

## Moving Towards Essay Examinations Written on Computers

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PTAS Forum May 2009

## The digital divide



Coursework

Exams



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## Are essay exams on computer a good idea? Why?

### Positive comments

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

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

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

### Negative comments

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.

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.

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



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## 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 Feltoich & Niday, 1996).
- A type-written essay will be marked more harshly than an identical handwritten text (Russell & Tao 2004, MacCann et al 2002)



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Exam4 software



[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



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## Our experiment

1<sup>st</sup> 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



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**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 mean no of words).  
 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).

**Some evidence of differences between questions**



No evidence of a difference in the quality of the text handwritten or typed

But markers differ in how they assess the different quality factors

'Quality' factors considered  
 engagement with subject  
 knowledge of topic  
 evidence of critical thinking  
 wider reading  
 essay structure



**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

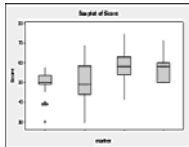
**ORIGINALS PLUS TRANSCRIPTS (predict mean of 54.16 for both)**

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
A	37	49.54	6.03	30.00	58.0
B	37	50.46	9.32	29.00	69.0
C	37	58.68	7.33	41.00	75.0
D	37	57.95	6.39	50.00	72.0



So typed scripts were generally a bit better

**Some remaining ifs**

Only looked at 1<sup>st</sup> 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 !



**Moving on**

We do now have a suitable exam hall 😊

Wireless submission

Used in 2 MBA summative examinations, giving students choice



**Conclusions :**

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.

