

Hand-written or word processed? The option of submitting word processed exam scripts

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1. Word processing in education

IT in non-computing education has come a long way in the last decade. When the Department of Communication and Information Studies at Queen Margaret College started teaching IT skills in the 1980s hands-on experience was the imperative, and it didn't seem to matter too much what it comprised. Anything from elementary BASIC programming through biorhythm programs to computer games could be deemed relevant. In those early days 'techno-phobia' was supposed to be a major issue, and indeed some people did have to be coaxed to sit in front of a VDU, and then reassured to overcome their apprehension of using a keyboard.

By the end of the decade, however, the PC had become a serious and appropriate working tool for students, used mainly for word processing course work assignments. Far from being apprehensive, nor having to be cajoled reassuringly towards the terminal, students elbowed each other aside to get keyboard time for their course work.

It was in this period that the Department of Communication and Information Studies at Queen Margaret College seriously began to consider offering the students the option of swapping their desk, paper and pens in the examination hall at the end of the academic year for a machine and floppy disk in the College's Information Technology Centre. Would any students take up such a proposal, how would the system operate and would it make any difference to their examination performance?

2. Word processing culture at Queen Margaret College

Word processed course work became a requirement for the Information Studies syllabus of the BA Communications Studies degree during the academic session 1985/86. Lex word processing software on a Vax multi-user minicomputer was available in a computer workshop of fifteen terminals. At times, access to smaller groups of terminals in other locations allowed thirty users to work simultaneously.

Technical difficulties such as variable response times and reliability of equipment at this period meant that the Department could not consider extending the use of this environment for the word processing of exams. Later a workshop of early 256K PC compatibles was acquired. However, until a workshop of 640K PC/XTs was established in 1987/88 the word processing option was held back.

3. Innovative teaching from induction to examination

Whereas during the teaching year academics seek, and pride themselves on, the introduction of innovative teaching practices, when the end of year exam diets come along it's all too easy to slip unconsciously into history and ritual. In June 1987 it dawned on the Department of Communication and Information Studies that, on the one hand students were being asked or encouraged to word process course work, when on the other they were required to submit hand written exam scripts. Indeed pieces of the historical blotting paper were still offered to exam candidates, the majority of whom were too young to ever have made an ink-blot!

Having recognised this paradox it was felt that there was an argument for offering the students the option of word processing their exam answers. Most of them did not consider this to be a strange alternative. There is a strong emphasis on computer mediated communication in the Department of Communication and Information Studies and this option appeared as a logical step to students who had been using electronic mail from the first week of their undergraduate career. So in June 1988 five students who had responded positively to the initial offer (made via e-mail) sat down at their terminals, isolated from their colleagues in the examination hall. For five successive years new Communication

Studies candidates have followed their lead. In 1991 the option was also extended to the BA Information Management students in the Department.

The option of word processing exams is now assumed by the students in the Department. At the time of writing there are mail messages racing around the College LAN asking what the arrangements will be for this in June. Students currently in third year were last year, over the network, urging their colleagues following them through the course to go for the word processing option. Numerous persuasive arguments for this were given ranging from the availability of the spell check to disguising awful hand-writing. It is interesting to note that this facility is very popular with international students, who last year made up one quarter of the word processing candidates in first year. The reasons for this have not been investigated formally. An explanation for this could be nervousness about use of English or that they are inherently adventurous – otherwise they wouldn't be studying in a foreign country in the first place.

4. Methods & procedures for word processing exams

4.1 Location

The separate location for students word processing their exam scripts has been a computer workshop in the College's Information Technology Centre. Since 1990/1 the PC/XTs have been superseded by 286s and 386s, running a variety of application programs, several of which are for word processing. In the exams up until the end of the academic year 1991/2, however, the students all used the same word processing software: Wordstar 2000. It is interesting to note that students who used different equipment during the rest of the year (for example some have their own Apple Macintoshes at home) were not deterred by this regulation. In the exams at the end of Semester 1 1992/3 students were given the option of using Word for Windows which had recently been installed on new 386 machines. Students are permitted to use facilities provided by the package, including spelling checkers and thesauri.

4.2 Equipment

Students in the examination hall are provided with answer booklets in which they write their exam answers. The computer workshop equivalent is a floppy disk labelled with the student's name. Prior to the examination empty files are created on these disks and labelled QUEST-1, QUEST-2, QUEST-3 etc. When answering a question, the student edits the QUEST-n corresponding to the question number.

The registry provides the same packs of exam papers, answer booklets and other exam paraphernalia as that being handed out in the examination hall. If, for any reason, a student at the word processing exam location decides to revert to handwriting their work the standard exam booklet can also be used.

4.3 Submission of the work

At the end of the official exam finish time a print out is taken of each exam answer. (Students are also permitted to take print outs during the exam period, but rarely do so mainly because this is perceived as an unnecessary interruption which would waste valuable typing time). Each printed page is initialed by the candidate beside the page number, and the completed exam answer is stapled inside a standard exam booklet. The information on the front of the exam booklet (ie name, class, subject) is completed as usual by the student.

All print outs and floppy disks must be left with the invigilators when the exam is finished. The floppy disk files are deleted and replaced with empty files again for the next exam. The answer booklets complete with stapled answers join the traditional booklets from the examination hall and are sent to the module co-ordinator for marking.

5. Perceptions, Problems & Issues

5.1 "Special" arrangements

A large degree of organisation and co-operation is required for this kind of activity. The setting up of the system requires the co-operation of registry staff who have to provide two sets of examination documentation (such as papers, regulations, signing in sheets and advice to invigilators) and information technology support staff who prepare the workshop and prevent other users working in the room for the duration of the exam. Preparation ranges from everyday tasks such as checking that the hardware and software are in order to rearranging workstations so that individuals' screens cannot be overlooked by other candidates.

