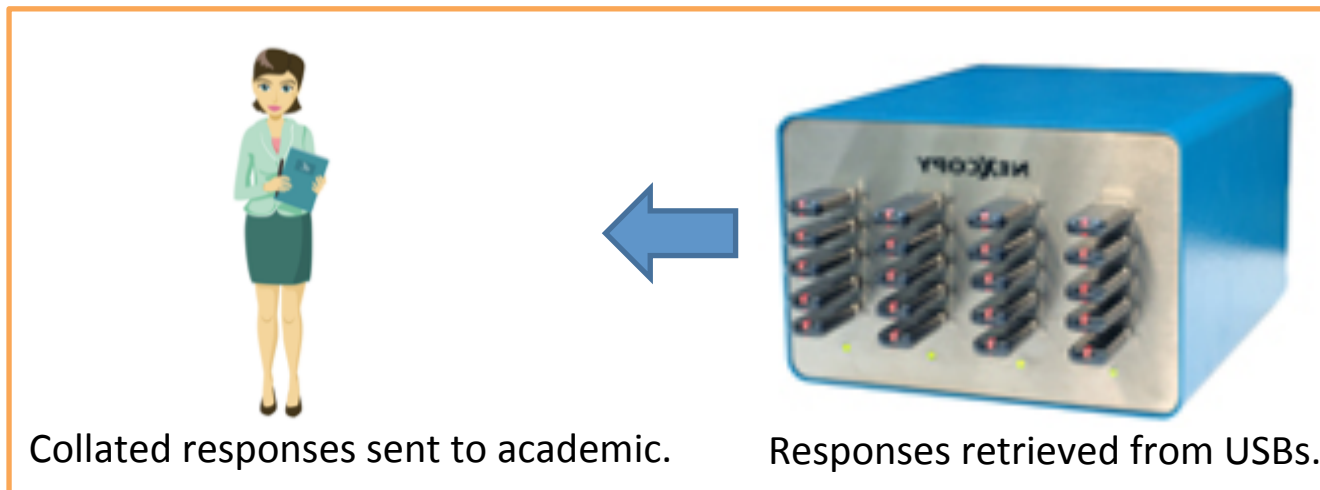


Pre-session:
Student Laptop setup.

Exam room use



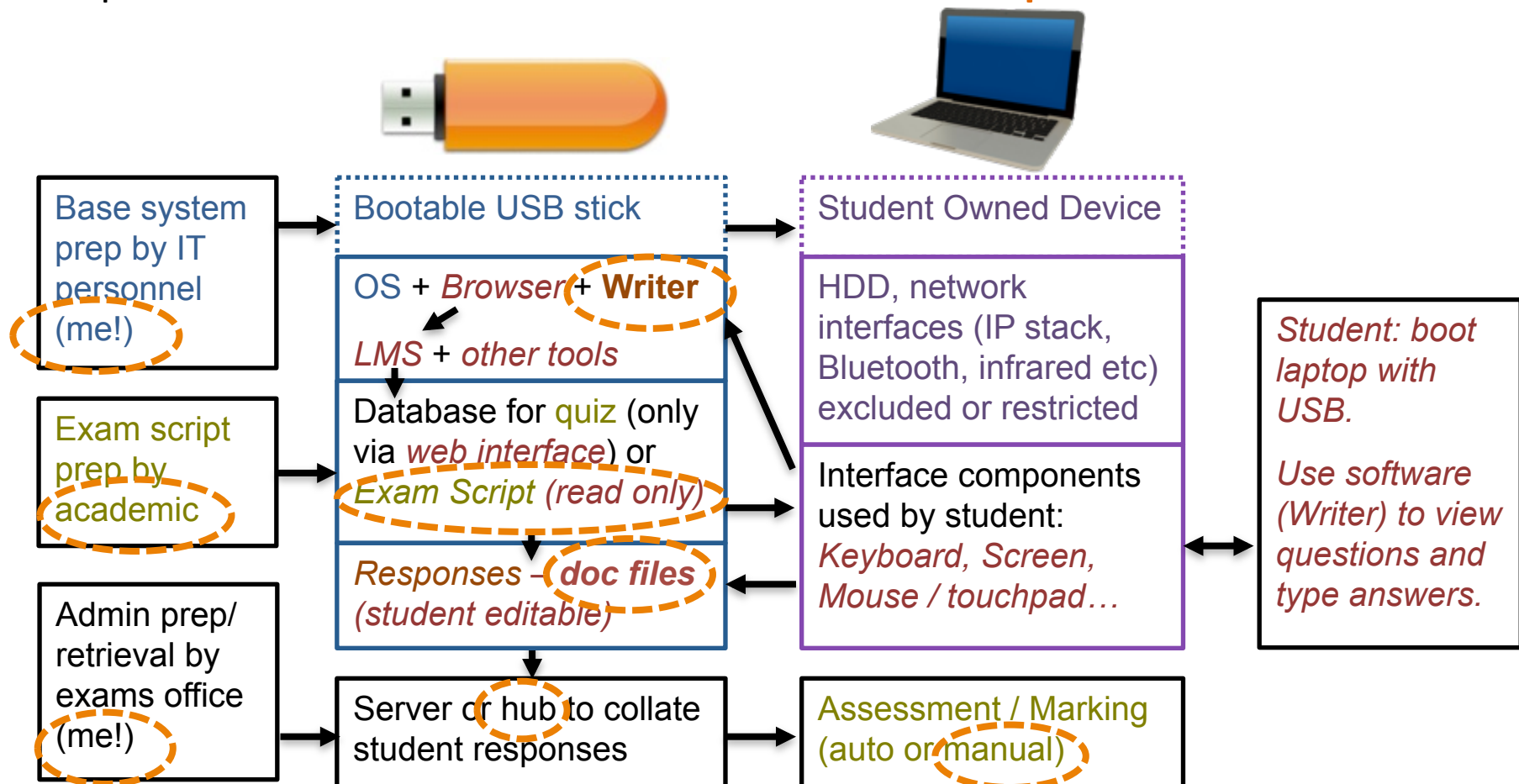
Post lesson: retrieve responses and assessment



