



TRANSFORMINGEXAMS.COM

A Scalable Examination Platform for BYOD Invigilated Assessment

Writing e-Exams in pre-university college

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Get this paper <http://ta.vu/occe41>

Matching paper <http://ta.vu/occe40>



Australian Government
Department of Education and Training



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National
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UNSW
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University of
South Australia

A key motivation - The gap

Real world of work



World Economic Forum - How will digital change your working world.
<https://agenda.weforum.org/wp-content/uploads/rtr2m8vm1-628x330.jpg>

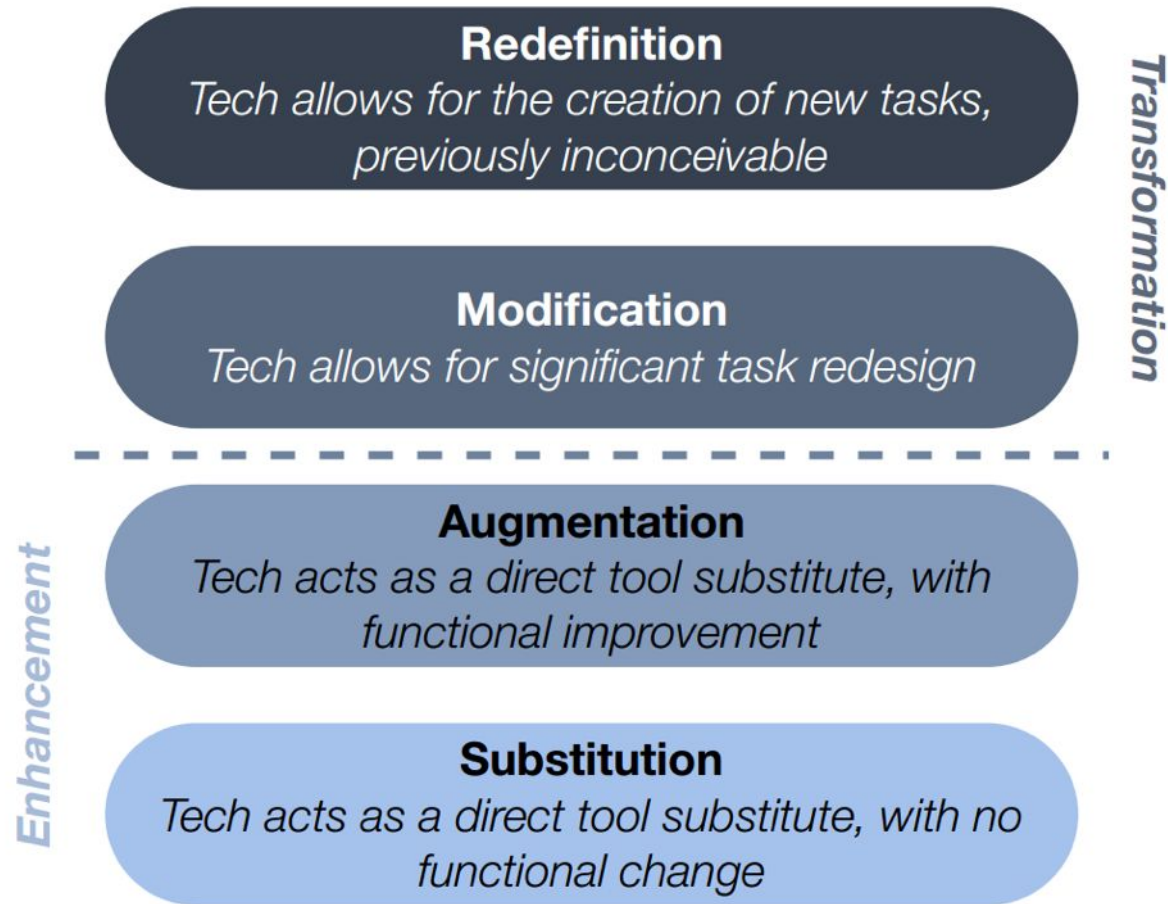
Exams



Exams at Monash Caulfield in 2015 (mathew.hilier[at]monash.edu)
70,000 student university.

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

What we are doing about it...



