

Transforming Assessment with e-Assessment for e-Exams

OLT Project leader / Presenter: **Dr Mathew Hillier**,
Teaching and Educational Development
Institute, University of Queensland

OLT Project Collaborator: **Dr Andrew Fluck**, University of Tasmania

OLT Project system developer: **Marisa Emerson**, University of Queensland

Get the demo, guides & these slides

<http://transformingexams.com>



Acknowledgement

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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.*

Drivers

Policy

- Realising ‘unfulfilled potential’ in higher education
 - Also - is a lack of e-exams in higher education hampering the wider uptake of ICT in other areas of education? *Ref- TAS*
- National participation targets - Higher student numbers...
e.g. UQ: 2007-2012 = **30K extra annual exam sittings.**
- Graduate attributes of Australian institutions - Feature current knowledge, skills for the modern world... this means ICT skills.
- Strategic & E-learning plans - significant activity with MOOCs, online learning, blended learning, flipped classrooms all depending on ICT success.
 - A recent internal UQ survey of senior teaching leaders placed ‘e-assessment / online marking’ and ‘e-exams’ at the top of their priority list for development.

Drivers

Practical

- Hand written assessment decreasing
- Technology provides and opportunity to enhance exam questions and scenarios
 - Some examples to follow later
 - More Examples at TransformingAssessment.com
- Increasing use of ICT, study, work social
 - 98% ownership of mobile WiFi enabled devices
 - **91%** (2012 UQ survey), **97%** (2013 UQ survey) **laptop ownership** highest of any device
 - 80% of students accessing online LMS weekly

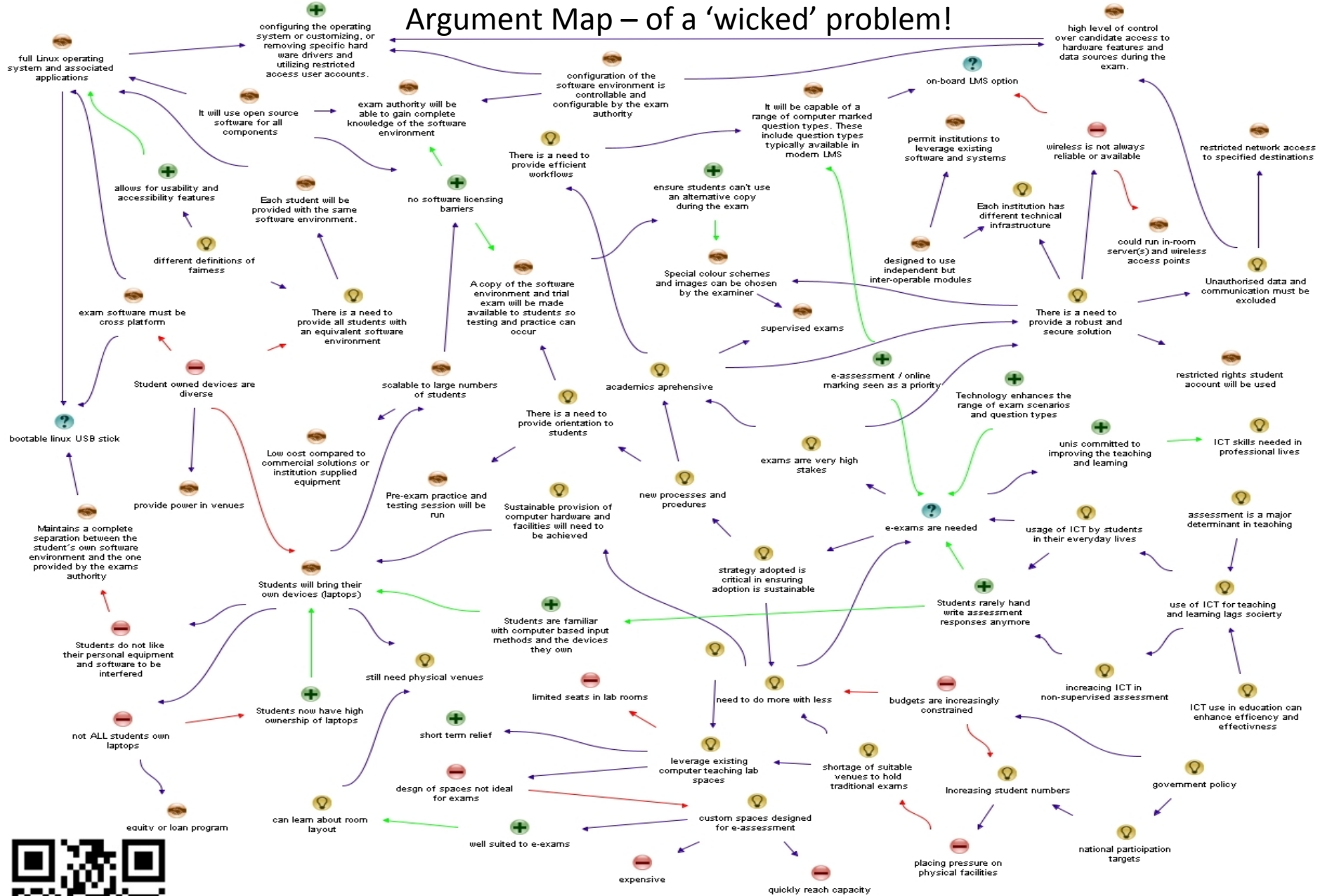
So?

All of this ...leads to a growing disconnect between the way high stakes testing is conducted using pen on paper exams and students' everyday experiences.

Are e-exams are the next step on from computer assisted marking and e-assessment of progressive assessments?

An e-exams solution is needed ... But!

Argument Map – of a ‘wicked’ problem!



bit.ly/eexam-map

Get the argument map

bit.ly/eexam-map



Some More Issues

- Fairness & Equity → ***equivalent*** environment
- Highest stakes → must be reliable and robust
- Many stakeholders - needs/concerns
- Security (end-to-end ref IT security principles)
- Invigilation (easy to identify misconduct)
- Administration (reduce manual/double handling)
- Sustainability, efficiency, facilities, spaces, equipment, set-up, logistics, processing, workflows...

Sustainable facilities

Provision of facilities must be sustainable

- How to provide computer hardware and facilities for large infrequent e-assessment events (exams):
 - Use existing campus computer labs? (Finite in number, small 20~ish room size, problematic layouts/poor design [Dermo, 2012] – these need mgmt solutions too [Warburton & Robinson, TA 2014])
 - Build dedicated e-exam space? (good design, but costly, although capital cost done once, still finite, potentially low utilisation out of exam periods)
 - Hire / build temporary lab space? (costly and reoccurring)
 - Share facilities between institutions? (scheduling issues)
 - Provide each student with hardware? (costly ~ give or rent to students? - reoccurring, maintenance?, low utilisation?)
 - *Rent or build options are not scalable or sustainable.*
- Given the already high ownership of suitable equipment by students -
> how can we make use of this equipment?