(Based on the e-Exam System by Hillier & Fluck 2013)

Architecture of e-Exam System

Modular architecture so academics / institutions can choose the features and mode of operation that suit them... **For 2014 UQ trials we kept to the basic features!**



Current OLT project adds these features to v5 (not used in UQ trial):

- On-board LMS for computer marked question types (Moodle) [demo available]
- Improved answer reticulation/workflows [TBA – in progress]

UQ e-Exam Trial Outcomes 2014

Data collected from students (updated September 2014)

- Via pre-exam project online survey: See Hillier & Tran 2014.
 - UQ students surveyed about their preconceptions about e-exams.
 - http://transformingexams.com/files/HERDSA_special_presentation_july_2014_pre_survey-final_version.pdf
- Via pre-exam short survey.
 - Conducted at the pre-exam practice setup sessions.
 - Covered: technical compatibility, hardware spec lists, student preliminary impressions.
- Via post-exam extended survey (see link below)
 - Conducted at the conclusion of the exam (in the room).
 - Covered: student exam experience, reaction to exam session conditions, e-exam system impressions, exam writing strategies and production, general non-exam writing strategies.
 - http://transformingexams.com/uq_trials/e-exams_2014_trial_results_sept.pdf
- Future analysis – production (words, language density, marks).

The Next phase: Post-paper exams with multimedia

UQ 2015? TBA: Post-paper exams via word processor (used at UTAS)

Include links to on-board media, PDFs and other software tools.

The image shows a screenshot of a word processor exam interface. The main window displays a list of exam questions. Question 5 asks to describe a picture. Question 6 asks to click on a link. Question 7 asks to place a drawing. Question 8 asks to view a video file. A video player window is overlaid on the right side of the screen, showing a video titled 'Genomics Digital Lab.ogg'. The video content includes a 'PLANT PROPERTIES' panel with 'SUGARS' at 0, and a 'WHERE THE CHLOROPLAST' panel. A black arrow points from the video player to question 6. The video player shows a progress bar at 0:27 / 1:18.

Movie Player

File Edit View Insert Format Table Tools Window Help

Default Times New Roman

5. Please describe the picture shown below.

Please write your answer below this line

6. Click on [this link](#) or open the file in the Materials folder.

Please write your answer below this line

7. Place a drawing of yourself below (you can use the GIMP as described on your student cEX). Please put your answer below this line

8. View the video file by clicking on [this link](#) in the Materials folder.

a) Could you see the video playing on your screen?