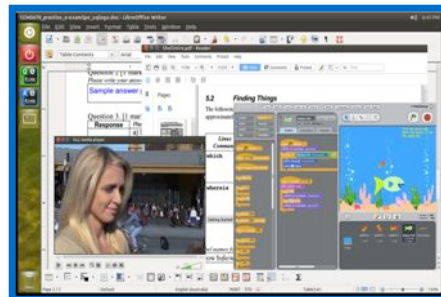
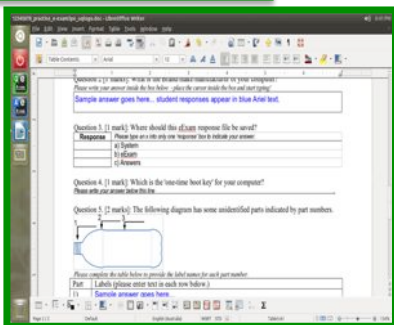
SAMR Theory - Puentedura, 2012

Study context - broader e-Exam project

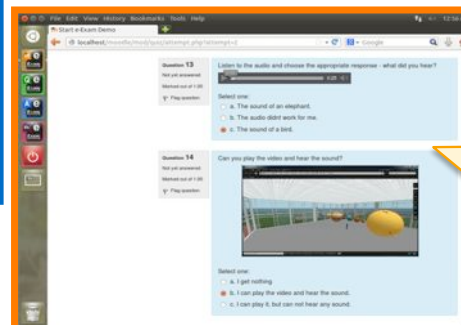
Start >	> > >	> > >	> > >	> > >	> Future >
Get Ready	Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
Institutional approvals, research ethics, hardware and infrastructure	Paper equivalent small scale. Basic doc exams to begin!	Post-paper small to medium. Expanding the app and media landscape.	Medium to large scale. Adding the power of an LMS.	Whitelisted and logged Internet Network BYOD exam.	Open but fully logged Internet Network mixed mode BYOD exam.
	Crawling	Walking	Running	Jumping	Flying!

This paper!

<http://ta.vu/e-exam-roadmap>



Extension work:
An offline e-learning platform see moleap.org



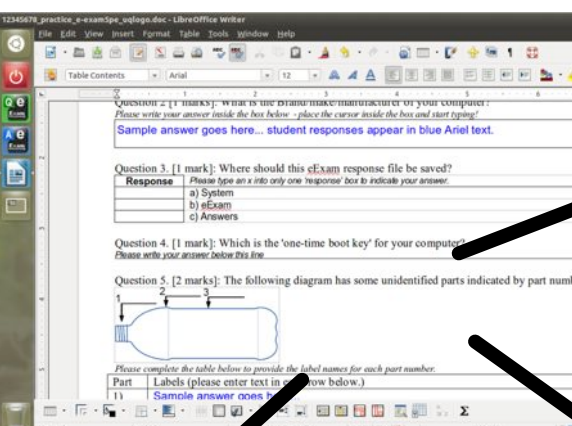
Thursday demo!
Moodle resistant to network outages!

Pedagogical Affordances

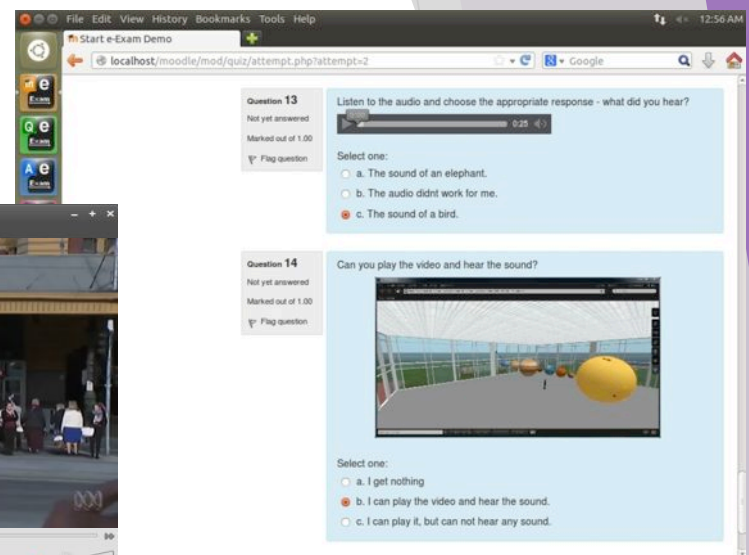
Authentic assessments. It is a platform, not an app!



