

To type or handwrite: student's experience across six e-Exam trials



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Australian Government Office for Learning and Teaching
National Grant ID15-4747: AU\$500K over 3 Years + 100K Monash



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Acknowledgements - Diamond and Gold Sponsors!

500K in support for this project has been provided by the Australian Government Office for Learning and Teaching. The views expressed do not necessarily reflect the views of the Australian Government Office for Learning and Teaching or participating institutions.

100K additional cash from Monash University.

Demo & Guides



Is this your exam space?



The core issue! ...

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 and life.

e-Exams: Online, Offline, On Campus or Distance

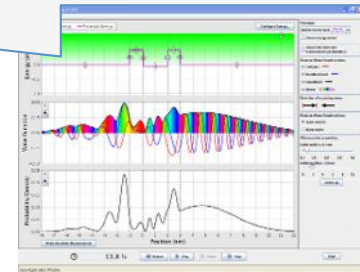
There are trade-offs for any e-exam solution.

Online	<ul style="list-style-type: none">• Space issues for institutions.• Improved exam management efficiency.• Equipment: computer labs big enough to cater for 2000 at once.• More secure: it is supervised.• Needs reliable network.	<ul style="list-style-type: none">• No space issue for institutions.• More efficient exam management.• Students supply equipment.• Less secure: students at home.• Needs reliable network.
Offline	<ul style="list-style-type: none">• Space issues for institutions.• Less efficient exam management.• Equipment: need computer labs to cater for 2000 at once.• More secure: it is supervised.• Network reliability not an issue.	<ul style="list-style-type: none">• No space issue for institutions.• Less efficient exam management• Students supply equipment.• Less secure: students at home.• Network reliability not an issue.
	On Campus	Distance

Where we are going: Post-paper exams

We need greater pedagogical flexibility and more authentic assessments in the exam room. ... alignment!

Simulations, tools of the trade, virtual experiments...



'Windows' software via WINE. E.g. CAD / 3D modeling, Celestia.

Moodle quiz with media (auto marked).

Question 13
Not yet answered
Marked out of 1.00
Flag question

Listen to the audio and choose the appropriate response - what did you hear?

Select one:

- a. The sound of an elephant.
- b. The audio didnt work for me.
- c. The sound of a bird.

Question 14
Not yet answered
Marked out of 1.00
Flag question

Can you play the video and hear the sound?

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.

Wine Windows Program L

EXAMINAT

Question 1
Find a minimum energy transfer orbit from Earth to Mars in January 2018. Provide a fuel requirement estimate for the vehicle.

LibreOffice Writer

Instructions:
Question 3
Design a portable conical showerhead which uses water efficiently

Celestia

Select Object

Object Name: Mars

OK Cancel

UQ Trials: Paper Equivalent

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

Question 2. Match the following host-MOTA below).

Possible descriptions:

- a) Mauris id mi id orci interdum semper.
- b) Sed eu neque ut est dignissim fringilla
- c) Vivamus in dolor euismod, luctus libe
- d) Mauris vehicula eros a viverra pellent
- e) Curabitur eu mi at nibh commodo var
- f) Aenean eget orci porta, malesuada lor

Please write or type the letter of the descriptions listed

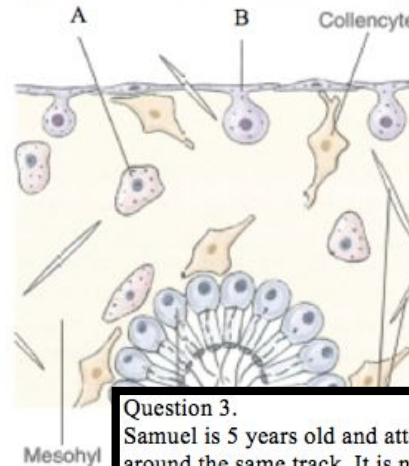
Answer a to f.	Terms
<u>f</u>	I. <u>Paxogen</u>
<u>a</u>	II. <u>Sitabosis</u>
<u>c</u>	III. <u>Fakeasalism</u>
<u>e</u>	

Question 7: Some rationales for punishment are **XEZT**. 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.

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



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

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.

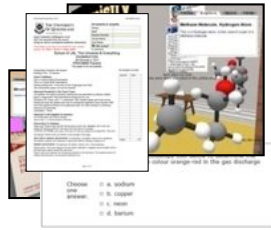
In the table below, give two (2) examples of flippant faxadism relevant to his age range (4-6 years), and describe how Samuel and Eamon differ in their abilities to perform faxadism.

[4 marks]

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

e-Exam Trials Workflow

Set-up: prepare exam learning materials



Academic creates exam learning material

Create master USB (tested)



USBs duplicated per student

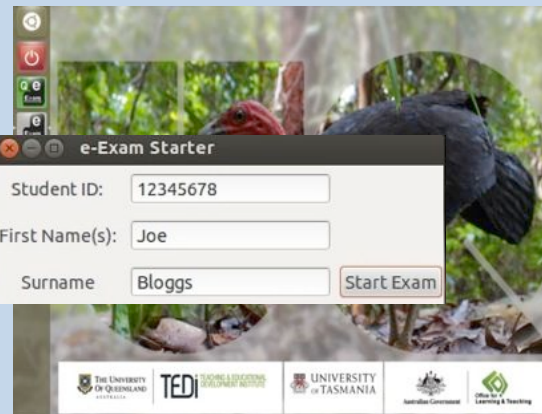
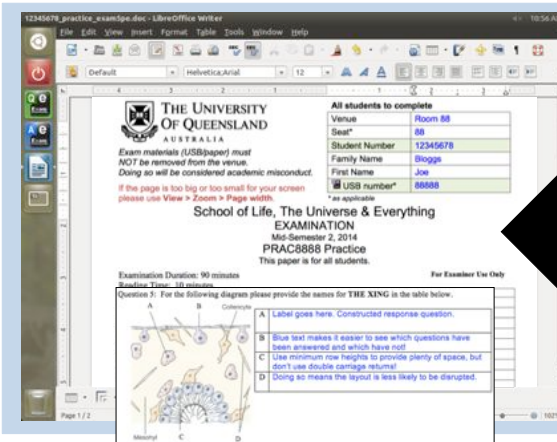
Pre-session:
Student laptop setup & practice.



Exam room use



*e-Exam system takes over laptop.
Ubuntu Live USB.
Libre Office.*



Post session: retrieve responses and assessment



Collect USBs (responses)



Responses retrieved from USBs.



Collated e-responses sent to academic.



