

Essay Exams on Computer

Fair or Unfair ?

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The digital divide



Coursework



Exams

Are essay exams on computer a good idea? Why ?

Positive comments

Negative comments

Yes, as the world is becoming more and more computerised, we must embrace this in all parts of academic life.

No, because it would put people on different starting points (e.g., touch typing) Also exam conditions are different, we have always done exams on paper.

Yes, because the nature of exams are changing and revision styles are changing because of computers.

No. Computers can crash & break down. This would not be good if we had a time limit. They are not efficient and safe compared to pen and paper.

Yes. People are using computers more in the workplace, so it would be beneficial.

No. I would write less; it would interrupt my thought process.



We already know :

- Pupils who have written their (non exam) essays using a computer write to a better standard (MacCann, Eastment & Pickering 2002; Russell & Plati 2001; Goldberg 2003; Hartley & Tynjala 2001)
- Students who write essays on a computer write more than students who handwrite (Russell & Haney, 1997; Russell & Plati 2001; Wolfe Bolton Feltovich & Niday, 1996).
- A type-written essay will be marked more harshly than an identical handwritten text (Russell & Tao 2004, MacCann et al 2002)



The logo for Exam4 software, featuring the text "EXAM4" in a bold, stylized, grey font on a black background.

Exam4 software

The logo for Extegrity, featuring a stylized white 'e' above the word "extegrity" in a lowercase, sans-serif font, all on a black background.

[www . extegrity . com](http://www.extegrity.com)

Easy to use, cut down word processor

- Student owned laptops – easy install (PC & Mac versions)
- Exam questions are NOT part of the download
- Course team decides re spell check & other features
- Course team decides re saving to network, USB, local disc
- Student just signs in & picks course from list, no file names to enter
- Regular encrypted snapshots throughout exam
- Option for student to retain encrypted version of script
- Student decides re font size, timer settings
- Admin needs code to decrypt scripts
- Can print or mark digitally, whole or part scripts

Our experiment

1st year divinity class, 70 students

(Optional) Mock exam, free choice to handwrite or type

Use own laptop or borrow a loan machine

Select one question from three, all pre-seen

All students sit in same room and do the mock exam

Transcribe all scripts into other format

Four experienced PG markers

Each marker marks every student script once

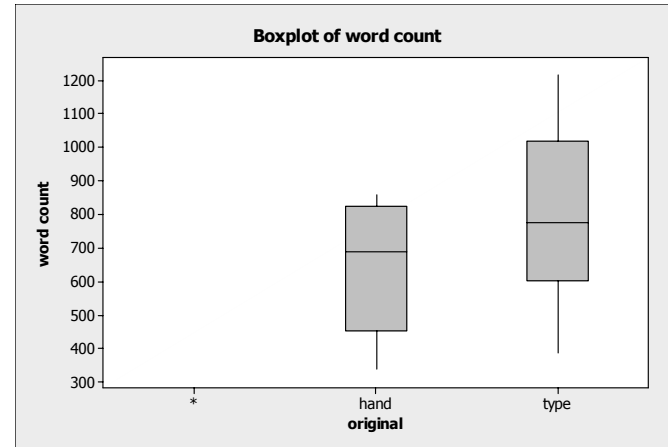
- either as typed or as handwritten



Is there a difference in the amount of text that can be written or typed in an examination?

Yes

All the longer scripts were typed
(But very little difference in means)



No correlation between reported typing speed and volume actually written

Females tended to write slightly more than males

No correlation with age

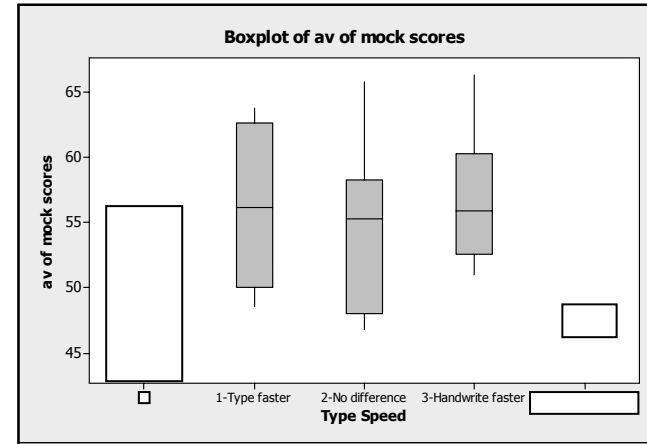
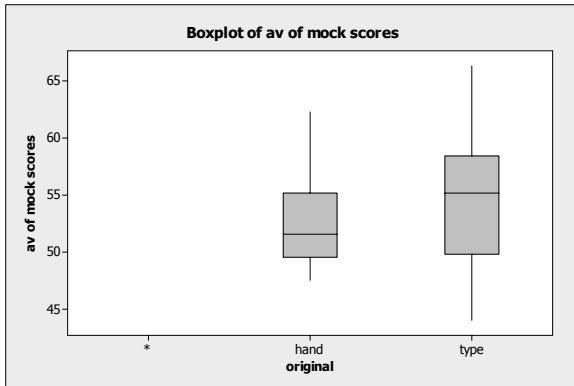


Are students who type slowly any more or any less disadvantaged than students who handwrite slowly ?