Exam doc

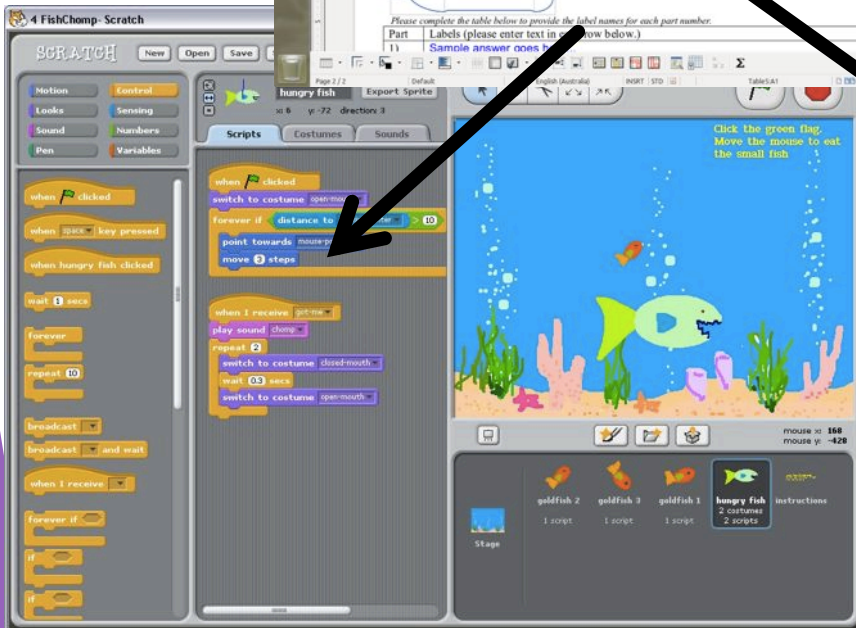


Video



LMS quiz

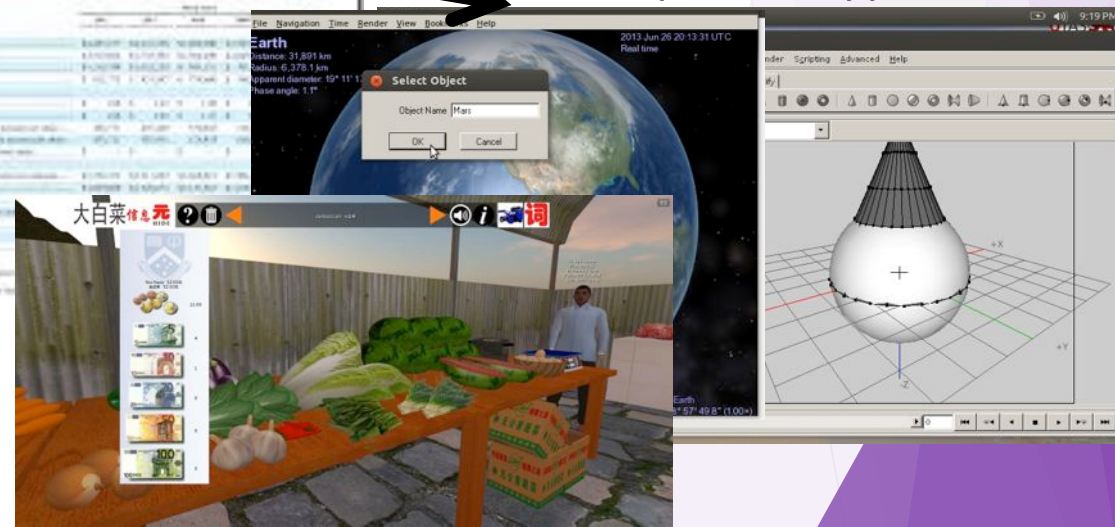
Scratch SDK



Specialist applications

PDF

Sims



e-Exam system (offline mode used in this study)

Pre-exam: prepare learning materials

1. Teacher creates exam, media, Moodle content, etc

2. Create master USB (load exam, configure, test)

3. USBs duplicated

5. Pre-session: Student laptop setup & practice.

4. USBs sent to exam venue

Linux Live USB. Libre Office. Question paper.

6. Exam venue:

- Students enter room
- Given USB
- Start laptop from USB
- Do exam
- Finalise and shutdown
- Return USB
- Leave room



7. Manual return

Post-exam: assessment

8. Responses retrieved from USBs.

9. Collated e-responses sent to teacher.

10. Return feedback to student.

USBs can be recycled next exam.



Quick Start for e-Exam System v6

Before you start

- Your computer must be compatible with Linux (see the Linux Hardware Compatibility List at www.linux.com)
- Install your operating system and ensure the system is stable. It is recommended to use a Linux distribution that is supported by the e-Exam system.
- To start up, the computer must be OFF (Shut down)

Applications

- Install the e-Exam system (USB drive)
- Power ON and immediately tap the same time the same key (see the manual for details)
- Then select the e-Exam system (see the manual for details)
- Press the [Enter] key to start the system

STOP & WAIT!

A supervisor will check the system and the system will be ready to use. Continue only when instructed.

When you are ready to submit your exam

- Click the 'Submit' button on the 'Submit' screen
- Remove the USB drive from your computer
- Click the 'Return' button on the 'Return' screen

Please remember to fill in the survey! - Thanks!