1. Students enter room.
2. Given USB.
3. Boot laptop.
4. Do exam.
5. Return USB.
6. Leave room.

UQ: First and Most Recent e-Exams

VETS2100 S2 2014



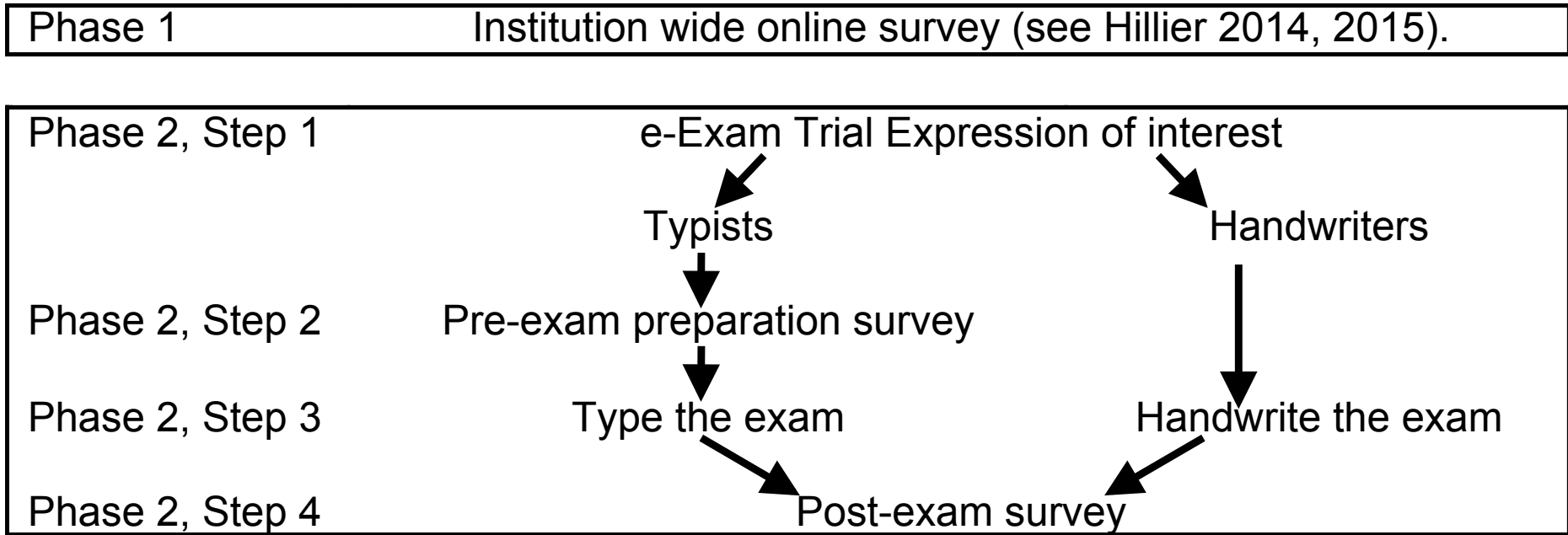
Used standard teaching rooms, sought rooms with tables and power sockets.

DENT4092 S1 2015



← VETS:
hand-writers sat
in rows.
Attempted to
separate typists
and hand-writers
where possible.
DENT: typists at
the back, →
hand-writers at
the front.

Study Design – Focus is on phase 2



Participation in Phase 1: approx. 928 respondents (Nov 2013 - Nov 2014)

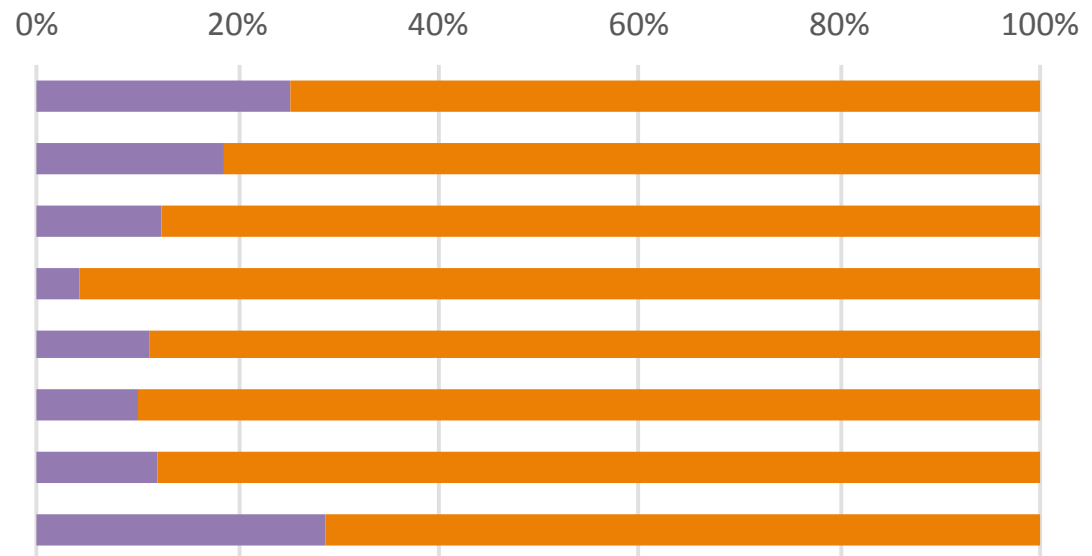
Participation in Phase 2: Eight courses (six in 2014 reported in paper, **plus two in 2015 ~updated**)

Steps of trial	Yes	Maybe	Total typists	Attrition	No - hand-write
1 Expression of Interest	241		241		420
2.1 Pre - before try	124	17	141	100	38
2.2 Pre - after try	112	19	131	10	52
4 Exam (after)	98		98	33	549

Table updated to include 2015 participants. Final typists based on returned surveys.

Typists and hand-writers by course

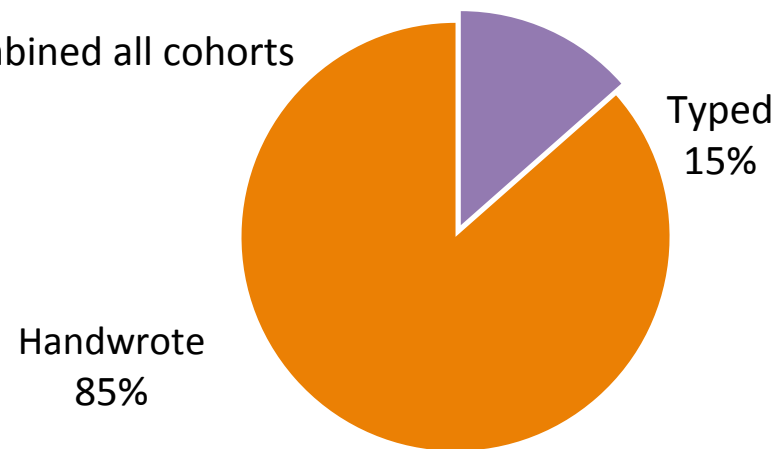
Cohort	Typed	Handwrote
CRIM2014	25.4%	74.6%
PHTY2014	18.8%	81.2%
VETS2014	12.4%	87.6%
ANIM2014	4.4%	95.6%
OCTY2014	11.1%	88.9%
BIOL2014	9.9%	90.1%
CRIM2015	12.1%	87.9%
DENT2015	28.8%	71.2%



