Pedagogy of e-Exams: Examples and Transition

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Melbourne, Australia
Pedagogical aspirations

Meaningful learning

Meaningful learning is:
1. Active
   manipulative/observant
2. Intentional
   Goal directed/ regulatory
3. Authentic
   complex/contextualised
4. Constructive
   articulative/reflective
5. Cooperative
   collaborative/conversational

Authentic learning involves:
1. Authentic context
2. Authentic activities
3. Expert performance
4. Multiple roles and perspectives
5. Reflection
6. Collaboration
7. Articulation
8. Coaching and scaffolding
9. Integrated authentic assessment
10. Professional learning

(Jonassen et al, 2008)
(Herrington & Kervin, 2007)
Constructive alignment (Biggs & Tang, 2011)

<table>
<thead>
<tr>
<th>Authentic</th>
<th>Traditional</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Outcomes</strong></td>
<td><strong>Tasks</strong></td>
</tr>
<tr>
<td>Situated, industry relevant, digital</td>
<td>Software use, modelling, programming</td>
</tr>
<tr>
<td>Academic, abstract knowledge and skills</td>
<td>‘Bookwork’</td>
</tr>
</tbody>
</table>
Discussion Question 1:

What would authentic assessment ideally look like in your discipline area?
SECTION 1

1. The curvature of earth is ignored in
   a) Geodetic surveying  c) Plane surveying
   b) Hydrographic surveying  d) Astronomical surveying
2. In an optical square; the mirror are fixed at an angle of
   a) 30°  b) 60°  c) 45°  d) 90°
3. The true meridian passes through
   a) Geographical poles  c) Magnetic poles
   b) Arbitrary poles  d) Only N-pole
4. In WCB system; a line is said to be free from local attraction, if the difference between FB and BB is
   a) 0°  b) 90°  c) 180°  d) 360°
5. When higher values are inside the loop; it indicates a
   a) HiB  c) pond
   b) sloping ground  d) Overhanging cliff
6. The line of collimation and axis of the telescope should
   a) coincide  c) by parallel
   b) be perpendicular  d) intersecting
7. The canal taken directly from reservoir is called as
   a) Main canal  c) branch canal
   b) Distributary  d) Field canal
8. For national highway the road way width is
   a) 9 m  b) 12 m  c) 7.5 m  d) 25 m
9. Cumulative error is proportional to
   a) L  b) 2L  c) y/L  d) L
10. The compass box is made of
    a) Iron  b) Aluminum  c) Brass  d) Wood
## Phased implementation strategy

<table>
<thead>
<tr>
<th>Start &gt;</th>
<th>&gt; &gt; &gt;</th>
<th>&gt; &gt; &gt;</th>
<th>&gt; &gt; &gt;</th>
<th>&gt; &gt; &gt;</th>
<th>&gt; &gt; &gt;</th>
<th>&gt; Future &gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Get Ready</strong></td>
<td><strong>Phase 1</strong></td>
<td><strong>Phase 2</strong></td>
<td><strong>Phase 3</strong></td>
<td><strong>Phase 4</strong></td>
<td><strong>Phase 5</strong></td>
<td></td>
</tr>
<tr>
<td>Institutional approvals, research ethics, hardware and infrastructure.</td>
<td>Paper equivalent small scale.</td>
<td>Post-paper small to medium.</td>
<td>Medium to large scale.</td>
<td>Whitelisted and logged Internet</td>
<td>Open but fully logged Internet</td>
<td></td>
</tr>
<tr>
<td><strong>Crawling</strong></td>
<td><strong>Walking</strong></td>
<td><strong>Running</strong></td>
<td><strong>Jumping</strong></td>
<td><strong>Flying!</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basic doc exams to begin.</td>
<td>Expanding the landscape with apps and media.</td>
<td>Adding the power of an LMS (Moodle).</td>
<td>Network BYOD exam.</td>
<td>Network mixed mode BYOD exam.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

http://ta.vu/e-exam-roadmap
e-Exam Trials: Towards ‘post-paper’ (phase 1 to 2)

Start simple and build up!