Study context - e-Exam Project trials

	2017 University [pre-university]	2018 University
Monash	<ul style="list-style-type: none"> • Geography x 3 classes [Monash college 2016] • Business Statistics • Language Translation (some NAATI) • Globalisation x 4 classes [Monash college 2017] • Introductory Chinese language (offline, Spreadsheet used as a form) • Language Translation 	<ul style="list-style-type: none"> • Language Translation • Introduction to Chinese (in 'Robust' Moodle LMS). • Chinese online media (in 'Robust' Moodle LMS).
UQ	<ul style="list-style-type: none"> • French language translation 	French language
CQU	<ul style="list-style-type: none"> • Knowledge Management Principles (IT) • Ethics and Social Issues (IT) 	IT management
UTAS	<ul style="list-style-type: none"> • Education 	Environmental Chemistry
MqU	<ul style="list-style-type: none"> • ICT in Education 	
UNSW	<ul style="list-style-type: none"> • Air power (ADFA) 	
ECU	<ul style="list-style-type: none"> • Teaching Introductory Computer Programming • OHS for trades 	
UniSA	<ul style="list-style-type: none"> • Science & Math for secondary teaching x2 	Math for secondary teaching

Items **marked in purple** for this presentation (paper 41 and also 40).

Items **marked in red** - we will talk about these at our Thursday demonstration!

Research Questions

Area	Example research questions
Rationale of students	What proportion of candidates were in favour of typing their exam? What rationale was provided for their choice ? Did the e-Exam environment support their writing?
Writing strategies	Were there differences in the writing preferences and strategies used by those that typed and those that handwrote?
Student performance	Were there differences in words produced and grades achieved by those that typed and those that handwrote?

* Note this study should be read in conjunction with our other paper!

Participation

128 pre-tertiary students.

Two units (subjects):

Geography and Globalisation

Sample: 65% female and 35% male.

52% of students chose to type.

But males were more likely to type than females.

Chi-square test ($\chi^2(1) = 5.299, p = 0.021$)

Caveat: Not random samples - descriptive of these groups only.



Monash College - e-Exam Process - Assessments

Geography & Globalisation

Students could choose to type or handwrite.

- 1) Two weeks prior: practice session and pre-survey.
- 2) Exam day: In-class, graded, supervised assessment task.

Materials provided on paper & as a word processor document. Included photos, diagrams, charts and data tables.

- **Geo 2016:** the assessment task was a single case study with an extended essay response. (*example next slide*)
 - **Glo 2017:** two short answer sections and a mini-case essay response
- 3) Students then completed a post-exam survey before leaving the room.

Example Assessment task (Geo)

All students to complete

Student Number	27888884
Given Name	Yi
Family Name	Sum

Note:
Materials (USB/paper) must NOT be removed from the venue.
Doing so will be considered cheating.

Software use procedure:

- While you will have typed in your student ID at the 'exam starter' screen please read the top of this page.
- While using the e-Exam system:
 - Remember 'File > Save' often. Shortcut "CTRL S".
 - If the page is too big or too small for your screen please use View > Zoom.
 - Apple Mac users - note short cut keys use CTRL instead of 'Command'.
- At the end of this assessment session
 - Use File > Save to finalise the completed answer script onto the Answer Sheet.
 - Then use File > Exit to Exit the Office.
 - Then shut down your computer using the big red button (upper portion of the screen).
- Please complete and return the survey form.

MUFY Geography Unit 1, Semester 2 2018 Assessment

Instructions: You will have the entire double lesson to write an essay in response to the question below. Your responses should refer to your case-study knowledge and address the suggested length for this task is 350-400 words.

Decisions regarding the use of tropical rainforest environments focus on short-term economic and environmental sustainability. Tropical rainforests sustainably a range of strategies incorporating the Principles of Sustainability.

Refer to your studies and the materials contained in the data pack

Materials Allowed:

- Pens/writing materials
- English-only printed dictionaries with no added text

Materials Not Allowed:

- Electronic dictionaries
- White-out
- Notes/text books/articles

All mobile phones must be switched off and placed in your bags. Any mobile phone in their possession (even if it switched off) will be severely penalised and receive an automatic zero for this assignment.

