

Do we engage the student in e-assessment by personalising lecturers' feedback interventions?

Wendy Fisher

Centre of Open Learning in Mathematics, Science, Computing and Technology
(COLMSCT), The Open University

w.a.fisher@open.ac.uk

This paper describes the results of an eighteen month study evaluating what students' perceptions were of digital ink feedback on electronic assignments. It was a comparative study with 10 distance learning lecturers, (hereafter referred to as tutors) marking up to a maximum of 600 students' electronic assignments over, two nine month presentations of the UK Open University (OU) course, T175 Networked Living. Assignments were submitted by students over the internet to a centralised web depository called the electronic tutor marked system (eTMA) at the OU, in Microsoft Word. Tutors downloaded these assignments onto their own computers and in this study; half of the assignments were marked and edited using a Personal Computer (PC) with conventional keyboard input, using word processing software. The other half of the assignments were marked using a Tablet PC in which it is possible to create a layer over, the Microsoft Word submission and then write directly onto the screen of the Tablet PC using a pen, as if writing on paper. The hand-written feedback was saved or converted to typed text and then saved. In the first presentation of the course over 67% of students made positive comments about how their tutor had used the Tablet PC in providing feedback. This study also showed that the digital ink technology could help extend pedagogy and is of interest to Higher Education establishments considering on-line submission of assessment.

Background

Current research into the use of Tablet PC and student engagement includes (Anderson, 2008), (Reba, 2008), (Freak & Underwood, 2008) and (Adams & Fisher, 2008), the first two consider the classroom setting, whilst the latter looks specifically at using Tablet PC technology in supporting students in a distance learning University. This is important for the Open University where in 2008 over fifty per cent of all assessment at the OU is now submitted on-line. There are over seven thousand part-time tutors marking at least 330,000 electronic assignments, every year. The general teaching practice for tutors when marking a students' assignment, usually submitted as a Microsoft Word document, is to provide typed feedback using a word processing package. Using a Personal Computer, tutors need typing and ICT technical competencies including, word processing skills to be able to provide feedback at a relevant point in an assignment relevant to the point that they want to make to the student. This is pedagogically sound and is a core part of a students distance learning experience. For some areas of the curriculum such as mathematical notation, scientific nomenclature and diagramming, there have been concerns over how these subjects can be affectively assessed on-line using a PC and keyboard, as these subjects call for symbolical and graphical representation of content. After a series of evaluations and internal scoping of the PC Note Taker Pen (Kempton, 2005) which were found to have limited functionality, the Tablet PC was fully evaluated for marking assignments submitted on-line.

Tablet PC technology

There are two different styles of Tablet PC's, a slate and a clam with the slate generally being lighter. The clam style has a fixed keyboard and a swivel hinge, so that the screen can be twisted around and folded down flat on top of the keyboard. Marking electronic assignments

has associated repetitive administrative tasks and these seemed to be better supported with a clam that had a fixed keyboard. Three makes of Tablet PC were evaluated for this study, the Hewlett Packard (HP) Compaq tc 4200, the Toshiba Portégé M200 and a custom built Ergo. The HP Tablet PC was purchased because of its small size swivel hinge and keyboard. The Tablet PC used in this project came with MS Windows XP Tablet PC edition 2005 Operating System, with Windows Journal as standard. Windows Journal is a significant piece of software because hand-written feedback can be written directly onto the Tablet PC screen irrespective of file format including Word, Power-Point or Web Pages. In this study tutors only marked Word documents. The processing of the electronic assignments as Word Documents after submission to the electronic web depository at the OU includes tutors downloading assignments onto a pre-determined file structure on their own computers. Following this step, there are a series of steps that the tutor has to follow, in which they change the file format, so that they can use the Tablet PC to replicate the pen and paper experience. The process of marking an electronic assignment submitted in any of the following file formats (.doc, .ppt or .html) involves the printing and exporting of files. Initially a Word document is 'printed' to the Windows Journal (.jnt) and a virtual layer created over the original document. This allows the tutor to mark an electronic assignment without disturbing the lay-out of the original work underneath. The marked assignment (.jnt) is exported either in (.mhtml) format or 'printed' to a (.pdf) using cutepdf writer. Students read their assignments using either Internet Explorer Version 5 or above for (.mhtml) or Adobe Acrobat Reader for a (.pdf). The (.pdf) route is the preferred route, the final file size of a (.pdf) is smaller than a (.mhtml) file. This is an important consideration when the maximum file size that can be submitted to the OU eTMA system is 2MB. In this initial study there was an issue over the use of the electronic highlighter as during the conversion from the (.jnt) to a (.pdf) the highlighted text or diagram was hidden underneath the highlighting.