Page 2 / 3 Default English (Australia)

Genomics Digital Lab.ogg

GENOMICS DIGITAL LAB

PLANT PROPERTIES

CHLOROPLAST

SUGARS 0

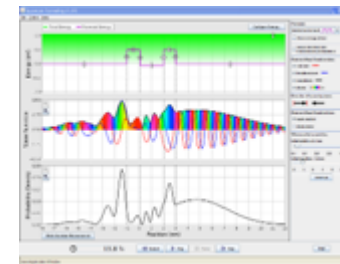
WHERE THE CHLOROPLAST

Time: 0:27 / 1:18

Playing

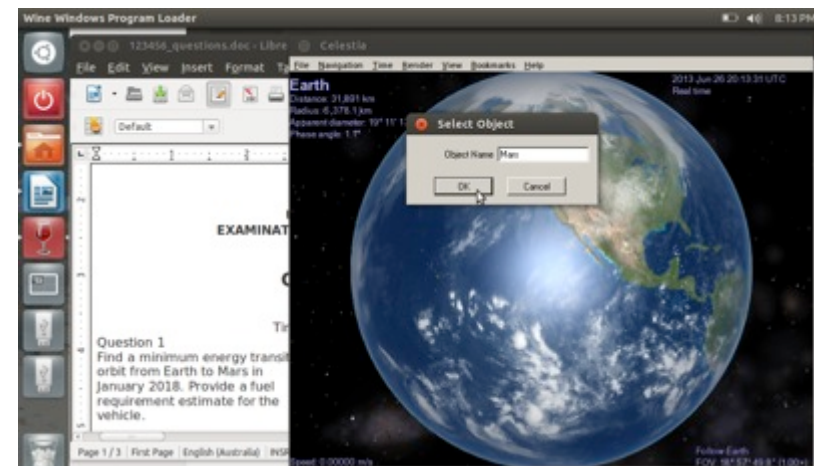
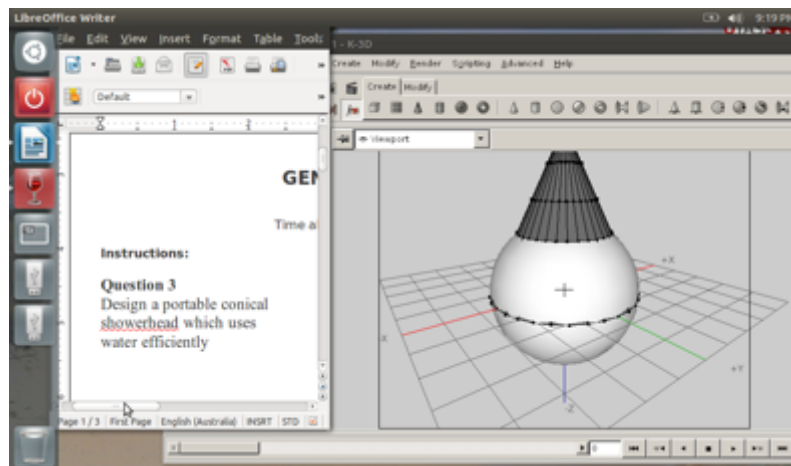
The next phase: can include software tools

Simulations, tools, virtual experiments, serious games...
Business, history, language/communication, science labs...



More examples <http://www.transformingassessment.com/moodle/course/view.php?id=38>

Including 'Windows' software; CAD / 3D modeling, Celestia via WINE



Ref: Dr Fluck, UTAS

The Future: LMS on e-Exam v5 (Demo)

Computer marked question types via on-board LMS (new to v5) with Integrated multimedia – high def video is possible!

Trials TBA!

The screenshot shows the 'e-Exam' interface in a browser. The address bar displays 'localhost/moodle/mod/quiz/attempt.php?attempt=2'. The page title is 'e-Exam'. A navigation menu includes 'Home', 'My courses', 'e-Exam', 'e-Exam Demo', and 'Start e-Exam Demo'. A 'QUIZ NAVIGATION' panel on the left shows the user 'John Smith' and a grid of question numbers (1-14). The main content area displays 'Information' and three questions:

- Information:** All questions in this demonstration exam, except for number 7 which an essay question, are computer marked. This demonstration displays all questions on one page, permits multiple attempts and provides feedback on correct and incorrect responses after the completion of the exam. These settings can be changed as needed.
- Question 1:** Moodle is the most popular LMS in the world today. Select one: True, False.
- Question 2:** What do you call a question format in which students must uniquely associate a set of prompts with a set of options? Answer:

This close-up screenshot shows two questions from the exam:

- Audio Question:** 'Listen to the audio and choose the appropriate response - what did you hear?' with a 0:25 audio player. Select one: a. The sound of an elephant, b. The audio didnt work for me, c. The sound of a bird.
- Video Question:** 'Can you play the video and hear the sound?' with a video player showing a 3D scene of a large yellow sphere and other objects. Select one: a. I get nothing, b. I can play the video and hear the sound, c. I can play it, but can not hear any sound.