Marking:

Criteria	Marks Possible
Retrieval	8
Comprehension	12
Analysis	12
Knowledge Utilisation	8

Mark: /40 Letter Grade:

Comments:

Assessment Task 4 Data Pack

Figure 1 – Former and Current Tropical Rainforest Distribution



Figure 2

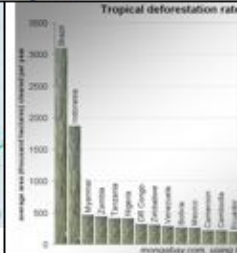


Figure 3



Figure 4

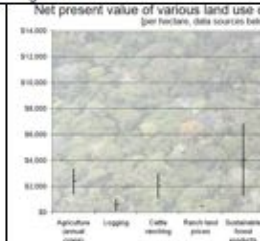


Figure 5

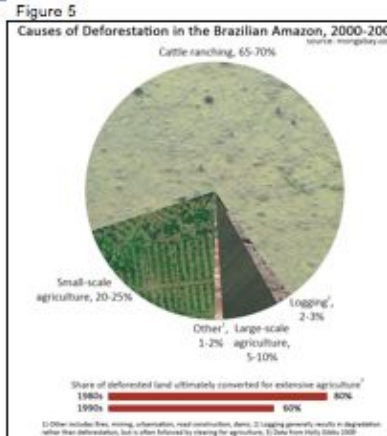
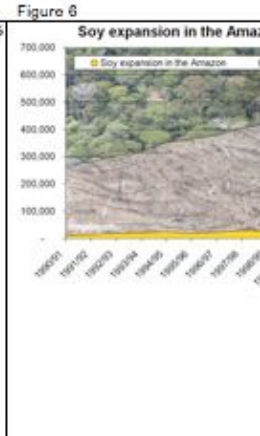


Figure 6



Please type your Essay response below this line

Currently, increasingly individuals focus on the tropical rainforest distribution leads to climate change, the destruction of environment, decreasing biodiversity. The use of rain forest only focus on being profitable is simply only concentrate on development of economic, instead of protecting environment of the same time. Therefore, the management of tropical rainforest is special important issue. However, how to manage tropical rainforest? There are few strategies can be mentioned, including protecting logging areas, allowing local people, selectively logging trees.

Firstly, logging for woods and allowing plant for land use should not be allowed in developing economic. In another word, people should opening an area that is not cut down the trees and develop the economic, such as the non-wood forest product. This management way is working for both sustainable and development, because using the rainforest special economic product will not cause to deforest and provide the economic. For example, Figure 2 shows the level of non-wood products can be supplied in rainforest, including food colorings, fruits and nuts, rubber, secondary wood products, rattan, fragrances, medicines. Thus, these special products not only can offer to local people, but also can provide the financial profit between outside of the rainforest area and the local. People can trade goods to earn money. This is an absolutely good management for sustainability of rainforest.

Secondly, making strict law for reducing logging and clearing plant is a useful way to address the goal. People want to get the money from plant crops and ranching cattle, they need land. That means more and more people going to cut down those rainforest, and which also being unsustainable principle. If don't have strict law, the land just gone day by day. According to Figure 3, rubber ranching and agriculture occupied the most of percentage (cattle ranching 65-70%, small-scale agriculture 20-25% and large-scale agriculture 1-10% of cause deforestation in Brazilian Amazon from 2000 to 2005). However, logging in the original context that cause to cattle ranching and developing agriculture. If the logging, no planting and ranching. Therefore, sustainable rainforest must important.