Invigilation procedures need to be altered when a number of students opt to move out of the examination hall into the IT centre. Departmental staffing levels have to be such that the two sets of candidates are ensured two sets of invigilators. Although students are reminded to save their work regularly as they write their answers, invigilators have in the back of their mind the apprehension that a candidate's work may be lost due to hardware failure. In five years this has happened only once to a single candidate who was calmed and given extra time in compensation. Students also give up the comfort of bringing sweets and drinks into their exam when they take the word processing option.

It can be seen that without the commitment and co-operation of academic and support staff the system would be impossible to operate. In the case of the Department of Communication and Information Studies the continuity of the option has been dependent on the cause being "championed" by one enthusiastic member of staff who insists that it is offered from semester to semester and takes responsibility for its administration.

5.2 Do students score better if they word process their exam answers?

There is a booming literature of writing by computer which recognises that it is a distinctly different process from composing by handwriting. There is indeed even an established debate which differentiates the quality of work produced on computer using a command line interface and graphical user interfaces. Mendelsohn (1991), for example, discusses a "PacMan Factor", arguing that while word processing "deep within you, unknown even to yourself, an enthralled teenager is playing PacMan." He attests that "The higher the PMF of a program, the less probable it is that you will accomplish something by using it and the more probable that you will enjoy yourself while not accomplishing it." Graphical user interfaces have a high PacMan factor.

An analysis of the marks awarded to student for their examination work at Queen Margaret College was made to see whether there was a distinct difference in the markers' assessments of the work presented in the two formats.

Before the analysis was made several factors had been discussed informally by members of staff who mark work in both formats. When hand written and word processed exam scripts are placed side by side the word processed single spaced answers can look short, even when the actual word count is comparable to the hand written answer sprawling across a full exam booklet. Staff have also commented that it is a relief to come across a set of neatly typed pages after struggling through barely legible scripts. The availability of a spell checker online provides the poor speller with a quick method of tidying up the text as compared with time consuming leafing through a dictionary in the examination hall. A word processed set of answers gives the students a degree of anonymity. The comparison of marks was made in an attempt to see whether an assumption that the presentation of the work did make a difference to the marker's generosity.

Before the figures were examined it was suspected that word processed work might score better. This suspicion rode on an anecdotal story relating to a piece of course work. A student hand wrote a full draft essay and then typed it up direct for submission. Somehow she lost the final laser printed hard copy version of her work along with the electronic file on the submission date, so handed in the hand written version, with a note explaining that she would get another print-out of the essay once she had recovered her disk. She soon found her work and handed the word processed version in, forgetting to retrieve the hand written copy. Both versions of the essay were returned to her marked. The word processed essay was awarded five per cent more than the hand written copy.

5.2.1 comparison of exam results

The table below summarises the average examination marks for first and third year Communication Studies students in the June examination diets from 1990-1992, giving results for hand-writers and word processing students. (Second year students were assessed solely on course work over this period).

Year		Hand	WP	Diff	Hand	WP	Diff	Hand	WP	Diff
		1990	1990	1990	1991	1991	1991	1992	1992	1992
	No of students	41	3		48	8		61	13	
1	Average mark	56.2	58.8	+2.6	51.2	49.0	-2.2	51.6	50.9	-0.7
	Standard deviation	3.8	5.1		5.8	8.8		7.6	7.8	
	No of students	36	3		36	8		40	3	
3	Average mark	59	59.2	+0.2	53	50.8	-2.2	53.7	47.7	-6.0
	Standard deviation	3.9	3.9		6.6	6.0	8.2	6.6		

It would appear from the figures presented that taking the option of word processing examination answers does not alter the examination performance of the average student. This does not, however, take into consideration the motivations of students who choose to word process their work. It might be argued that these results do not compare like with like and that a more scientific approach would be to compare the performance of one group of students under both conditions. At a departmental level, however, it came as a relief to the markers that no great difference was discovered following the analysis. It will be interesting to see the uptake of the word processing option amongst the next set of students when these results are made available to them.

Other possibilities for analysis of the students' comparative performance exist. In the future an examination will be made of the comparative nature of the two types of writing in terms of the length of the scripts and the quality of the language used. It has already been established by observation that the word processed work is, on the whole, much better structured with clear paragraph divisions and appropriate headings. Invigilators have remarked that students in the word processing examination room spend more time going back over their work and editing it, which might point to a higher quality of writing as a result.

6. The future of word processing exams

In the summer 1992 examination diet the number of students wishing to word process (thirty-two when the BA Information Management students are taken into consideration) significantly exceeded the departmental capacity to provide places in the Information Technology Centre (sixteen). There were several reasons why this was not possible. This was obviously disappointing and the Department now intends to refer the experiences in this area to, and seek advice from, the College's academic committee for educational practices. Discussion is planned with the administrators in the College registry to see whether the word processing of exams should now be taken on as a College-wide option rather than a special facility laid on just for Communication Studies and Information Management student examinations. As the College moves to modularity and with the promise of the Department's courses being offered to students on other courses this will become a greater issue.

If one of the arguments for the continuance of examinations as a valid mode of student assessment is because they test the application of a basic knowledge to a particular problem in a limited amount of time – a skill that graduates will need in the world of employment – then which is the more realistic arena for this test? The annual image of ranked, single desks furnished with pen and examination booklet in a vast, echoing examination hall harks back to the Dickensian evocation of clerical work. The word processing option mimics a representative work place future of working under pressure: at a computer, situated in the familiar surroundings of the everyday workplace.

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7. Reference

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