Issues - BYOD

- Given high ownership of laptops – we can leverage these
 - But ...
 - Diversity of devices - hardware, operating systems (Windows, Mac, Linux), software applications.
 - Need a ‘cross platform’ solution
 - Need to provide same (equivalent) software environment
 - A potential source of unauthorised assistance
 - Need ability to completely control student owned equipment for the exam duration – ref to ‘security principles’.
 - Students have a lot ‘invested’ in their devices (for work, for study, for personal and social uses, etc – *ethical dimension*)
 - Need to respect this domain, maintain privacy and integrity of student equipment.
 - Need to return student equipment as ‘untouched’ when done - separation of the exam environment and the student owned ‘host’ equipment.
 - Equipment does fail on occasion
 - Need appropriate back-up facilities and processes, data progressively saved, provide power, spare laptops etc

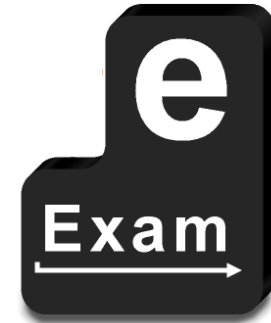
Issues

Varying technical infrastructure between / within
Institutions

- How to:
 - Be applicable across the higher education sector
 - Fit into existing software and hardware landscapes
 - Leverage existing infrastructure
 - Cater for flexible needs
 - Not be a nightmare to support...

e-Exam System v5

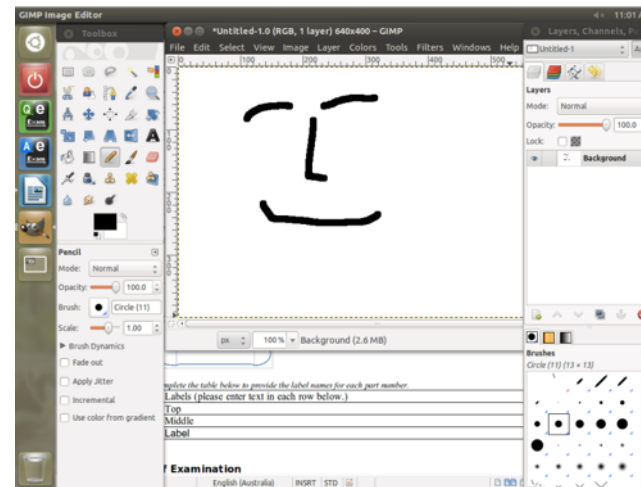
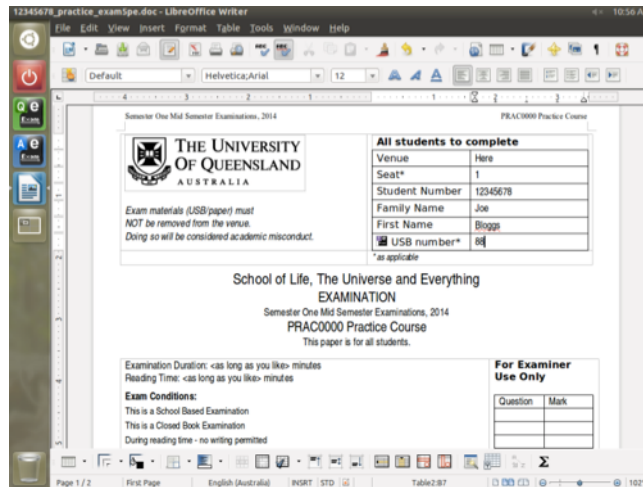
Some ideas...



- Bootable USB sticks.
- Full operating and application suite onboard.
- Typed student responses via
 - Word processor -human marked
 - On-board learning management system quiz
- Student owned equipment used as host and left untouched.
- Open source code base, commodity components.
- Works on most Intel based laptops (apple, windows etc)

eExam (v4) Modes

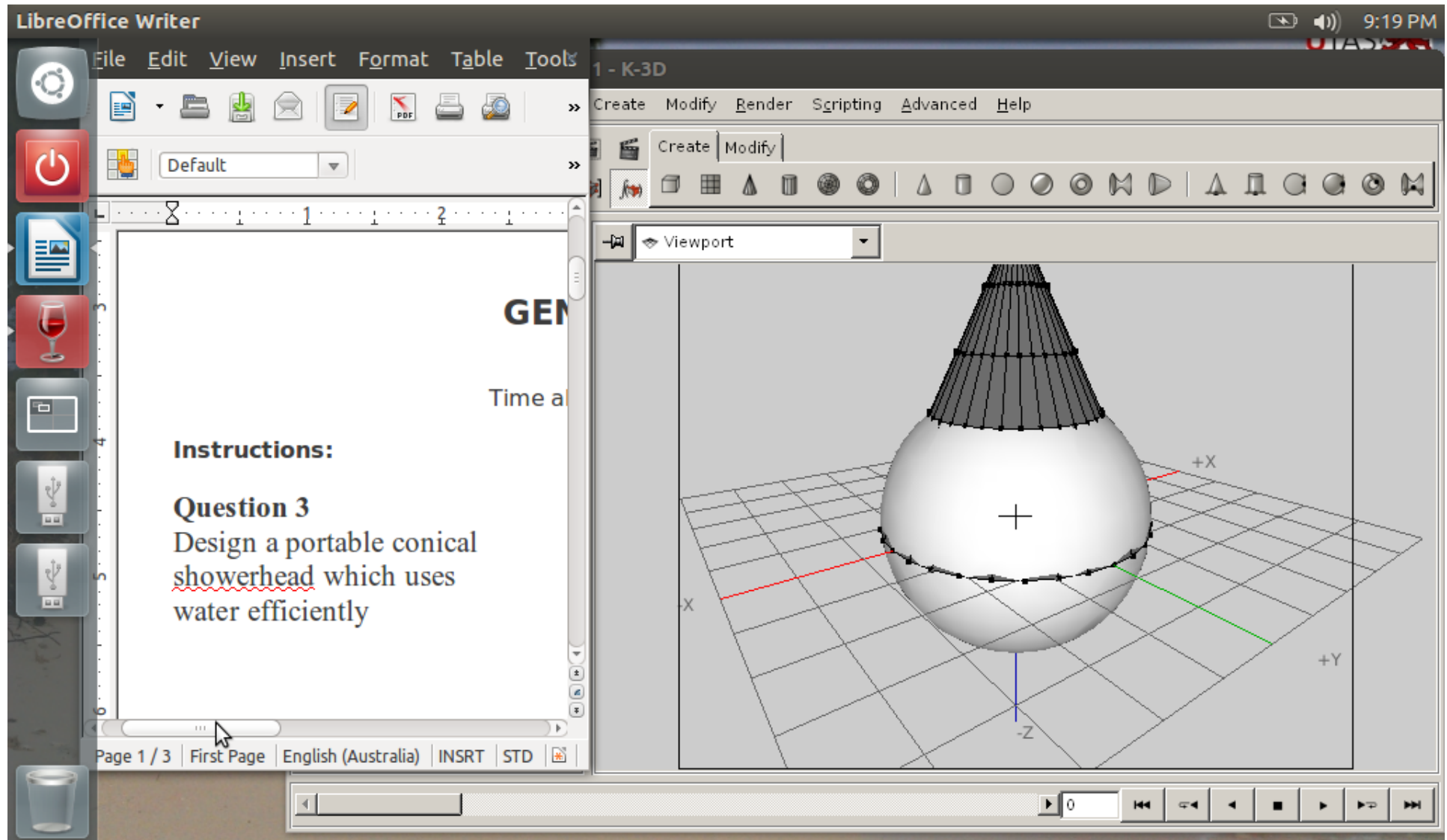
- Modes (phases of introduction)
 1. Paper equivalent – computer optional (a typewriter), essay, short answer, basic drawing, limited MCQs (manual marked)