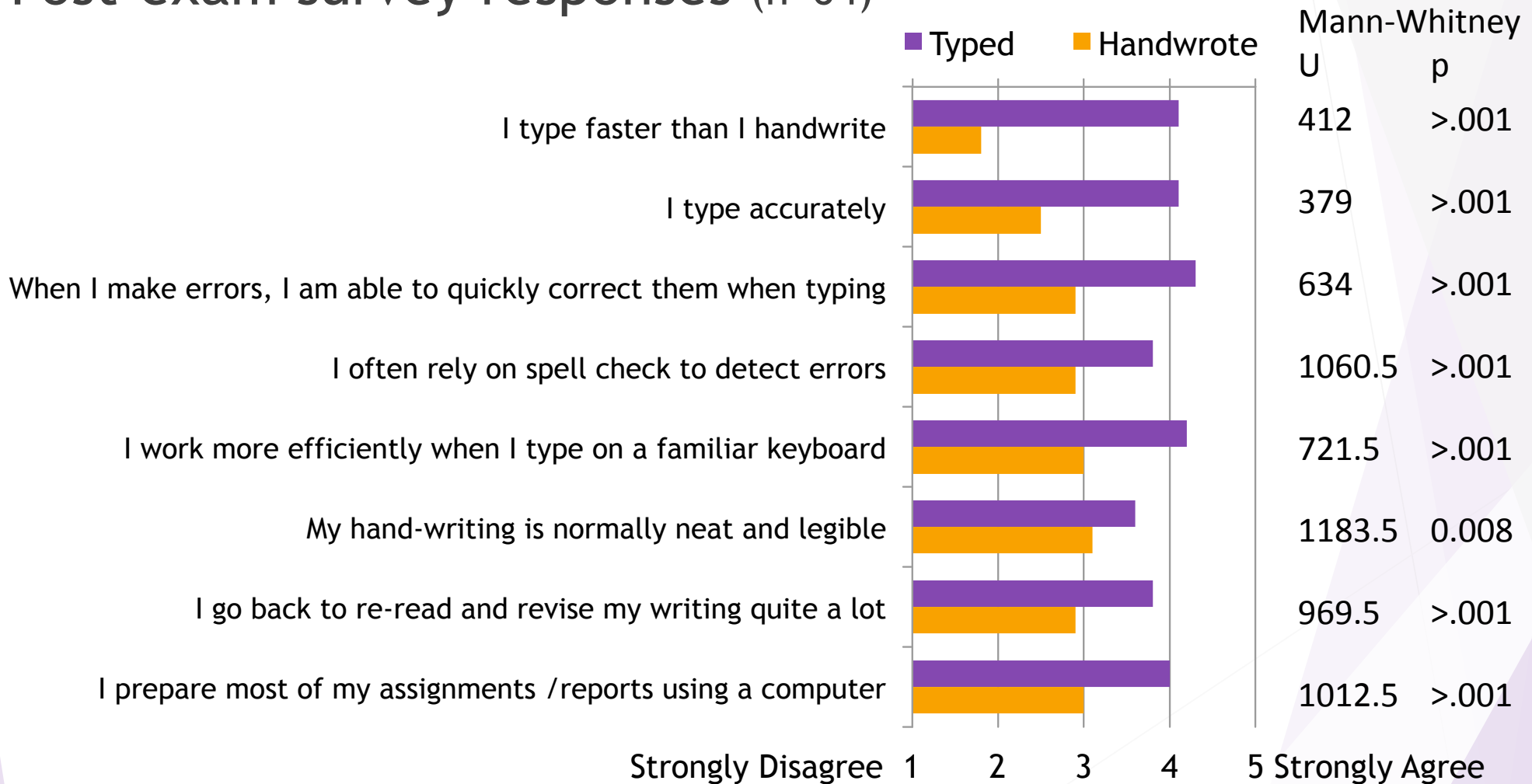
In addition, call the local people's attention about their home region are endangered. This is for make local people clear about how the deforest will affect their life and how can they avoid deforestation their life.

Thirdly, selectively logging trees can solve the problem of study about trees, but also protect the rainforest. Selectively logging means cut trees in one type or size tree in one special area.

Overall, allowing protecting logging areas, allowing local people, selectively logging trees can help to manage rainforest sustainability.

Findings: Writing preferences

Post-exam survey responses (n=64)



Caveat: Not random samples - descriptive of these groups only.

Findings: Writing strategies

Responses were in alignment with their choice to type or hand-write.

(n=64) Fisher's exact test.

sig When ... using a 'computer', 'same' or 'pen and paper'.

>.001 I write more words in an exam when...

>.001 I write faster in an exam when...

>.001 I think more carefully before I start writing in an exam when...

n/s I pause to think most in an exam when...

>.001 I write in a style that feels more normal in an exam when...

0.003 I try not to make changes unless they are really important when...

>.001 I change, move or correct words or phrases most when...

>.001 I think the overall structure/argument of my response is better when...

>.001 I make more effective use of the time available in an exam when...

>.001 I go back and read over my response most in an exam when...

n/s I feel more stressed in an exam when...

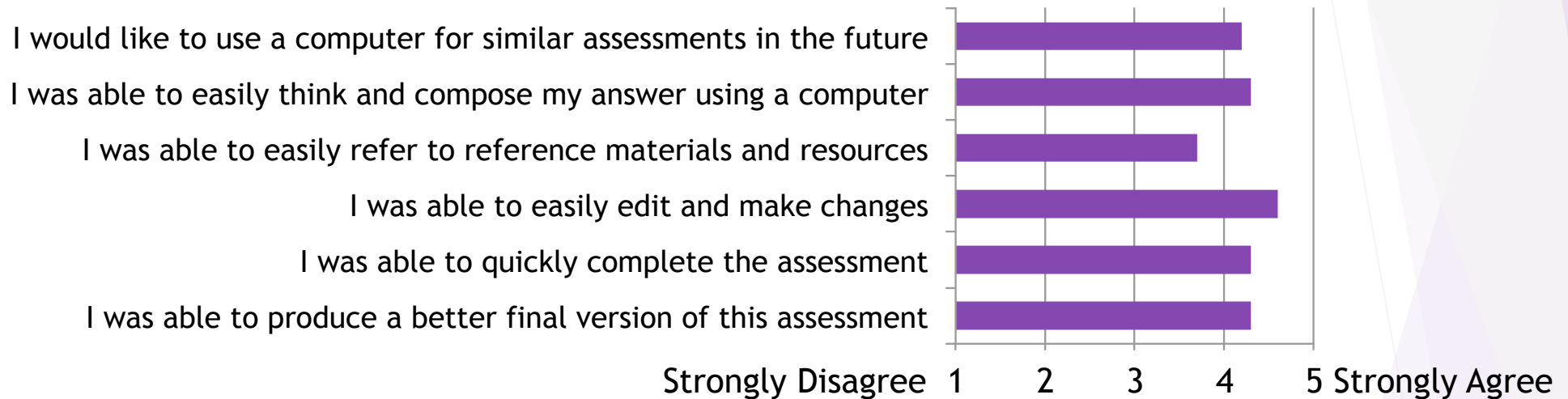
n/s I am more likely to run out of time in an exam when...