Proportion of typists and handwriters by cohort

■ Typed ■ Handwrote

Combined all cohorts

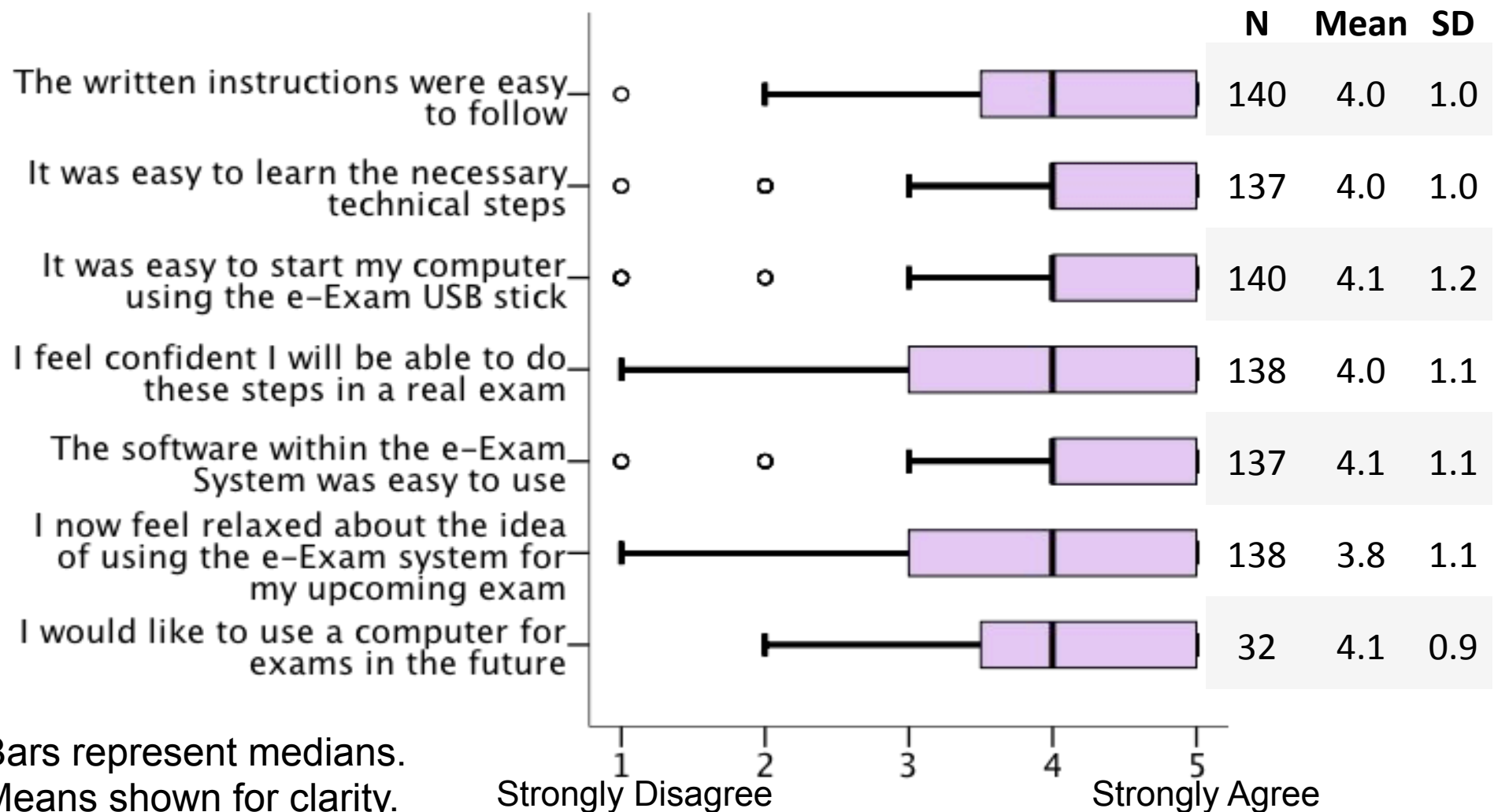


Proportion of typists and hand writers in each of the eight cohorts 2014 -2015

Pre-exam First Impressions

Selected pre-exam session survey questions (typists only)

Students came to test their laptop and try the system a couple of weeks prior to the exam.



Bars represent medians.
Means shown for clarity.

Updated to include s1 2015 results – 8 cohorts.

Post-exam Impressions

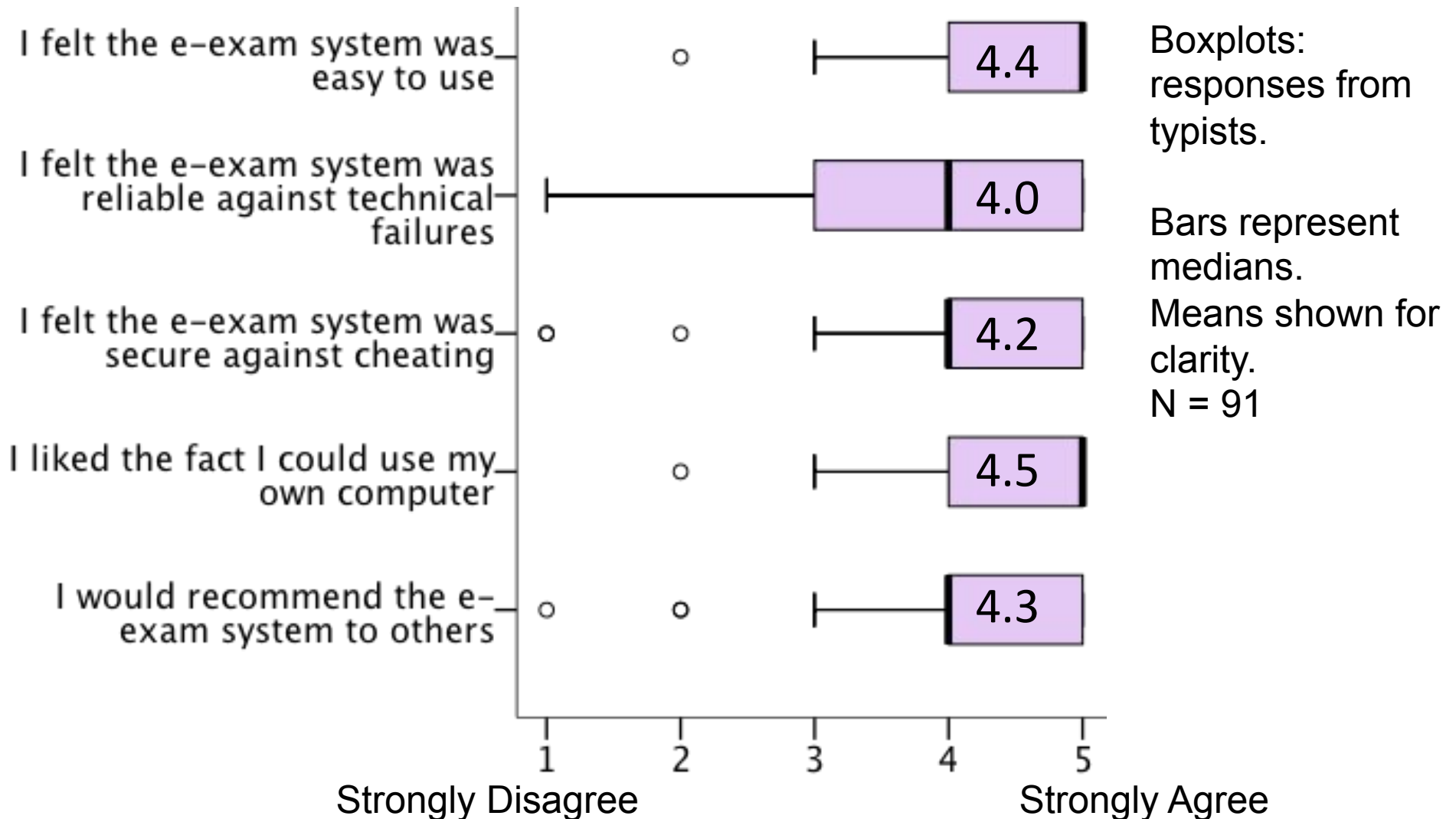
Selected post-exam session survey questions
(likert 5 = strongly agree)