2. Post-paper – a computer becomes compulsory
 - Adds multimedia prompts, video, audio and software tools can be made available in the exam so that ***students can construct a response.***

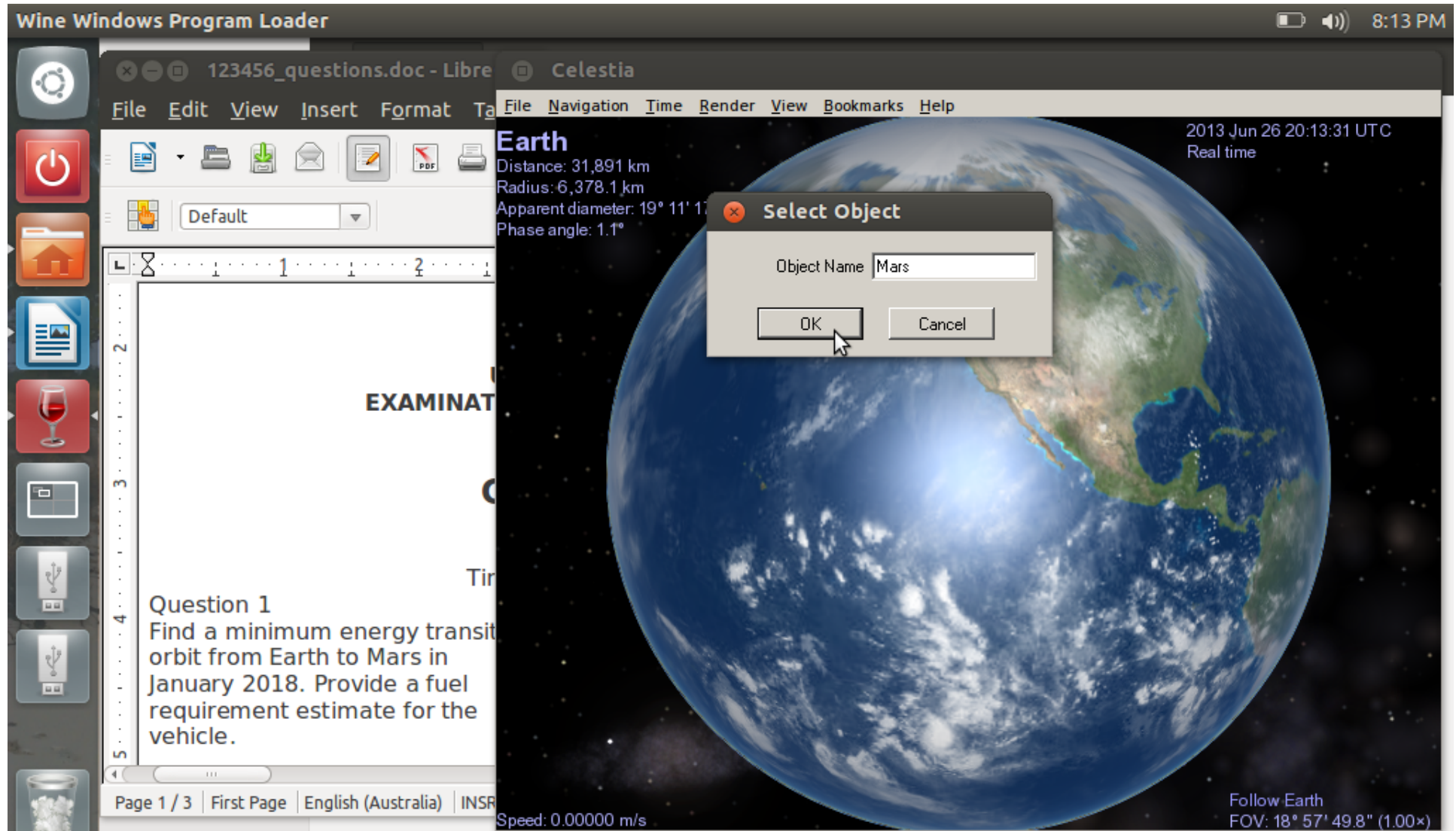
Post-paper - Can Include Software Tools

- Software tools can be made available in the exam



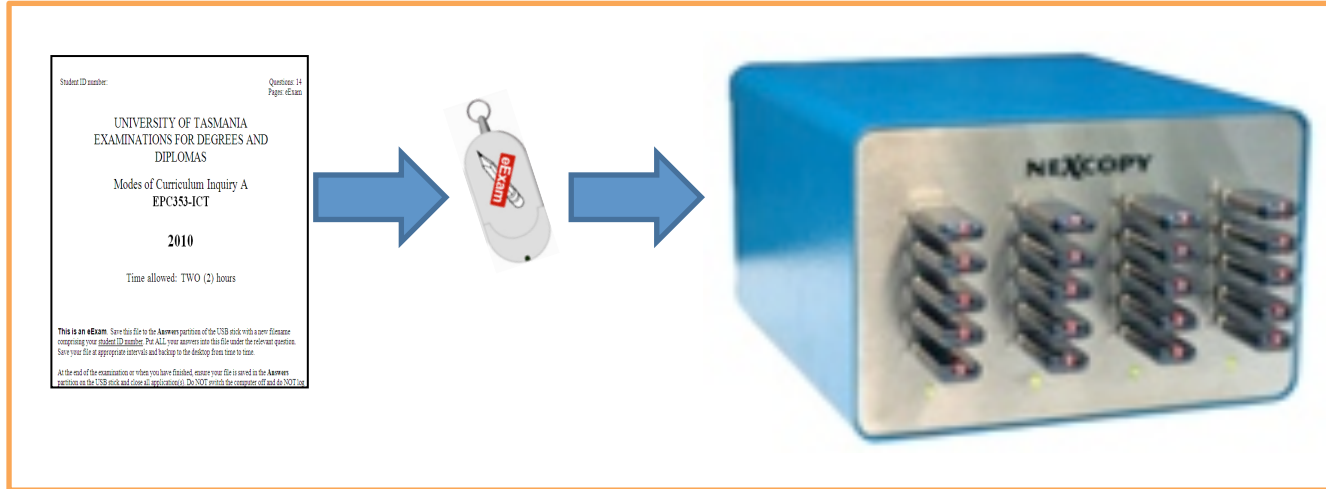
Post-paper - Can Include Software Tools

- Software tools can be made available in the exam



The Current Process – how it works

Prep



Exam Room



Post Exam



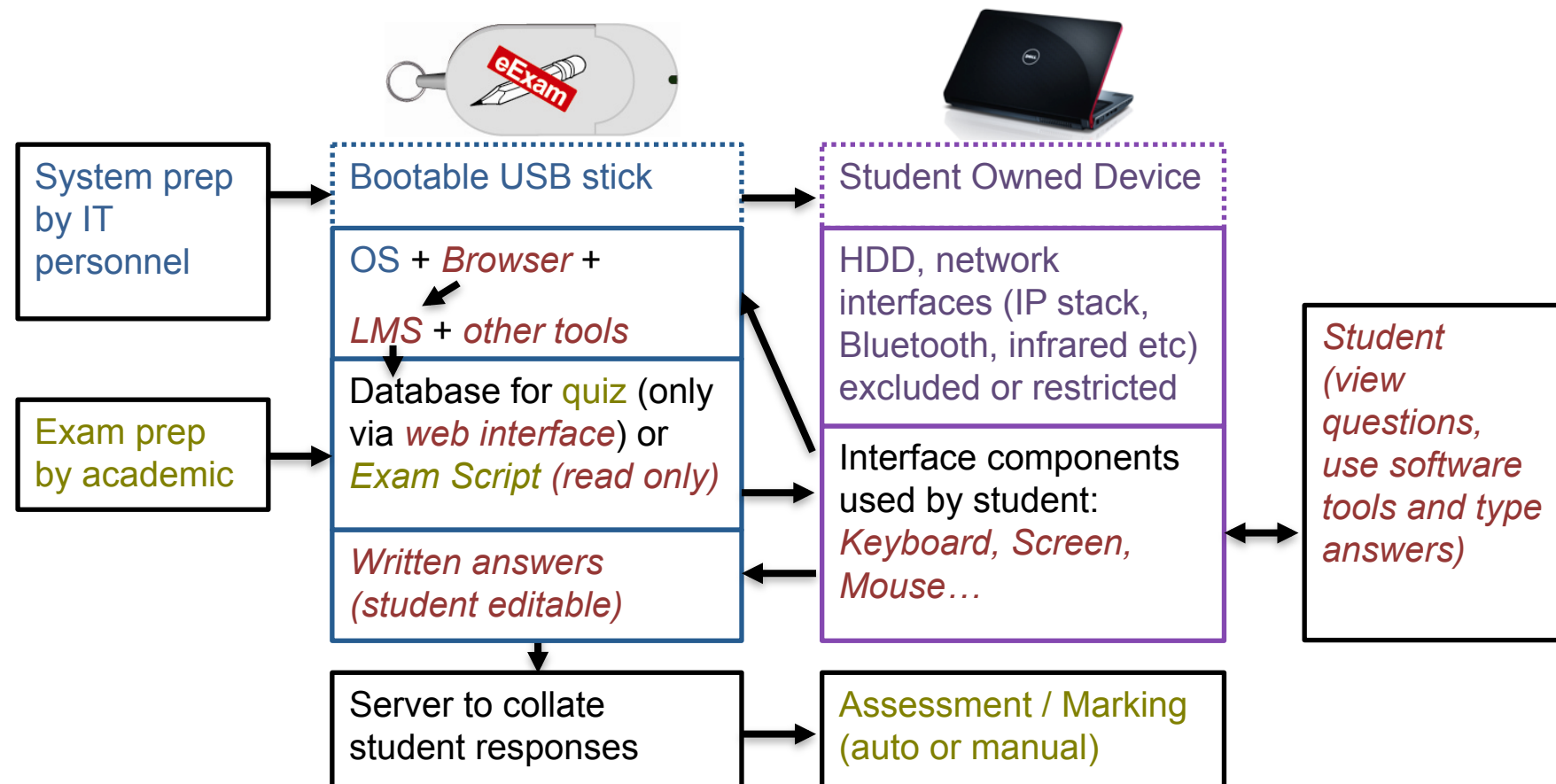
(credit: Dr Fluck UTAS)

e-Exam system for BYOD

Current project improvements for v5 – adds:

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

Modular architecture so academics / institutions can choose the features and mode of operation that suit them...



Possible Modes of Use

- **Non wireless mode** [*demo available*]
 - Exam / LMS is on-board the stick itself.
 - Duplicating equipment to reverse copy student answer files/databases from the USB sticks to a collation location
 - Fall back in all cases - manual copying each student's answer file(s)
- **Ad-hoc wireless mode** [*feature TBA*]
 - Exam / LMS will be on-board the stick itself.
 - Periodic connections to upload/update student answers on a collation server in background or via a student initiated final submission with confirmation shown on screen.
- **Wireless/Network always on mode** – [*demo available*]

Needs reliable, redundant, high capacity wireless/network in the exam room (best to use wired!) or just use as a secure boot image for computer labs to serve as a gateway to the institution's LMS.

 - Doesn't require an LMS on-board the stick
 - Web browser to access a LMS server quiz via *restricted* connection
 - Or use local office suite then upload answer files.
 - Custom network config by institution IT (done once, reused)

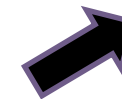
Current e-Exam v5 Demo

Four-in-one demo. Choice of modes via .config file.
A unique background image for each exam for added security.

('e-Exam Starter' dialog used specific modes in real exams)