Data Collection and Analysis

Different levels of perceptions about the use of the two technologies were collected using questionnaires. These were sent to both students and tutors and 22 responses from students and fifteen responses from tutors were completed and returned. In-depth telephone interviews with ten tutors apart from two face-to-face sessions, were extended by six out of the ten tutors taking part in a focus group at the end of the project. The different data sources including, qualitative (transcripts of interviews, focus group, and a virtual ethnographic study) and quantitative (questionnaires) were analysed using a 'grounded theory' approach (Strauss and Corbin's, 1990).

Students and tutors perceptions of electronic assessment

Tutors and students were asked, how important was it to have feedback positioned close to the point or points being raised, in electronic assessment. The results showed that, irrespective of technology, tutors do think that it is 'very' important to achieve this. Just over 80% of students thought it was 'very' or 'fairly important' to place feedback close to the point being raised when tutors use a desktop PC with keyboard input. With a Tablet PC that figure went down by 10% to 72%.

Tutors and students were also asked how important it was to maintain the lay-out of a student's assignment; the results showed that tutors using either technology did not see this as crucial. The student results, when 'very' and 'fairly' were combined, showed that 36% of students did not want to have the lay-out of their work changed as a result of it being marked.

In the student questionnaire overall, students found Tablet technology in assessments to be a good experience, out of a total of 22 possible responses, 18 were made, of which 12 were positive and the rest either negative or mixed. Overall, just over 67% found this a positive experience and some quotes from the students show that they liked the personal feel of the written feedback.

- My tutor using the Tablet PC was able to put comments in that felt more personal being that they were handwritten right in with the questions
- Handwritten text gave it a more personal feel
- My tutors comments made me feel that they had done a good job

With the following two comments on messiness.

- Personally, I did not like the way feedback was made, it looked messy and untidy
- It looked messy and it made me feel as if less care and thought had been taken

The tutor's record an emotional empathy with the Tablet PC, a relationship recorded by (Twining, 2000) in schools. Tutors less in favour of using a Tablet PC were touch typists with one having a speed of one hundred words a minute.

Digital Ink and Pedagogy

As a result of this study there was a significant emergence of novel pedagogical ideas from the tutors, based on the extensive functionality of the pen input of a Tablet PC. The user interface allows for a paperless 'pen and paper' experience. Tutors found themselves engaged with providing hand-written feedback that was colourful and easily re-edited. Hand-written text could be either saved as hand-written or converted to typed text. There were three main elements identified in providing feedback and these included the electronic eraser, the electronic highlighter and the electronic pen. Since the pen has the functionality to allow the tutor to interact with the screen and the electronic toolbar, the tutors found that the speed with which they could change the colour of the pen and the colour of the electronic highlighter led then to experiment with linking specific colours to corrections including spelling, english, and more specific learning outcomes. Tutors also record that they were happy to re-edit their initial feedback as a direct result of the ease with which it could be done using the electronic eraser.

Discussion and Conclusions

Several themes have emerged from this study. They include the students' perceptions of electronic hand-written feedback and what might be influencing their engagement with it. How tutors use technology to provide feedback on assignments. How using new technology can lead to tutors reflecting on current practice. Lastly, how using new technology results in the evolution of pedagogical developments rather than developing new pedagogy for e-learning. The perceptive analysis gathered from questionnaires sent to students, shows that students comment in either a positive or negative way on electronic hand-written feedback, with little in between. Positive comments by students relate to how the hand-written feedback felt more personal. Whilst the negative comments from students show that they perceive electronic hand-writing to be messy and untidy. The mixed response does indicate that hand-written feedback has resulted in an emotional response from some of the students. Further work is needed to fully understand how a student is engaging or not engaging with the feedback as a result of how it looks, text or hand-written. From the tutors' perspective, some tutors in this study record a symbiotic relationship with the Tablet PC, and naturalness in using it to mark electronic assignments. Other tutors with speed typing skills were frustrated by having to use a Tablet PC, as it was perceived to slow up the process of them being able to record their initial feedback response to a student, on the assignment. Some tutors as a result of taking part in this study have cut back on the amount of feedback that they write on their students' assignments. As a result of this approach it could mean that there is less feedback but it could be of a higher quality. The pedagogical developments as a result of this study in which the use of colour could be linked to learning outcomes is equally useful for tutors using either a Desktop PC and keyboard input as a Tablet PC. As a result of this study, the long term gains for students could be that their feedback may be presented in a more colourful way

and consequently more fun to read. Finally, from the tutors' perspective, student engagement with electronic feedback could be dependent on two things, the technology they use to generate their feedback, and their level of typing and ICT skills and technical competencies'. Finally further data sets have been analysed and future low cost solutions' are being evaluated as a part of mainstreaming the outcomes of this study.

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