Updated to include s1 2015 results – 8 cohorts.

Question	Typists			Hand-writers		
	N	Mean	SD	N	Mean	SD
I typed (or hand-wrote) this exam	98	-	-	522	-	-
I felt the e-exam system was easy to use	91	4.4	0.7	-	-	-
I felt the e-exam system was reliable against technical failures	91	4.0	1.0	-	-	-
I felt the e-exam system was secure against cheating	91	4.2	0.9	-	-	-
I liked the fact I could use my own computer	79	4.5	0.8	-	-	-
I would recommend the e-exam system to others	90	4.3	0.9	-	-	-
Overall my experience of this exam was positive	98	4.0	1.0	511	3.7	1.1
I ran out of time	97	2.7	1.4	508	2.6	1.5
I felt more stressed in this exam than I normally do in other exams	97	2.6	1.3	510	2.7	1.3
I went back and read over my responses before submitting	98	3.5	1.5	509	3.5	1.4
I would like to use a computer for exams in the future	39	4.2	0.8	167	2.2	1.2
I felt this particular exam suited the use of computers	92	4.3	0.9	-	-	-
I think my hand writing was neat and legible	-	-	-	513	3.4	1.2
I experienced discomfort (sore/tired/cramp) in my writing hand	-	-	-	453	2.4	1.3
I type faster than I handwrite	94	4.5	0.9	439	3.8	1.4
I type accurately	93	4.2	0.9	440	3.5	1.1
When I make errors, I am able to quickly correct them as part of typing	94	4.5	0.8	438	3.9	1.1
I often rely on spell check to detect errors	93	3.3	1.3	439	3.5	1.3
I work more efficiently when I type on a familiar keyboard	94	4.4	0.9	439	4.3	0.9
My hand-writing is normally neat and legible	94	3.3	1.3	439	3.4	1.1

Post-exam Impressions

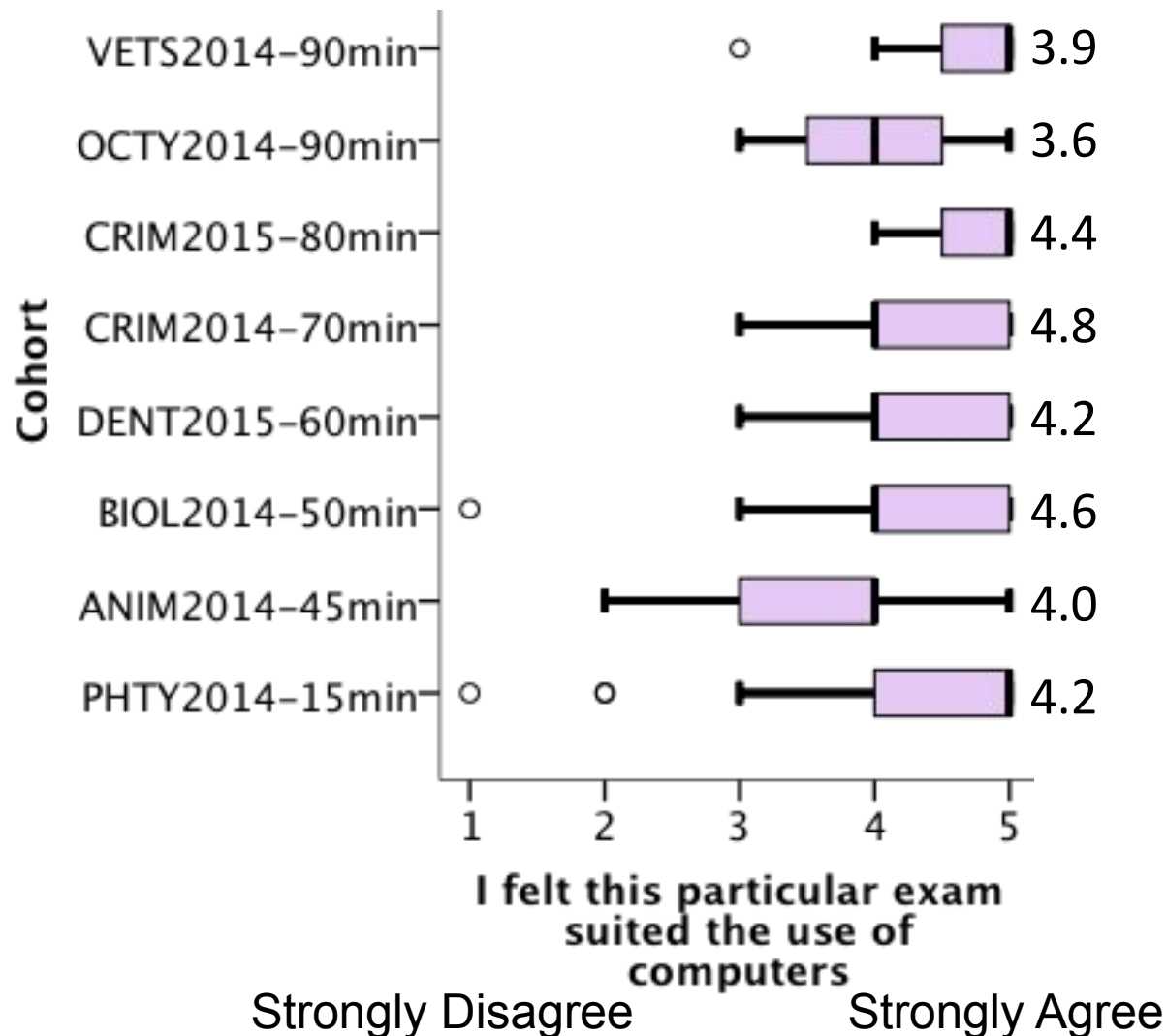
Student (typists) impressions of using the exam system



Updated to include s1 2015 results – 8 cohorts.