Word doc exams



e-Exam Starter

Student ID:

First Name(s):

Surname

On-board LMs exams



Current e-Exam v5 Demo

A real exam - Paper 'equivalent' via word processor.

UQ Semester 1 trials ~ Students have a choice of pen or keyboard.

To start an e-Exam:

1. Student boot with USB
2. Students type ID & name & clicks 'Start Exam' button
3. Student can now start typing

Note: Automated background processes
The system copies Qn 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 image illustrates the e-Exam process. It shows a USB drive labeled 'eExam' being used to boot a laptop. A large black arrow points from the laptop to a screenshot of the 'e-Exam Starter' application window. This window has input fields for 'Student ID: 12345678', 'First Name(s): Joe', and 'Surname: Bloggs', with a 'Start Exam' button. A second black arrow points from the 'Start Exam' button to a screenshot of a LibreOffice Writer document. The document is a practice exam cover page for 'THE UNIVERSITY OF QUEENSLAND AUSTRALIA' and 'PRAC0000 Practice Course'. It includes a table for 'All students to complete' with fields for Venue, Seat, Student Number, Family Name, First Name, and USB number. Below this is the exam title 'School of Life, The Universe and Everything EXAMINATION' and 'Semester One Mid Semester Examinations, 2014'. At the bottom right, there is a table for 'For Examiner Use Only' with columns for 'Question' and 'Mark'.

Current e-Exam v5 Demo

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

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 7 [4 marks]: Place a rough drawing of yourself below (you can use the drawing tools in this program, or create the image using the GIMP as described on your student eExam instruction card).
Please place your answer below this line



Copy & Paste

GIMP Image Editor



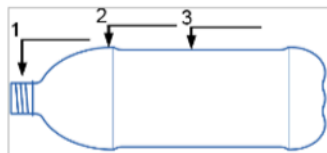
Draw in GIMP

complete the table below to provide the label names for each part number.
 Labels (please enter text in each row below.)

Top
Middle
Label

Examination
 English (Australia) INSR STD

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



Fill in table rows...