The Future: LMS Question Types

Computer marked question types (Moodle)

Standard [**already in the demo**]:

- Calculated (Wildcards and datasets, calculated MCQ)
- Matching
- Embedded Answers (Cloze Test / Gap Fill – text with multiple choice, short answers and numerical answers)
- Short Answer (sentences)
- Numerical
- True/False
- [Short essay - with response template - human marked]

Custom types:

- Algebra, Multinumerical, Spreadsheet,
- Chemistry Molecular editor questions,
- Music (key signature, scales, intervals)
- Hot spots, drag and drop (labels, text, images),
- Set splitting,
- Missing words, Gapfill,
- Regular expression...

Marking: delayed, Certainty-Based Marking... manual override.

The Future: Advanced Example - Virtual 3D Spaces

Proposal for offline Virtual OSCE, practicals etc. Technology is already working 'online'.

Data flows as if the student was doing the activity in the LMS



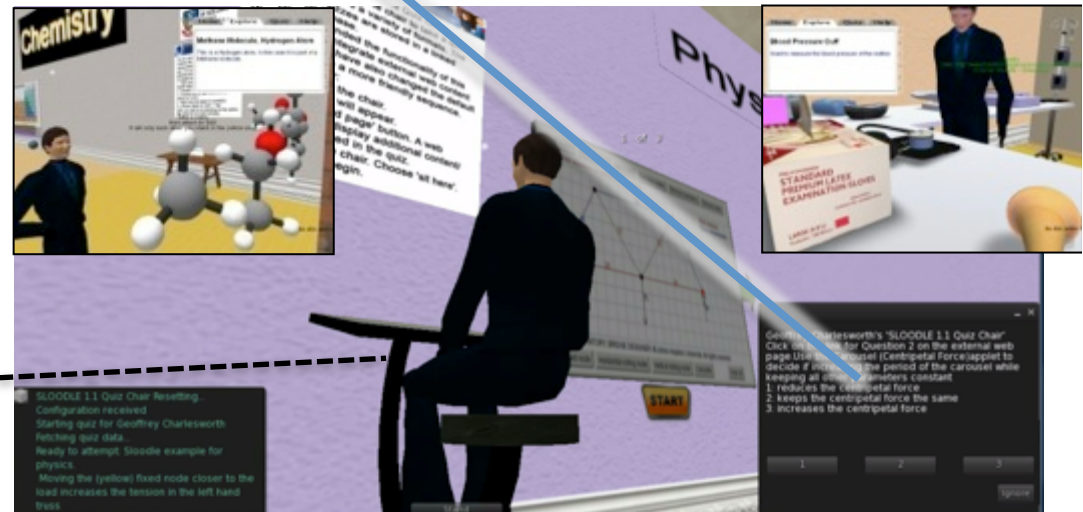
Set up Quiz in the LMS. Results are stored in the in grade book.



Showing graded and ungraded attempts for each user. The one attempt for each user that is graded is highlighted. The grading method for this quiz is **highest grade**.

Username	Attempted on	Completed on	Time taken	Score	MCQ	MCQ	MCQ	MCQ
Geoffrey Charesworth	2 May 2015, 08:08 PM	9 November 2015, 09:00 PM	128 days 3 hours	2.0	0.0	2.0	0.0	0.0
Geoffrey Charesworth	28 June 2015, 02:02 PM	9 November 2015, 09:00 PM	122 days 4 hours	0	2.0	2.0	0.0	0.0
Geoffrey Charesworth	4 July 2015, 02:48 PM	9 November 2015, 09:00 PM	122 days 7 hours	0	2.0	2.0	0.0	0.0
Geoffrey Charesworth	4 July 2015, 02:22 PM	9 November 2015, 09:00 PM	122 days 7 hours	0	2.0	2.0	0.0	0.0
Geoffrey Charesworth	4 July 2015, 04:14 PM	9 November 2015, 09:00 PM	122 days 7 hours	0	2.0	2.0	0.0	0.0
Geoffrey Charesworth	9 July 2015, 02:41 PM	9 November 2015, 09:00 PM	128 days 7 hours	2.0	0.0	2.0	0.0	0.0
Geoffrey Charesworth	9 July 2015, 09:04 PM	9 November 2015, 09:00 PM	128 days 11 hours	2.0	0.0	2.0	0.0	0.0
Geoffrey Charesworth	9 July 2015, 10:05 AM	9 November 2015, 09:00 PM	128 days 8 hours	0	2.0	2.0	0.0	0.0
Geoffrey Charesworth	9 July 2015, 10:50 PM	9 November 2015, 09:00 PM	128 days 8 hours	0	2.0	2.0	0.0	0.0
Geoffrey Charesworth	9 July 2015, 07:12 PM	9 November 2015, 09:00 PM	128 days 11 hours	2.0	0.0	2.0	0.0	0.0
Geoffrey Charesworth	9 July 2015, 10:28 PM	9 November 2015, 09:00 PM	128 days 4 hours	2.0	0.0	2.0	0.0	0.0
Geoffrey Charesworth	9 July 2015, 02:47 PM	9 November 2015, 09:00 PM	128 days 4 hours	2.0	0.0	2.0	0.0	0.0
Geoffrey Charesworth	10 June 2015, 09:28 PM	9 November 2015, 09:00 PM	142 days 4 hours	0	2.0	2.0	0.0	0.0
Geoffrey Charesworth	7 May 2015, 02:48 PM	7 May 2015, 02:48 PM	31 secs	0	2.0	2.0	0.0	0.0
Geoffrey Charesworth	28 June 2015, 02:04 PM	28 June 2015, 02:04 PM	28 secs	0	2.0	2.0	0.0	0.0
Overall average				4.0	2.0	2.0	0.0	0.0