Post-exam Impressions

Did typists think the exam suited the use of computers?



Boxplots: responses from typists by cohort.

Bars represent medians.

Means shown for clarity.

Overall mean agreement 4.2

Largely that was a 'yes'.

However two factors at play:

a) Self-selecting sample.

Typists would be positive.

b) Exam was 'paper equivalent' thus not taking advantage of what was possible with IT e.g. multimedia, simulations etc

Post-exam Impressions

Hand-writing in the exam

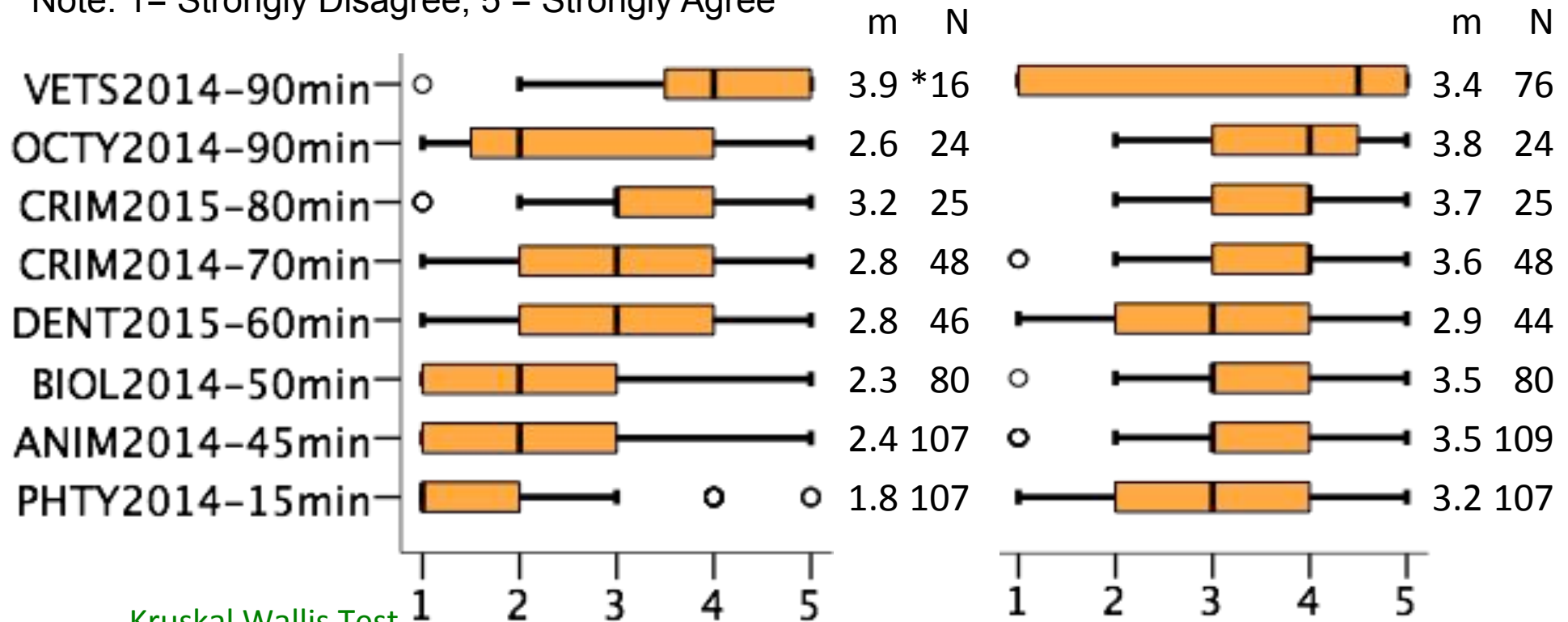
Boxplots: responses from hand-writers.

Bars represent medians.

Means and counts shown for clarity.

Note: 1= Strongly Disagree, 5 = Strongly Agree

Are some students over estimating the neatness of their hand writing?!



Kruskal Wallis Test

Chi-Square

df

Asymp. Sig.