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

Current e-Exam v5 Demo

Post-paper exams via word processor.... (used at UTAS)

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

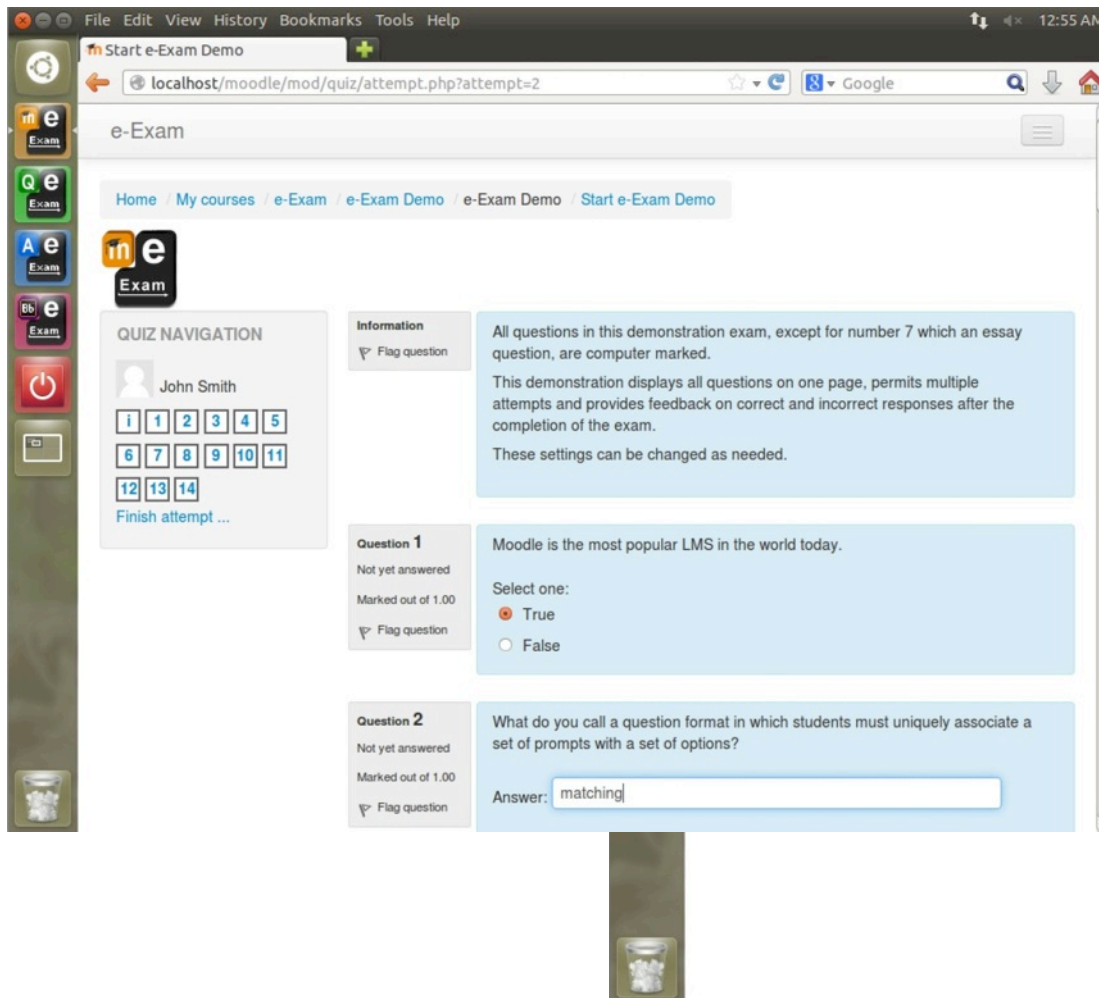
The screenshot displays the e-Exam v5 interface, which is a desktop environment with three main windows:

- LibreOffice Writer:** The top-left window shows a document titled "practice_e-exam5p-123456s.doc". It contains instructions for the exam, including a text input field with the number "123456s" and a section titled "Instructions:".
- Movie Player:** The top-right window shows a video player with a question about a picture. The question text is: "5. Please describe the picture shown below." Below the question is a video player interface for "GENOMICS DIGITAL LAB" showing a plant and various data points like "PLANT PROPERTIES", "LIGHT", "GASES", "MOISTURE", "CALORIFLATT", "SUGARS", and "WATER". A large black arrow points to the video player.
- Genomics Digital Lab:** This is a simulation window showing a plant and various data points. A large black arrow points to the video player.

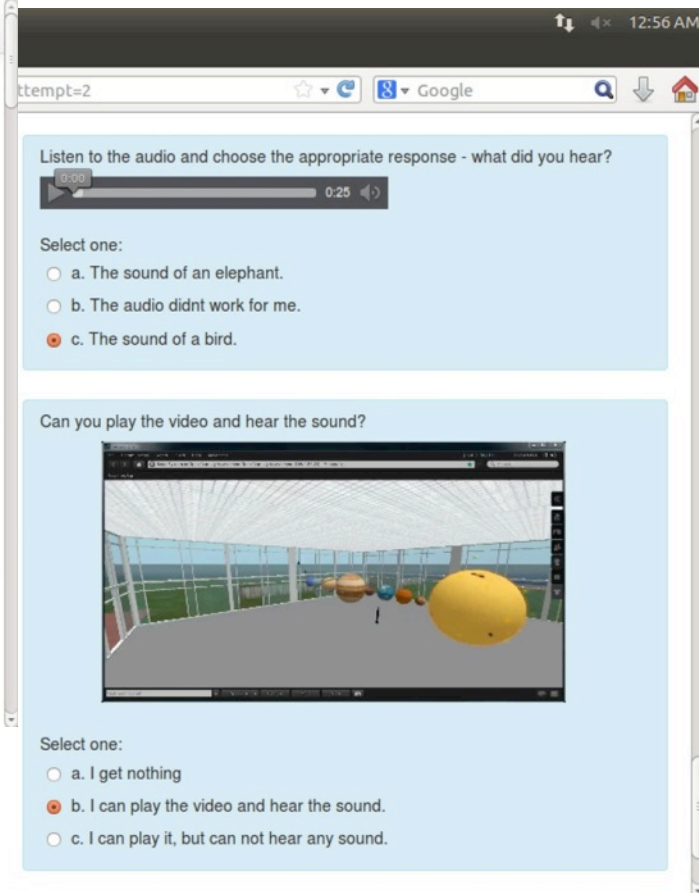
The interface also includes a vertical sidebar on the left with icons for "Exam", "Question", "Answer", "Mark", "Time", and "Tools". The bottom status bar shows "Page 2 / 3", "Default", "English (Australia)", and "Playing | 0:27 / 1:18".

Current e-Exam v5 Demo

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



The screenshot shows a web browser window with the URL `localhost/moodle/mod/quiz/attempt.php?attempt=2`. The page title is "e-Exam". The breadcrumb trail is "Home / My courses / e-Exam / e-Exam Demo / e-Exam Demo / Start e-Exam Demo". The user is identified as "John Smith". The "QUIZ NAVIGATION" section shows a grid of question numbers 1 through 14, with a "Finish attempt ..." link. The "Information" section states: "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" is "Moodle is the most popular LMS in the world today." with a "Select one:" radio button for "True" (selected) and "False". "Question 2" is "What do you call a question format in which students must uniquely associate a set of prompts with a set of options?" with an "Answer:" field containing the text "matching".



The screenshot shows a question titled "Listen to the audio and choose the appropriate response - what did you hear?". It includes an audio player with a progress bar at 0:25. Below the audio player, the question asks to "Select one:" and provides three radio button options: "a. The sound of an elephant.", "b. The audio didnt work for me.", and "c. The sound of a bird." (selected). Below this, another question asks "Can you play the video and hear the sound?" and includes a video player showing a 3D scene with a large yellow sphere and other objects. Below the video player, the question asks to "Select one:" and provides three radio button options: "a. I get nothing", "b. I can play the video and hear the sound." (selected), and "c. I can play it, but can not hear any sound."