Start! Exam doc

Video

Scratch SDK

Spreadsheets as ‘forms’ or as calculation and analysis.

Specialist applications

PDF

Sims
Paper equivalent using word documents

Suitable format adjustments were made to cater for both paper and screen.

**Question 2.** Match the following host-MOTAT (below).

Possible descriptions:
- a) Mauris id mi id orci interdum semper
- b) Sed eu necque ut est dignissim fringilla
- c) Vivamus in dolor euismod, luctus libero
- d) Mauris vehicula eros a viverra pellentesque
- e) Curabitur eu mi at nibh commodo vari
- f) Aenean eget orci porta, malesuada loric

Please write or type the letter of the descriptions listed above.

**Answer a to f.**

<table>
<thead>
<tr>
<th>Terms</th>
<th>f</th>
<th>I. Paxogen</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a</td>
<td>II. Sitabosis</td>
</tr>
<tr>
<td></td>
<td>c</td>
<td>III. Fakascalism</td>
</tr>
</tbody>
</table>

**Question 5:** For the following diagram please provide the names for THE XING in the table below.

<table>
<thead>
<tr>
<th>A</th>
<th>Label goes here. Constructed response question.</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>Blue text makes it easier to see which questions have been answered and which have not!</td>
</tr>
<tr>
<td>C</td>
<td>Use minimum row heights to provide plenty of space, but don't use double carriage returns!</td>
</tr>
<tr>
<td>D</td>
<td>Doing so means the layout is less likely to be disrupted.</td>
</tr>
</tbody>
</table>

**Question 3.**

Samuel is 5 years old and attends racing cars 5 days per week. Eamon is 10 years old and rides a superbike around the same track. It is not a selected response item so some text will be expected.

In the table below, give two examples of flippant *faxadism* relevant to his age range (4-6 years), and describe how Samuel and Eamon differ in their abilities to perform *faxadism*.

<table>
<thead>
<tr>
<th>Two different examples of flippant <em>faxadism</em> (one per row)</th>
<th>Describe Samuel's abilities (age 5)</th>
<th>Describe Eamon's abilities (age 10)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type here</td>
<td>Minimum heights set for both rows</td>
<td>More details about setting heights appear later in these examples.</td>
</tr>
</tbody>
</table>

**Question 7:** Some rationales for punishment are XEZE... does this mean?

Please write / type your response inside the box below.

The student types their answer here. In this example a two row table. The response table row is created cell has a minimum height set (by dragging the box) and a minimum height cell instead of successive carriage returns to set the box height, the next question will be less likely to be disrupted when students type their responses. The initial size of the box should indicate the desired length of the response. The box will automatically expand when it gets full.
Student’s choice - Macquarie U

ICT in Education, 80 min 40% Final exam
Word document: 10 x MCQ and 1 x Essay.
Phase 1 ~ toe in the water.
Language exams - UQ

French language. 120 min 30%. Word document: article translation and response essay. Type English and French.

- QWERTY with accents
- AZERTY layout

Example:
Accent agiu é: type a 'single quote' then type the letter e.
Post-paper e-exams at UTAS (Andrew)

Word document question and response space – links to e-tools

Final exam: 47%, 2 hours.
Word doc with short and long text. Constructed response tasks.

Solve a problem in Scratch (block programming for primary school students)

Critique student understanding (video)

Multimedia video prompts.