A set of scripts for Moodle and VW that acts as a bridge.



Student undertakes assessment in the virtual world



Remote connection to networked LMS

Computer marked question types via institutional LMS

Needs network. Provides a restricted gateway – e.g. demo can *only* connect to UQ Blackboard (IP address) and no other server. New to v5.

Trials TBA – *dependant upon reliable/robust network connections!*

The image displays two screenshots of the Blackboard Learn interface. The top screenshot shows the 'Preview Test: Example test - e-exam mode' page. The page header includes 'THE UNIVERSITY OF QUEENSLAND AUSTRALIA' and 'eLearning@UQ'. The main content area contains a table with the following details:

Description	Example test to try marking (Normally the description of the test for students would appear here)
Instructions	Normally the instructions for students would appear here
Timed Test	This Test has the time limit of 1 hour. You are notified when time expires, and you may continue or submit. Warnings appear when half the time, 5 minutes, 1 minute and 30 seconds remain <i>[The timer does not appear when previewing this Test]</i>
Multiple Attempts	Not allowed. This Test can only be taken once.
Force Completion	Once started, this Test must be completed in one sitting.

Below the table, there is a section for 'Question Completion Status:' and a warning: 'Moving to another question will save this response.' The current question is 'Question 1' with a value of '10 points' and a 'Saved' status. The question text is 'What is two times twenty-one?' and the input field contains the answer '42'.

The bottom screenshot shows the 'Learn.UQ' login page. It features the University of Queensland logo and the text 'Learn.UQ'. There are input fields for 'USERNAME:' and 'PASSWORD:', and a 'Login' button. A small note at the bottom states: 'Staff and students: To log into Blackboard use your UQ username/Student ID and password. If you don't know your password contact the ITS Helpdesk on 07 539 5600 or 1300 739 002 (Australia Only), or by email: Blackboard@its.uq.edu.au

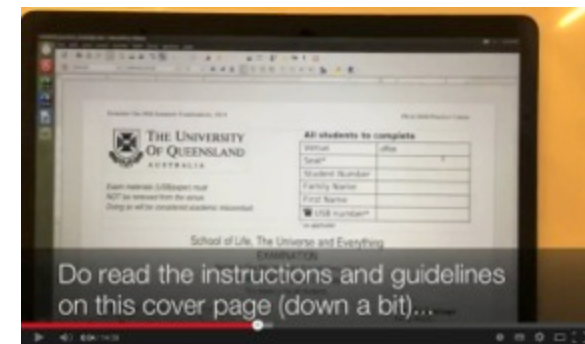
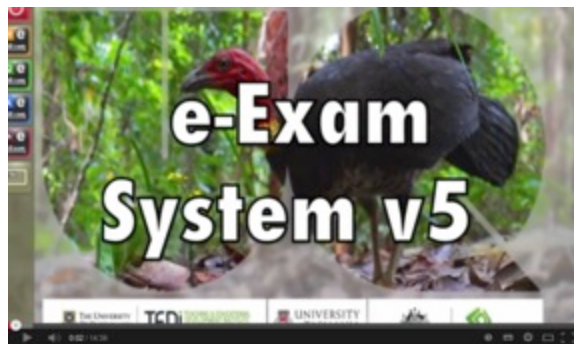
e-Exam Project Resources

More information....

Demo set-up Guide,

Student Practice and User Guide

<http://transformingexams.com>



Demo videos start-up, use and recovery examples.

Apple <http://bit.ly/eexam-demo-vid-a>

'Wintel' (Dell) <http://bit.ly/eexam-demo-vid-d>

Contact: m.hillier[at]uq.edu.au

Cite

Cite this resource:

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