Current e-Exam v5 Demo

Computer marked question types via institutional LMS

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

The image displays two overlapping screenshots of the Blackboard Learn v5 interface. The top screenshot shows the 'Preview Test: Example test - e-exam mode' screen. The browser address bar indicates the URL: https://learn.uq.edu.au/webapps/portal/frameset.jsp?tab_tab_group_id=3_1. The page header includes 'THE UNIVERSITY OF QUEENSLAND AUSTRALIA' and 'eLearning@UQ'. The main content area is titled 'Preview Test: Example test - e-exam mode' and contains a table of test settings:

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 'Question Completion Status:' section, a warning icon with the text 'Moving to another question will save this response.', and a progress indicator 'Question 1 of 19'. The 'Question 1' section shows a question: 'What is two times twenty-one?' with an input field containing the answer '42'. A '10 points' and 'Saved' indicator is visible next to the question.

The bottom screenshot shows the 'Learn.UQ' login page. It features the University of Queensland logo and a login form with fields for 'USERNAME:' and 'PASSWORD:', and a 'Login' button. A footer note provides contact information for staff and students.

What else it could do

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)

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.

More Examples – Confidence questions

- Confidence based approaches penalise guessing. Students need to choose a response and declare their level of certainty. Available in Moodle now.

Certainty levels and consequences

Certainty level:	C=1	C=2	C=3	No Reply
Mark if correct:	1	2	3	0
Penalty if wrong (T/F Q)	0	-2	-6	0

Qu. 1:

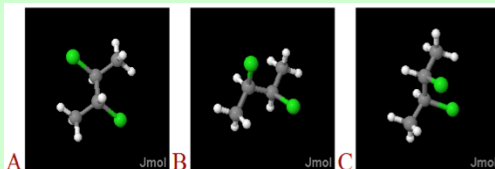
Which structure shown below represents meso 2,3-dichlorobutane, A, B or C?

[Click on the text below to open a window with the three choices]

[Three structures, A, B and C](#)

Choose one of the following:

- C
 A
 B



No Reply

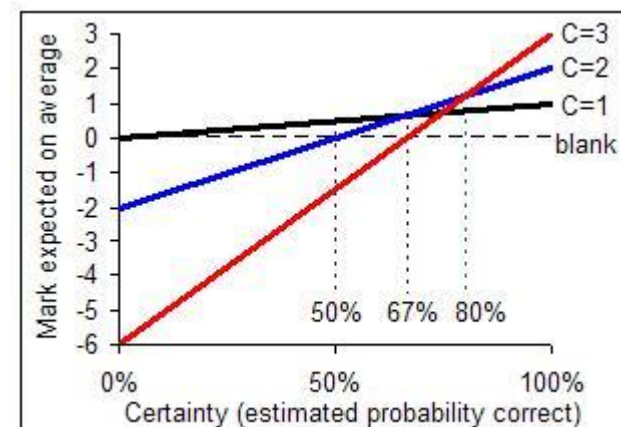
Certainty:

C=1 (low)

C=2 (mid)

C=3 (high)

Certainty v Mark Expected



University College London

More Examples – Short text response

Students type in a short sentence response which can be marked by computer based on pattern matching.

Available in Moodle now.

Example question

Example settings

A boy climbs slowly to the top of a slide and then slides down it. At which point will his kinetic energy be a maximum?
Note: Your answer should ignore the effects of friction.

*You should give your answer as a **short phrase or sentence.***

Kinetic energy will be at maximum when at the bottom of the slide.

The screenshot shows the Moodle question settings for a short text response question. It is divided into two main sections: 'Options For Entering Answers' and 'Define Synonyms For Words in Answers'.

Options For Entering Answers:

- Case sensitivity: No, case is unimportant
- Allow use of subscript: No
- Allow use of superscript: No
- If answer is more than 20 words: warn that answer is too long and invite respondee to shorten it
- Check spelling of student: Yes
- Add these words to dictionary: (empty text area)
- Convert the following characters to a space: (empty text area)

Define Synonyms For Words in Answers:

- Word: impact, Synonyms: stop*|land*|finish*|complet*
- Word: just, Synonyms: prior|when|point|instant|moment|immediat&|second

Question Configuration:

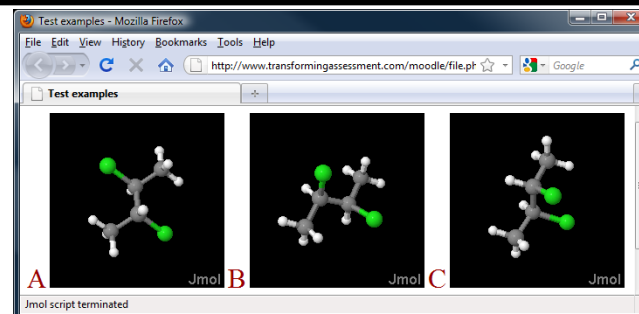
- Answer: match_mw (bottom|base|end|flat*|floor|ground|horizo
- Grade: 100%
- Answer: match_any (match_mw (fast*|quick*) match_mwp4 (great*|max*_velocity|speed) match_mwp4 (velocity|speed_great*|max*))
- Grade: 50%

A red box labeled 'evaluation' is positioned between the student's answer and the 'match_mw' setting, with arrows pointing to both, indicating that the student's answer is evaluated against this pattern.

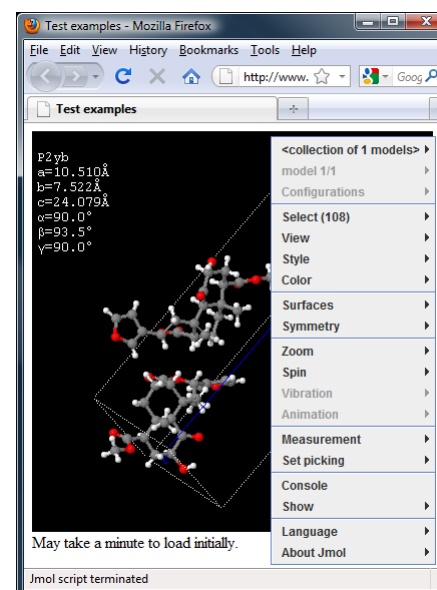
Examples – embedded applets

Moodle Quiz – Easy in Moodle, not so in BB!

1 Marks: --/1
Which structure shown below represents **meso** 2,3-dichlorobutane, A, B or C?
[Click on the text below to open a window with the three choices]
Three structures, A, B and C
Answer:

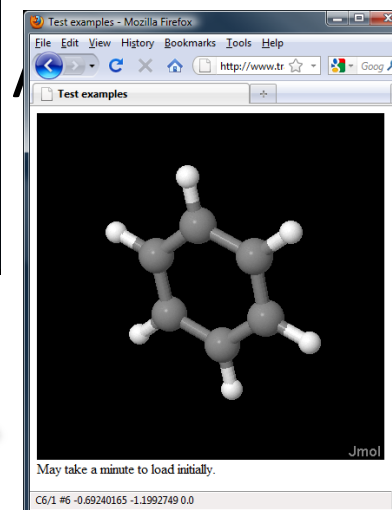


2 Marks: --/1
Use the **Jmol applet** to view the crystal structure of the presented molecule. Use the Jmol applet display to match the following statements.
There are 7 stereogenic centres in the molecule
There is evidence for an intramolecular hydrogen bond
There is evidence for an intermolecular hydrogen bond
 True False



Students interact with tools to obtain data to construct an answer.