Scratch programming task

Chemistry education software evaluation
Critique student understanding (video)

Teaching Secondary Mathematics
Comment on the child’s understanding of symmetry based on her response to this task.
Solve a problem in Scratch

Digital Technologies Education

Write a program in Scratch using Felix the cat and a blank stage that:

a) Allows Felix to be moved by pressing arrow keys on the keyboard
b) Allows the user to draw a picture of a house as they move Felix around the stage.
Spread sheet as a Form

Phase 2.5!
A form - but with no network.
Intro to Chinese (first year):
2017 Semester 2.
22 students at pre-exam practice.
16 typed the exam.
Two components:
Student XLS file
Marking XLS file
## Spread sheet as a Form

Language tools available according to LOTE selection

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rewrite:</td>
<td></td>
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<td></td>
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<td></td>
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<tr>
<td>English:</td>
<td></td>
<td></td>
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<tr>
<td>(2) 你得好朋友唱歌非常唱女</td>
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<td></td>
<td></td>
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<tr>
<td>Rewrite</td>
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<td>English:</td>
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<tr>
<td>(3) 我他见</td>
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<tr>
<td>Rewrite in</td>
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</tbody>
</table>

Respond in designated cells (other cells are locked).
Candidates can access wxMaxima, SciLab, GeoGebra, GNU Octave (like MatLab), R (statistics package) alongside the standard LibreOffice suite (word processor, spread sheet etc), media, plus programming tools such as Python, Scratch etc. Responses via documents or Moodle LMS.
Teaching Python Programming exam: Word document + Python IDLE

Q1: [Sequence, user input, output] 5 points
A painter requires a program to calculate the number of litres of paint needed for a job. Each litre of paint will cover 16 square metres. The program should accept the number of square metres to paint and then output the number of litres of paint required to the user.

Write a connected Python program for this task.
Open IDLE - Python environment.
Remember to save all files in 'Assignment/1'.

Q2: [Loops] 5 points
A program is required that receives input of five sentences one by one and then prints out the sentences in alphabetical order.

a) Draw a flowchart to represent the algorithm for your program (3 points):
   - You can use the drawing tools within the word processor. Make some extra space here, draw the diagram and save this file (it will be submitted on the UWS site),
   - Use a separate piece of paper labelled with your student ID to draw the diagram.

b) Write a Python program for this problem (2 points):

Q2. Write a text file 5 points
A program is needed to store a list of tools and their hire rate in dollars per day. Write a Python program to accept data from the user and store it in a text file.

Possible Data:
- Air compressors: $5 per day
- Sander: $25 per day
- Brick saw: $110 per day
- Drill: $50 per day

Q4: Input a text file, use a function 5 points
a) Add to your program in Q3 so that it can retrieve the name of the tools and the cost per day from the text file (5 points).

b) Display the data read from the file on the screen. Make 'displayData' a function in your program (2 points).

Q5: [Everything] 10 points
Create a robust, modular, user-friendly, connected Python program to simulate an automatic teller machine. The program should:

a) Set up the accounts for 3 people and store their four-digit pin number and their initial balance in a text file (3 points).

b) Allow a user to login using their pin (3 points).

c) Allow a user to view their balance and account details (2 points).

d) Allow a user to deposit and withdraw money (2 points).

End of Exam
Robust Moodle - Monash

Monash – Chinese language – two units (1st year and 3rd Year)

Moodle quiz question/response medium

Selected 3rd party software included.

Robust Moodle worked to rescue network outages (double layered backup!)

Audio data files cached at the start of the exam.
Students used headsets to listen.
Third party software included.

LMS questions in Safe Exam Browser

This is an offline dictionary tool ‘Dim Sum’
Case studies - hand out (double sided!)

UTAS - Post-paper word document based e-exam
Monash - ‘robust’ online e-exam in Moodle

Discussion!
Innovation in education depends on teachers...

Roger’s (2010)
Diffusion of Innovation

![Diagram showing the adoption of innovation by different groups: Innovators (2.5%), Early Adopters (13.5%), Early Majority (34%), Late Majority (34%), and Laggards (16%).]
Barriers to technology integration

First order (external) barriers:
- Resources
- Hardware
- Software
- Training
- Support

Second order (internal) barriers:
- Confidence
- Beliefs about student learning
- Perceived value of technology in learning & teaching

Ertmer et. al. (2012)
Discussion Question 2:

What are the main barriers that universities/institutions/schools face in order to apply authentic assessment practices, and what are the best ways to overcome them?
References

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Monash University Caulfield Campus
Melbourne, Australia

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