I experienced discomfort (sore/tired/cramp) in my writing hand

61.060

7

0.000

I think my hand writing was neat and legible

19.631

7

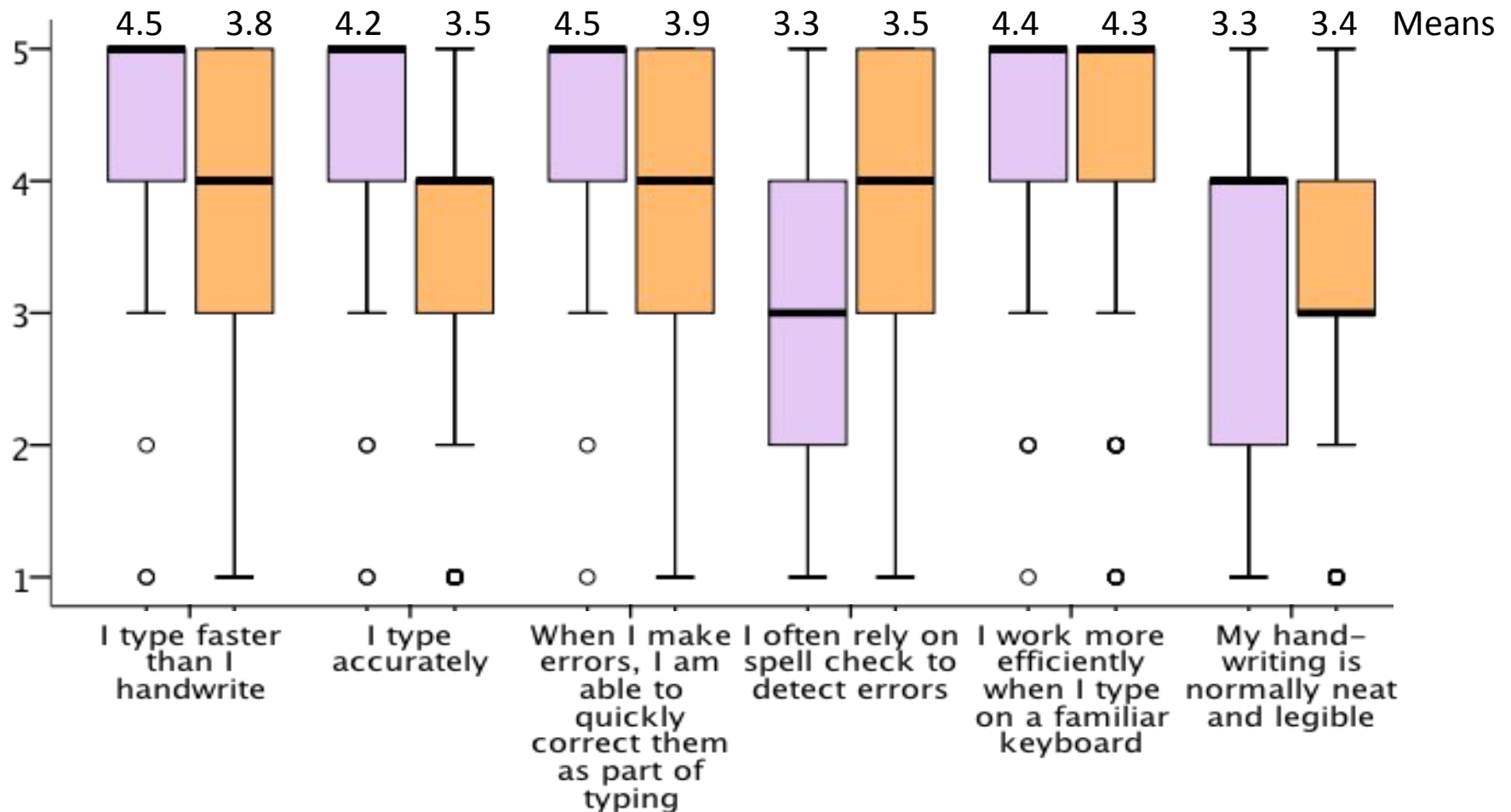
0.006

Typing and writing abilities

Student typing and writing in general

Typers (left) and Hand writers (right)

Likert scale: 1 = strongly disagree, 5 = strongly agree.

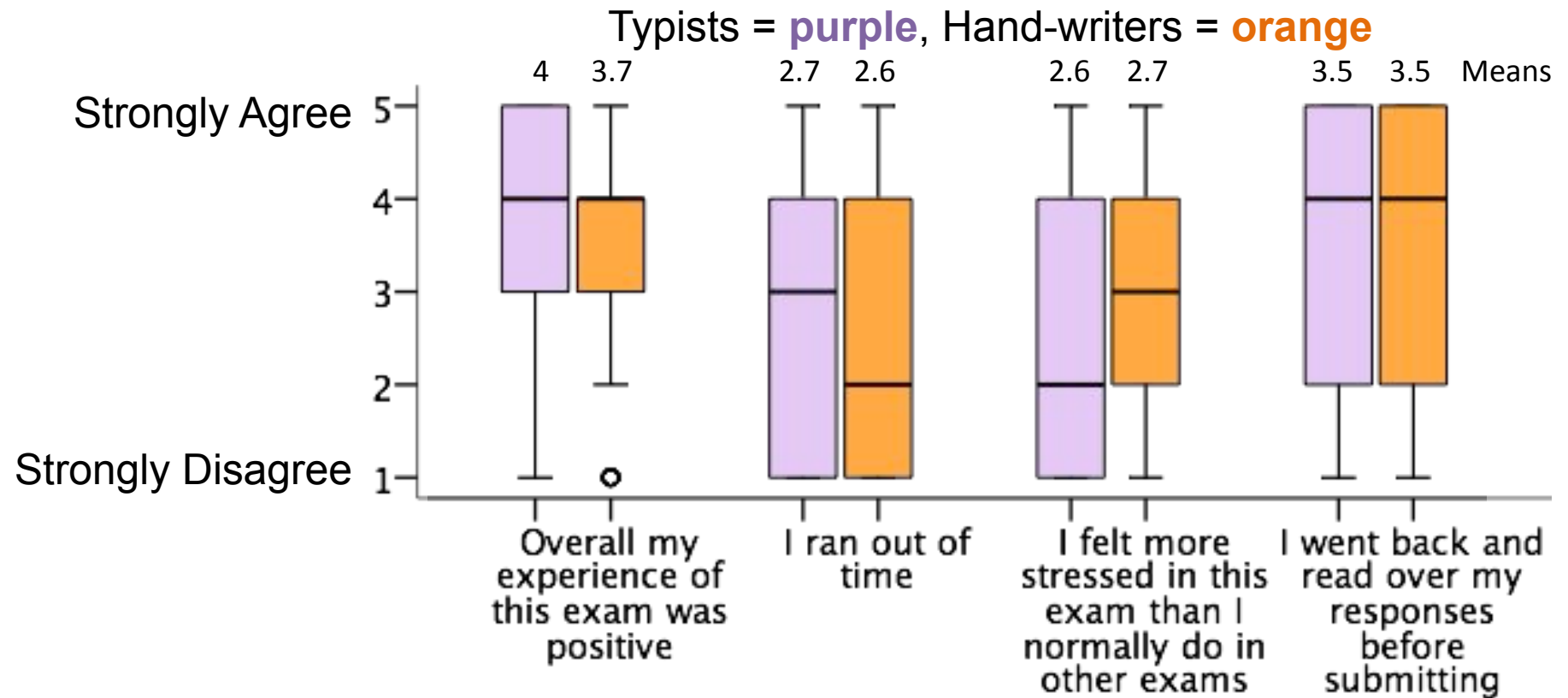


Mann-Whitney U	14703	13079.5	14514	18196.5	18969	19746.5
Z	-4.708	-5.677	-4.762	-1.694	-1.366	-0.676
Sig. (2-tailed)	>.001	>.001	>.001	n/s	n/s	n/s

Updated to include s1 2015 results – 8 cohorts.