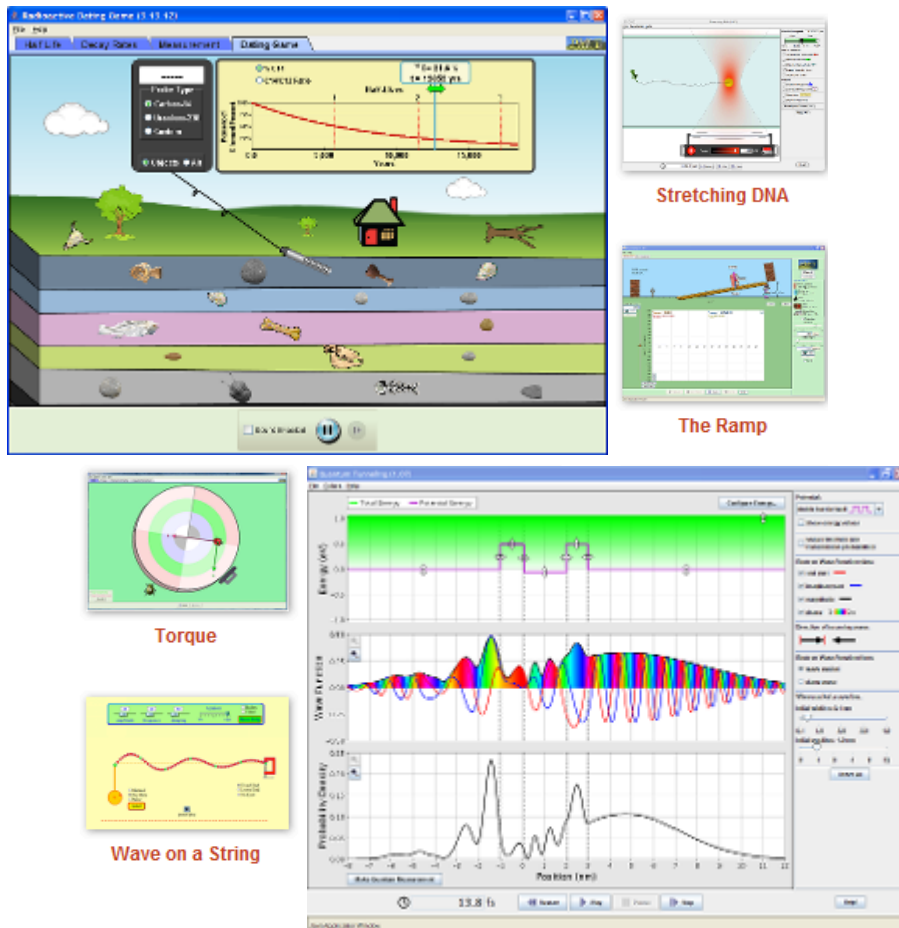
3 Marks: --/1
Use the **Jmol applet** to view the molecular structure of the presented molecule. Use the Jmol applet display to match the following statements.
The most electron rich region of this molecule is
The most electron poor region of this molecule is
The lowest energy molecular orbital for the molecule is
The highest energy molecular orbital for the molecule is
 situated on the six carbons situated on the six carbons and the hydrogens the edges of the molecule, in the plane in the middle of the molecule, above and below the plane



<http://www.transformingassessment.com/moodle/file.php/27/jmol/jmol01.html>

Advanced Examples – Virtual Labs / Sims

Conduct experiments via locally run simulations¹ or internet connected hardware²



1 v
Marks: 1

What peak voltage is produced across the coil when a voltage of 3.5 is applied to the driving motor?

Use the remote laboratory experiment shown below to run the experiment and observe the peak voltage produced on the positive side of the scale. Note that the red bars indicate whole even numbers.

Enter an average of the peak values you have observed into the answer box shown at the bottom. Enter a positive number only.

Electromagnetic induction

View of the experiment

Electromotive voltage on the rotating coil

time (s) (1 red division is 1 s)

Voltage on the driving motor

Stop I II III IV V

3.2 V

Data recording

13

art of recordi
g of recordi

Choice of the measurement

port as text separated by tabulatd Export for Excell

• Magnetic induction: 17 mT +/- 1mT
• Number of loops in coil: 33
• Coil size: 18,2 mm x 52,1 mm +/- 0,5 mm

Answer:

(1) <http://phet.colorado.edu/>

(2) <http://www.transformingassessment.com/moodle/course/view.php?id=72>

Examples – Augmented Reality Experiment

Firefox

www.transformingassessment.com/moodle/mod/quiz/attempt.php?id=584

AR101: Example Quiz that includes Aug...

1

Marks: 1 Use the colour coded AR Markers to simulate the mixing of Zinc and Copper Sulphate Solution. When you are done, choose the correct reaction from below.

Choose a resource

Chemistry

Reactivity series of metals.
Experiment with the metals and solutions and find out what reactions happen when one metal is mixed with a solutions.

Marker key

Blue	Silver
Purple	Magnesium
Yellow	Zinc
Green	Iron
Red	Lead
Orange	Copper
Pink	Copper Sulphate Solution
Turquoise	Magnesium Sulphate Solution
Grey	Silver Nitrate Solution
Black	Lead Nitrate Solution

Results

zinc + copper (II) sulphate solution → copper and zinc sulphate solution

$Zn(s) + CuSO_4(aq) \rightarrow Cu(s) + ZnSO_4(aq)$

AR Marker Colour Key

Blue = Silver
Purple = Magnesium
Yellow = Zinc
Green = Iron
Red = Lead
Orange = Copper
Pink = Copper Sulphate Solution
Turquoise = Magnesium Sulphate Solution
Grey = Silver Nitrate Solution
Black = Lead Nitrate Solution

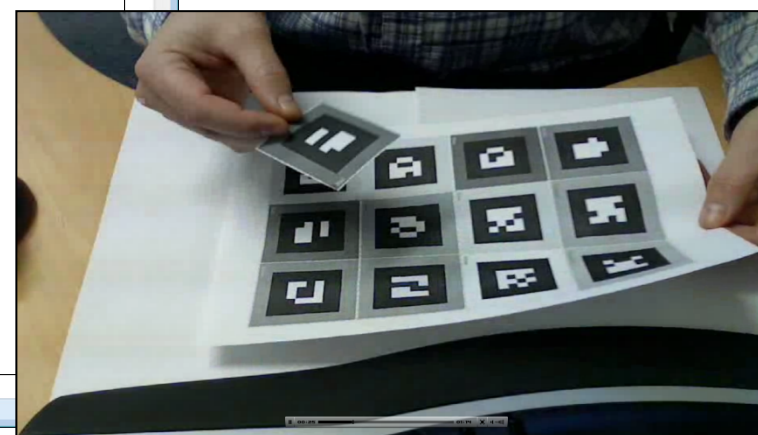
Choose one answer.

- a. $Cu(s) + ZnSO_4(aq)$
- b. $Zn(s) + CuSO_4(aq)$
- c. $Cu(s) + Ag_2SO_4(aq)$

Web cam



AR markers



AR software embedded in question

Advanced Examples – Virtual 3D Spaces

1 Click on the link for Question 1 on the external web page. Use the emission and absorption spectroscopy tool below to determine the element corresponding to the colour orange-red in the gas discharge tube.