>.001 Overall I feel I perform better in an exam when...

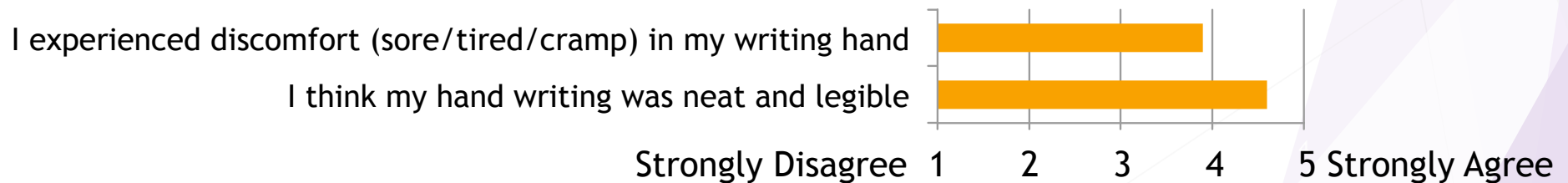
Caveat: Not random samples - descriptive of these groups only.

Findings: Post-exam survey responses

Typists: using a computer for the assessment (Geography only n=24)



Handwriting in the assessment (both units n=53)

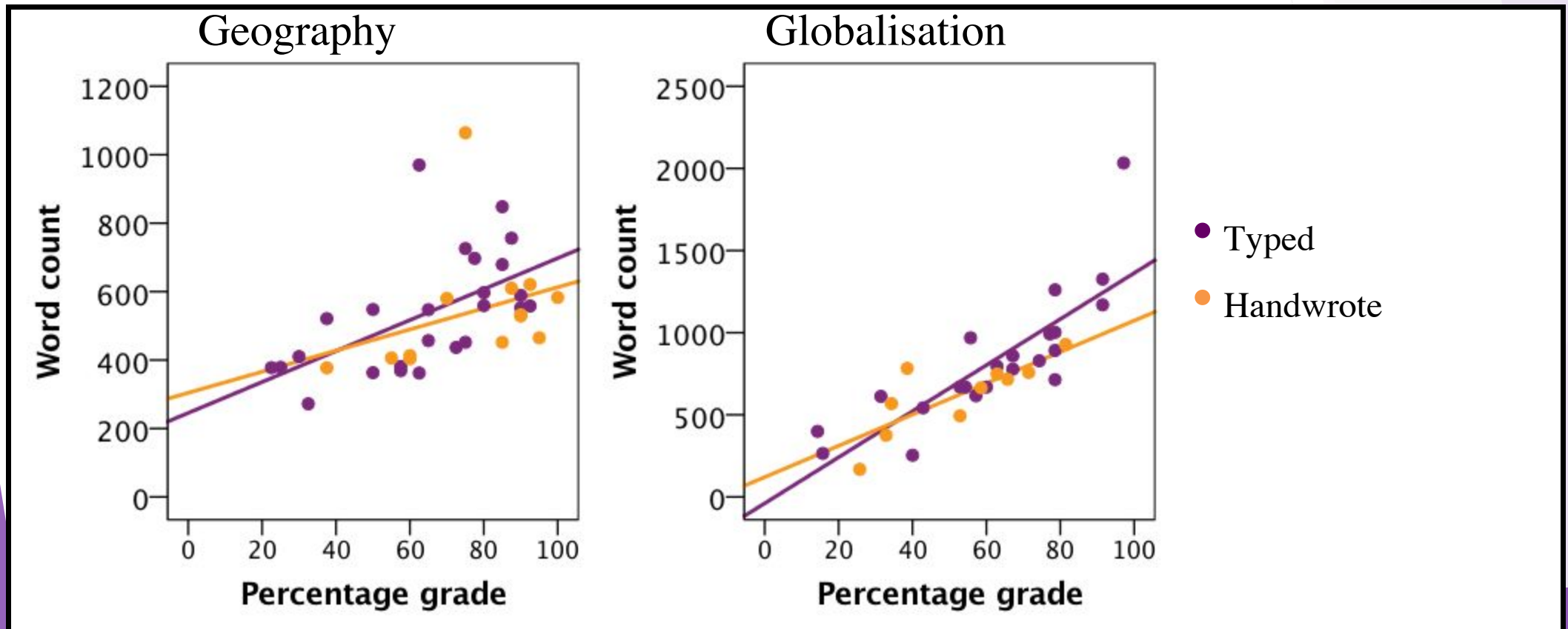


Caveat: Not random samples - descriptive of these groups only.

Findings: Performance - words and marks!

No statistically significant (MW-U) difference in number of words produced by typists and hand-writers. Assessment tasks were different - only compare within units.

Correlation (Spearman's) is certainly not causation in terms of word count - quality still matters!



Caveat: Not random samples - descriptive of these groups only.

Summary - Key Findings

Alignment of preferred writing strategies and chosen text production mode (purposeful, optimising humans!)

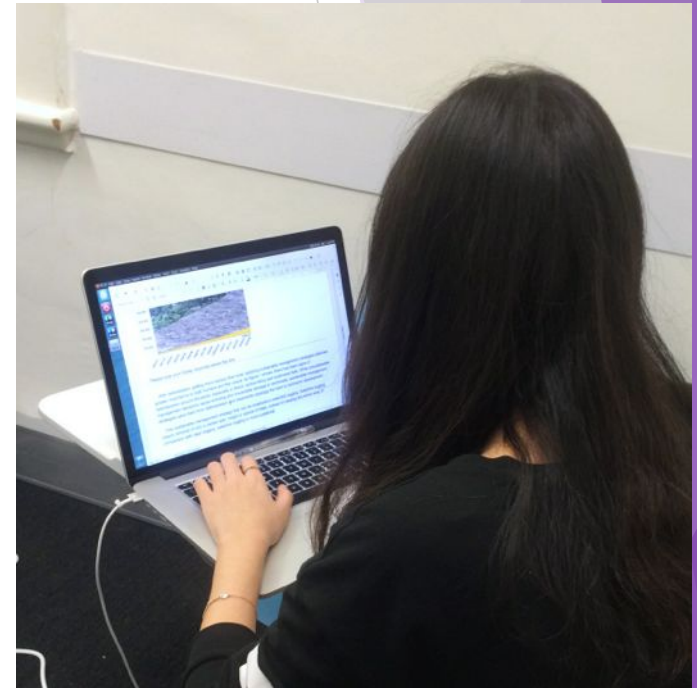
The choice to type or handwrite is multifaceted.
Strong influences:

Able to type more quickly than handwrite,
typing accuracy, editing capability.

Short duration tasks (70 min) -
Handwriters: only a few sore hands.

Typists said: the **computer allowed them to produce *better responses*** on the assessment task.
Scatter chart shows a slightly better 'earn' rate too!

A period of transition needed for hand-writers to ensure they are able to adapt successfully (leave nobody behind).



Thank you

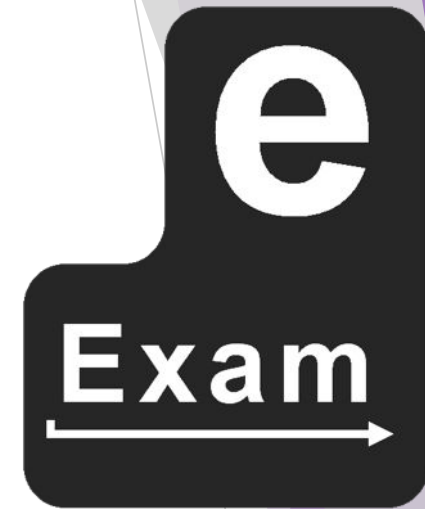
For further information contact:

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TransformingExams.com

eExamSymposium.eventbrite.com.au

24 Nov, Melbourne, Australia.



Our presentations at OCCE 2018:

1. Writing e-Exams in Pre-university College. Full text <http://ta.vu/occe41>
2. Tuesday FPS 4.1 (15:00 - 16:30)
Student experiences with a bring your own laptop e-Exam system in pre-university college. Full text <http://ta.vu/occe40>
3. Thursday FPS 8.1 (10:30 - 12:00)
Robust networked e-Exams with Moodle ~ demo!
Get abstract <http://ta.vu/occe42>