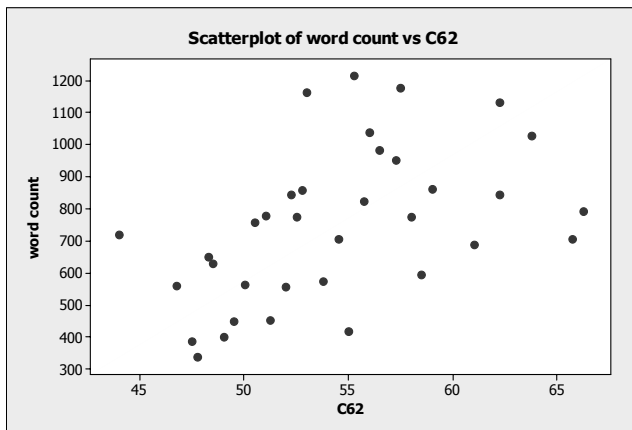
No



Scores for typed and handwritten scripts were broadly similar



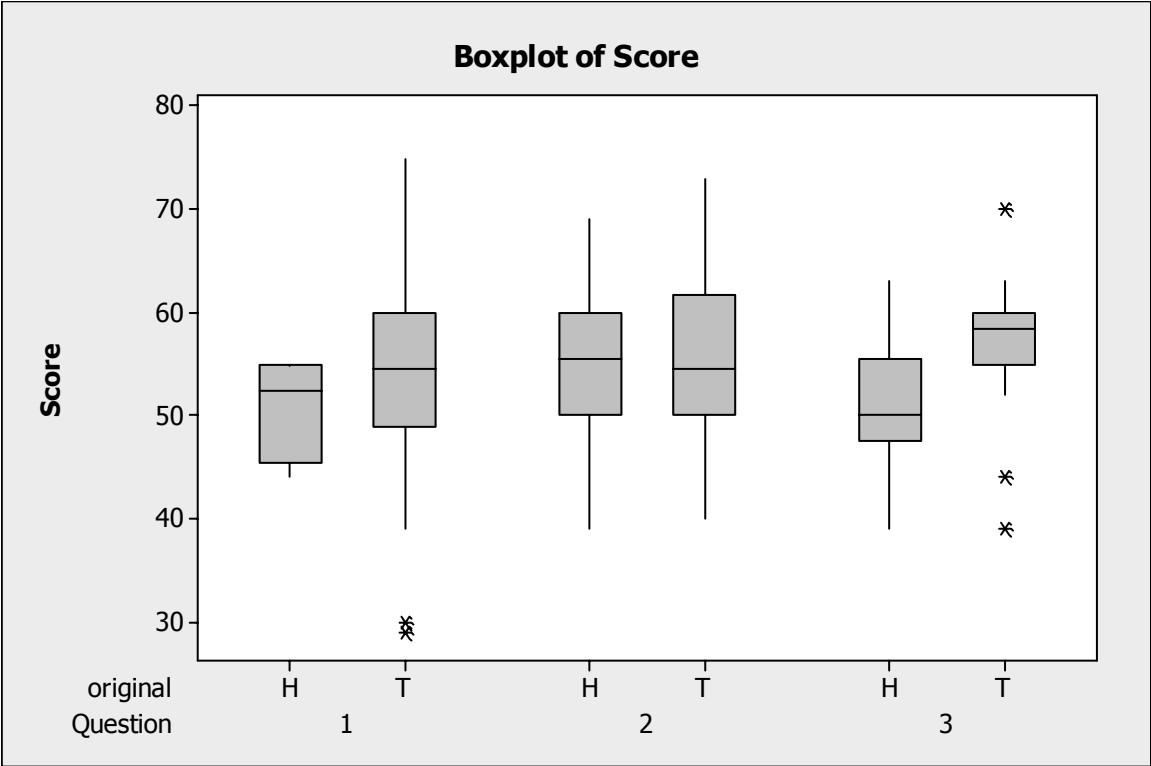
Variation in scores not obviously linked to writing preference



Longer scripts tended to score more than short scripts (correlation = 0.484)