Marks: 1

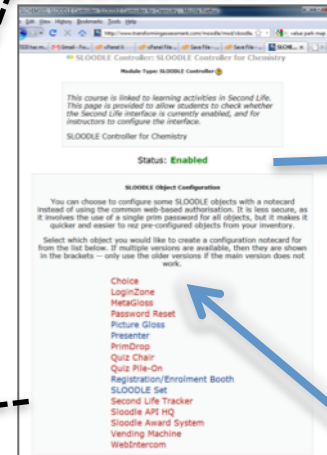
Choose one answer.

- a. sodium
- b. copper
- c. neon
- d. barium

As if the student was doing the activity in the LMS



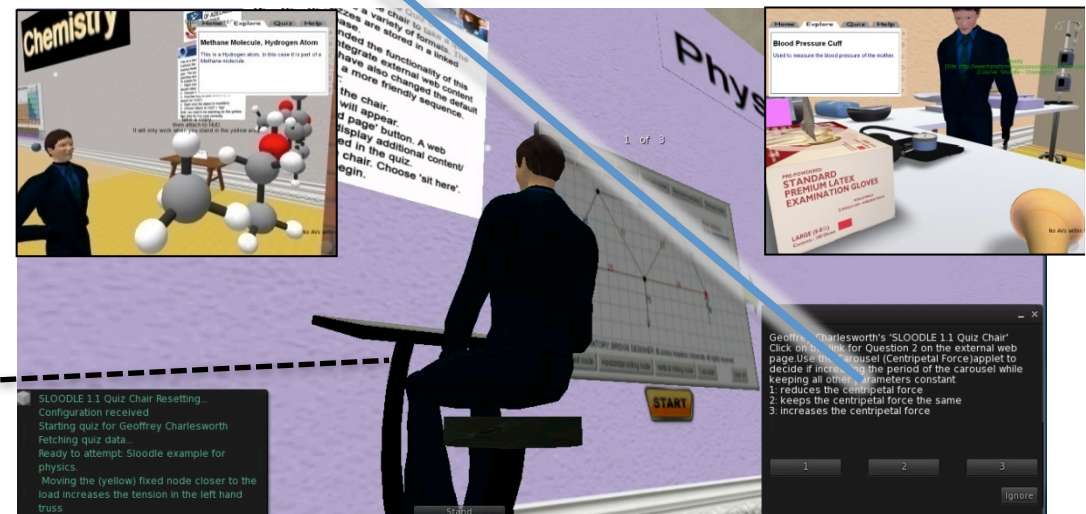
Set up Quiz in the LMS. Results are stored in the in grade book.



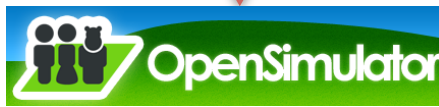
Showing graded and ungraded attempts for each user. The one attempt for each user that is graded is highlighted. The grading method for this quiz is **Highest grade**.

	First name / Surname	Started on	Completed	Time taken	Grade/10	#1	#2	#3	#4
	Geoffrey Crip	5 May 2010, 08:09 PM	5 November 2010, 09:30 PM	184 days 2 hours	3.5	0/2.5	2.5/2.5	0/2.5	0/2.5
		29 June 2010, 02:33 PM	5 November 2010, 09:30 PM	129 days 6 hours	5	2.5/2.5	2.5/2.5	0/2.5	0/2.5
		4 July 2010, 02:46 PM	5 November 2010, 09:30 PM	122 days 7 hours	5	2.5/2.5	2.5/2.5	0/2.5	0/2.5
		4 July 2010, 03:22 PM	5 November 2010, 09:30 PM	122 days 6 hours	5	2.5/2.5	2.5/2.5	0/2.5	0/2.5
		4 July 2010, 04:16 PM	5 November 2010, 09:30 PM	122 days 5 hours	2.5	2.5/2.5	2.5/2.5	0/2.5	0/2.5
		9 July 2010, 02:41 PM	5 November 2010, 09:30 PM	120 days 7 hours	2.5	0/2.5	2.5/2.5	0/2.5	0/2.5
		9 May 2010, 09:04 PM	5 November 2010, 09:30 PM	184 days	5	2.5/2.5	2.5/2.5	0/2.5	0/2.5
		4 May 2010, 10:18 AM	5 November 2010, 09:30 PM	183 days 11 hours	2.5	0/2.5	2.5/2.5	0/2.5	0/2.5
		4 May 2010, 10:25 AM	5 November 2010, 09:30 PM	183 days 11 hours	5	2.5/2.5	2.5/2.5	0/2.5	0/2.5
		6 May 2010, 12:32 PM	5 November 2010, 09:30 PM	183 days 8 hours	5	2.5/2.5	2.5/2.5	0/2.5	0/2.5
		6 May 2010, 07:12 PM	5 November 2010, 09:30 PM	183 days 2 hours	2.5	0/2.5	2.5/2.5	0/2.5	0/2.5
		7 May 2010, 12:28 PM	5 November 2010, 09:30 PM	182 days 9 hours	2.5	0/2.5	2.5/2.5	0/2.5	0/2.5
		3 June 2010, 03:47 PM	5 November 2010, 09:30 PM	135 days 6 hours	2.5	0/2.5	2.5/2.5	0/2.5	0/2.5
		16 June 2010, 05:25 PM	5 November 2010, 09:30 PM	142 days 4 hours	5	2.5/2.5	2.5/2.5	0/2.5	0/2.5
	Matthew Miller	7 May 2010, 03:44 PM	7 May 2010, 03:43 PM	31 secs	5	2.5/2.5	2.5/2.5	0/2.5	0/2.5
		29 June 2010, 03:36 PM	29 June 2010, 03:36 PM	24 secs	5	2.5/2.5	2.5/2.5	0/2.5	0/2.5
	Overall average				6.25	2.5/2.5	2.5/2.5	1.25/2.5	0/2.5

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



Student undertakes assessment in the virtual world



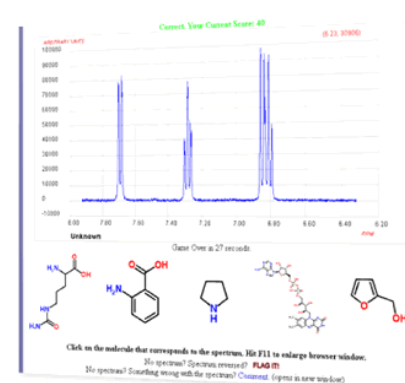
(e.g. Sim-on-a-stick)

Advanced Examples – Serious Games

- Serious games, simulations, role plays. Business, science, history, language/communication.



SPECTRAL GAME



Research program outputs

- The e-Exam system is situated within a wider research program to develop:
 - A working prototype of an exams platform and documentation allowing others to reproduce it.
 - A set of example questions that can be used in e-exams.
 - A research-informed set of good practice guidelines on e-exam processes and procedures.
 - A guide on preparing students for e-exams.

Further Information

Acknowledgements

OLT Project leader / Presenter:

Dr Mathew Hillier*,
Teaching and Educational Development
Institute, University of Queensland

OLT Project Collaborator:

Dr Andrew Fluck, University of Tasmania

OLT Project system developer:

Marisa Emerson, University of Queensland

Contact:

Email [m.hillier\[at\]uq.edu.au](mailto:m.hillier@uq.edu.au)

Project website and demo download

<http://transformingexams.com>



References, if any, are available upon request.

Please cite this resource as:

Hillier, Mathew (2014) Transforming Assessment with
e-Assessment for e-Exams, Global Links Speaker Series, Bond University, Gold Coast, 4 April.

e-Exam Demo Video

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