Reaction to conditions in the exam

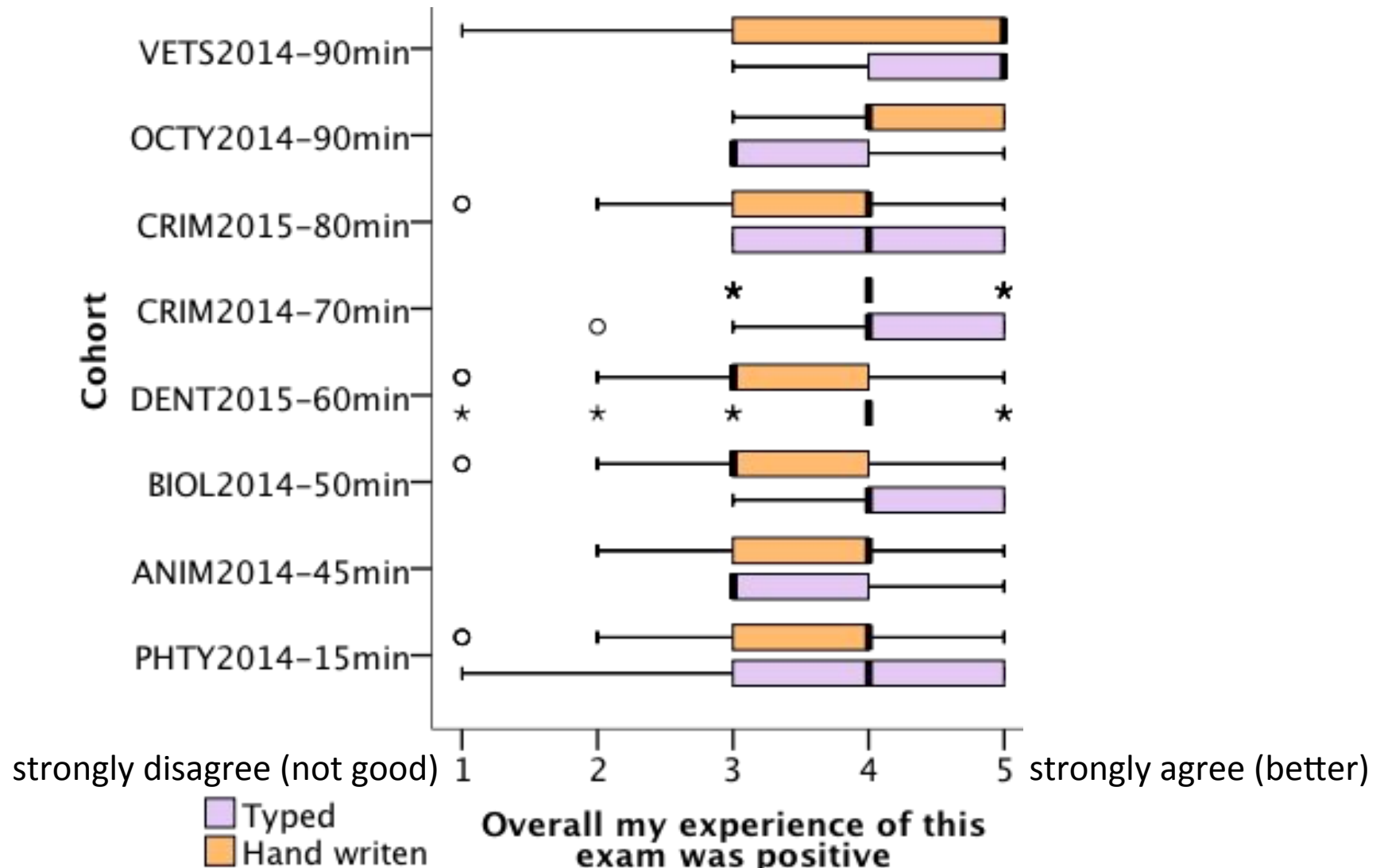
Typists had a more positive experience overall but no significant differences were reported for time running out and stress levels.



Mann-Whitney U	21172.5	23645	23065	24252
Z	-2.539	-0.647	-1.081	-0.447
Asymp. Sig. (2-tailed)	>.05	n/s	n/s	n/s

Reaction to conditions in the exam

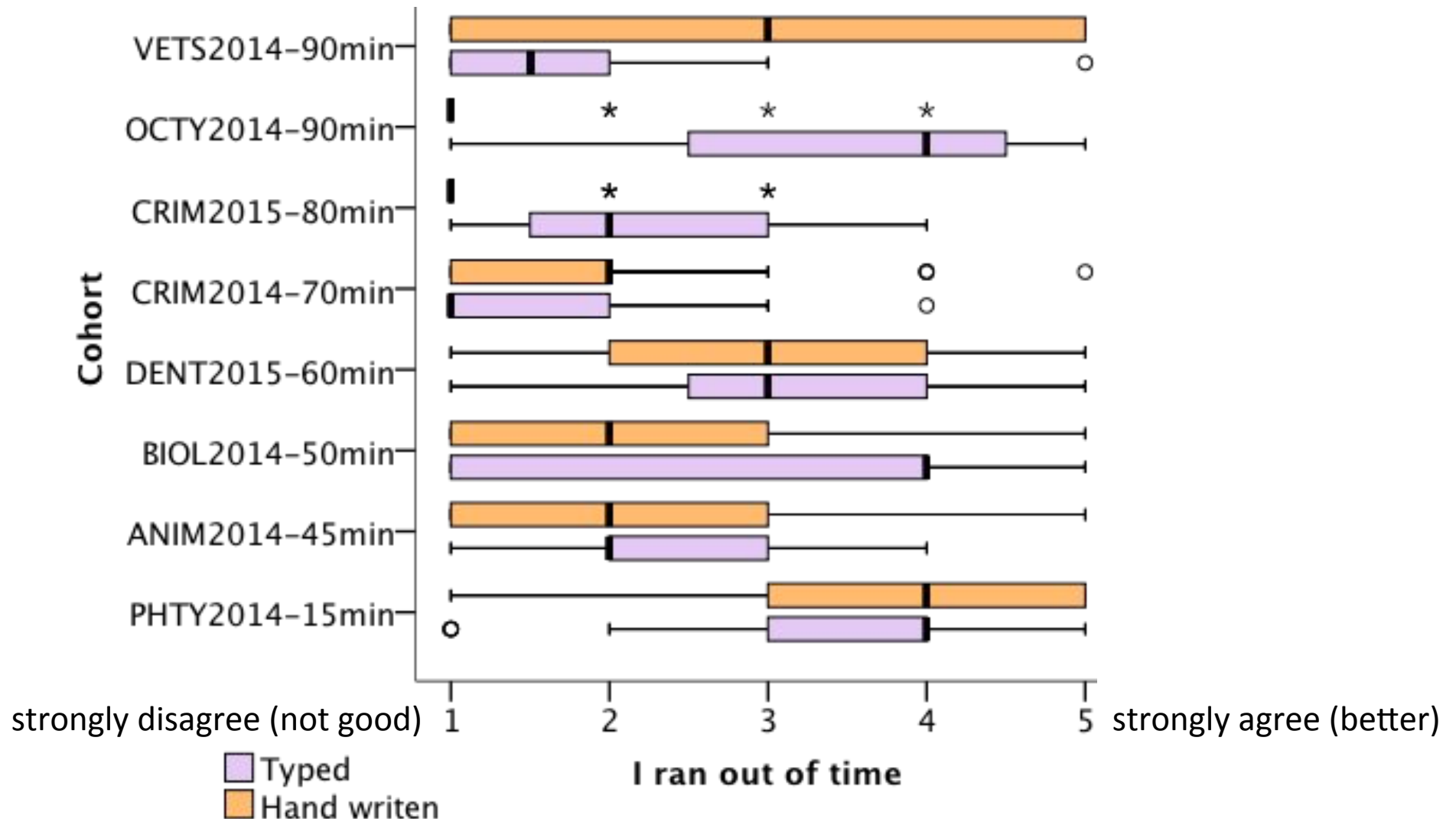
Overall exam experience by cohort



Updated to include s1 2015 results – 8 cohorts.