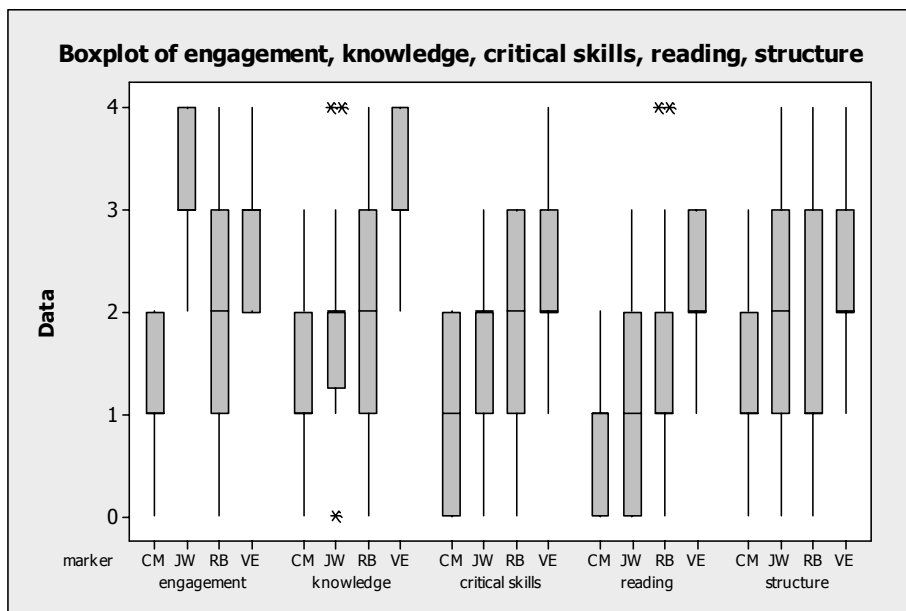
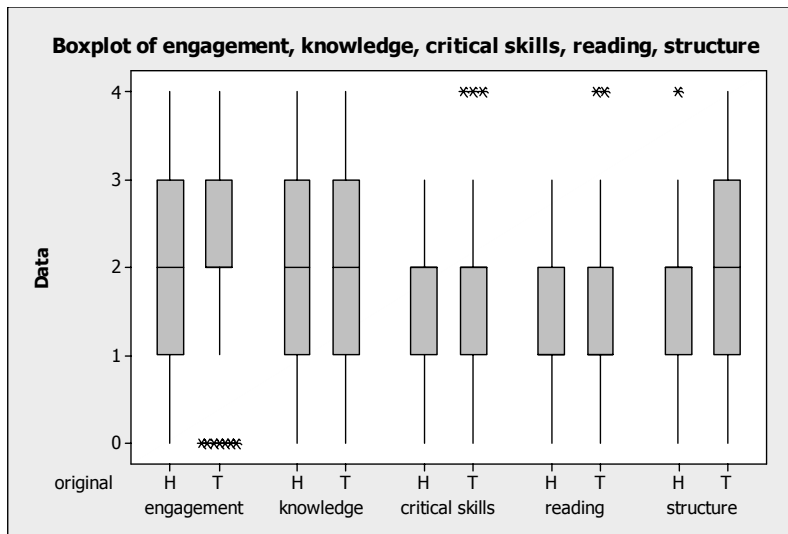


But is Q3 different ?



Is there a difference in the quality of the text handwritten or typed?

No



But there is a difference in how the markers assess The different factors

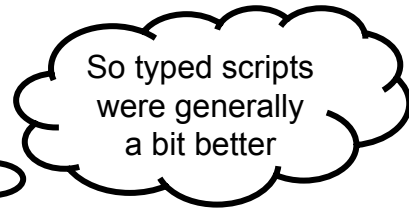


Is the mark influenced by the format of the script (typed or handwritten) rather than its content ?

Perhaps (just)

ORIGINAL SCRIPTS ONLY

Mean Score Awarded handwritten scripts = 52.79 St Dev = 7.13
Mean Score Awarded typed scripts = 54.90 St Dev = 9.0



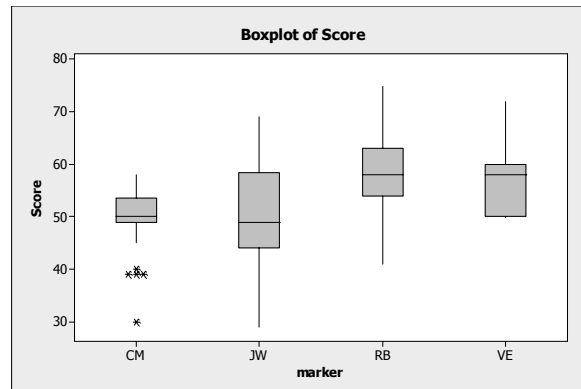
ORIGINALS PLUS TRANSCRIPTS (predict mean of 54.16 for both)

Mean Score Awarded handwritten scripts = 55.12 St Dev = 8.25
Mean Score Awarded typed scripts = 53.19 St Dev = 8.53

BUT

Variation between markers is **much** more important than variation due to format

marker	N	Mean	StDev	Min	Max
CM	37	49.54	6.03	30.00	58.0
JW	37	50.46	9.32	29.00	69.0
RB	37	58.68	7.33	41.00	75.0
VE	37	57.95	6.39	50.00	72.0



Some remaining ifs

Only looked at 1st year Divinity

No mock can ever truly repeat the exam context

Practice isn't just familiarity with the software:

"I had no concept of how much I had written, with a hand written exam you aim to write about three sides of A4"

NB : This also applies to markers, not just students !

.... But we do now have a suitable exam hall 😊



Essay Exams on Computer

Fair or Unfair ?

Given enough warning and enough practice
we believe this is
no less fair than handwritten essay exams

We can and should give students the choice.



Greg Sarab, Extegrity



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