Reaction to conditions in the exam

Time availability by cohort

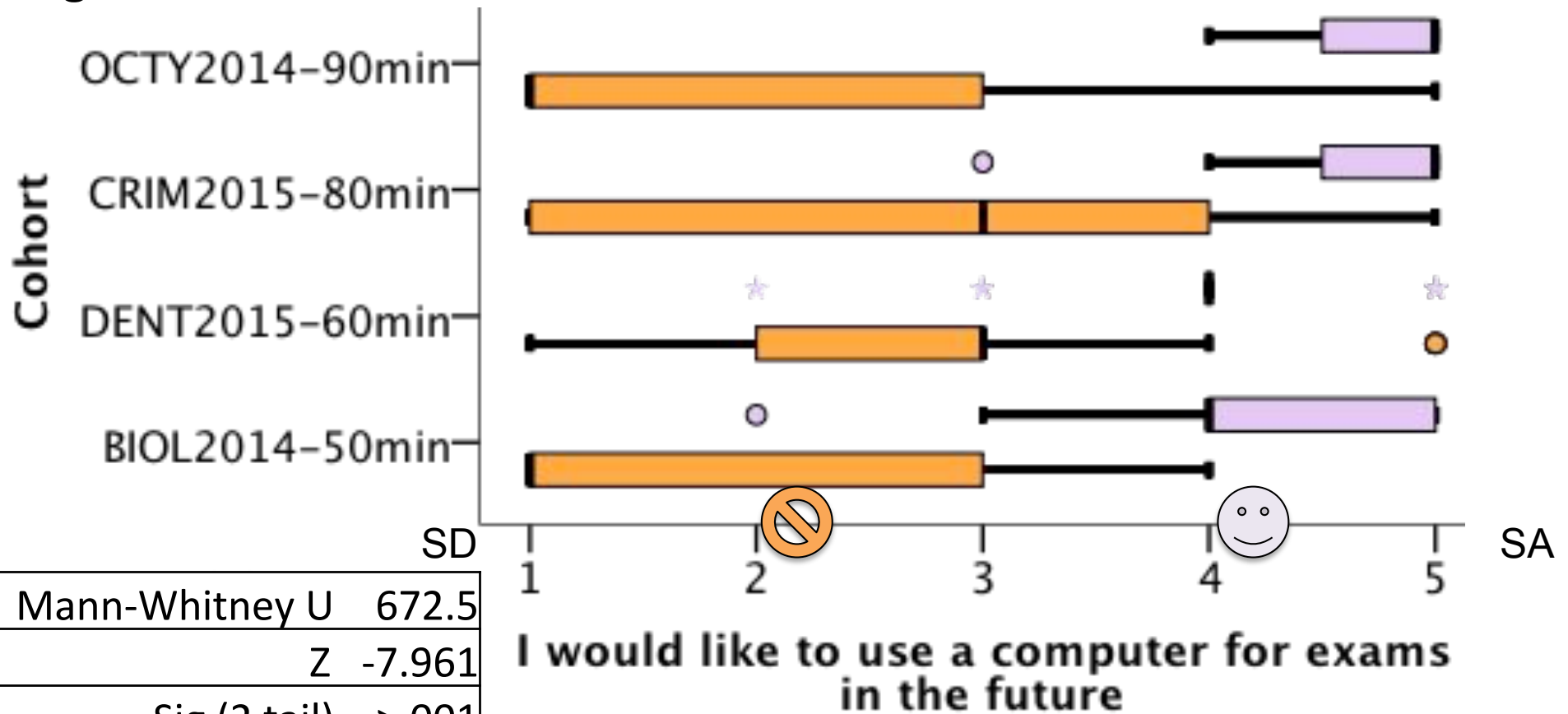


Updated to include s1 2015 results – 8 cohorts.

Future Intentions

Typists were more positive towards future e-Exams, as expected, but hand-writers were not negative as a whole.

	Mean	N	SD
Typists	4.2	39	0.8
Hand-writers	2.2	167	1.2



Mann-Whitney U	672.5
Z	-7.961
Sig (2 tail)	>.001

Typists = purple, Hand-writers = orange

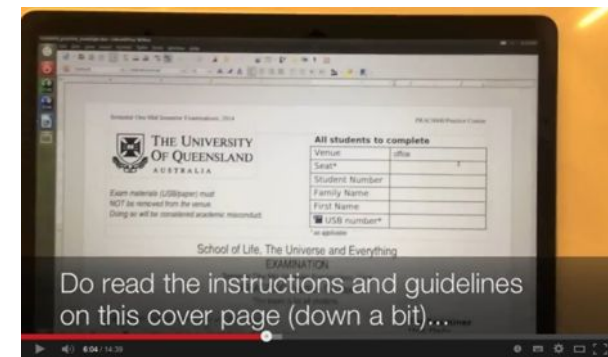
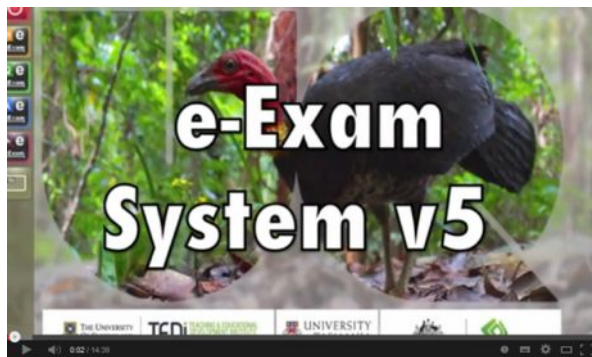
e-Exam Project Resources

More information....

Demo set-up Guide,

Student Practice and User Guide

<http://transformingexams.com>



Demo videos start-up, use and recovery examples.

Apple <http://ta.vu/eexam-demo-a>

'Wintel' (Dell) <http://ta.vu/eexam-demo-d>

Contact: mathew.hillier[at]monash.edu

End

Cite this resource

Hillier, M (2015) "To type or handwrite: student's experience across six e-Exam trials" Presentation at ASCILITE Conference, Perth, Australia, 30 Nov - 2 Dec.

Feedback Survey

<http://ta.vu/eexamsurv>



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220 more at: <https://www.zotero.org/groups/e-assessment/items/tag/e-exam>