

Paperless assignments: Moving forward or marking time?

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The advent of technology in the 1990s was seen as having the potential to revolutionise electronic management of student assignments. While there were advantages and disadvantages, the potential was seen as a necessary part of the future of this aspect of academia. A number of studies (including Dalgarno et al in 2006) identified issues that supported positive aspects of electronic assignment management but consistently identified drawbacks, suggesting that the maximum achievable potential for these processes may have been reached. To confirm the perception that the technology and process are indeed 'marking time' a further study was undertaken at the University of South Australia (UniSA). This paper deals with the study of online receipt, assessment and feedback of assessment utilizing UniSA technology referred to as AssignIT. The study identified that students prefer a paperless approach to marking however there are concerns with the nature, timing and quality of feedback. Staff have not embraced all of the potential elements of electronic management of assignments, identified Occupational Health Safety and Welfare issues, and tended to drift back to traditional manual marking processes through a lack of understanding or confidence in their ability to properly use the technology.

Keywords: paperless marking, online submission, electronic assessment, feedback

Introduction

In the mid to late 1990s there were high expectations of technology in managing the process of collection, marking and return of student assignments. The literature, and this study, seems to suggest that instead of moving forward, the process seems to be 'marking time'.

During May 2008, the authors undertook two separate online surveys to determine the perceived effectiveness of the online submission and marking systems in UniSA's School of Commerce. The first was to gain an understanding of students' views on paperless assignments and online submission. The second was a marker's perspective of paperless marking and the use of AssignIT. This is an extension of the study undertaken by Dalgarno et al (2007) which investigated the perspectives and opinions of students to an online marking trial conducted in Information Technology subjects at Charles Sturt University.

Electronic management of assessment: Where from and where now?

There is an interesting phenomenon occurring with the theory and practice of electronic management of assessment (EMA). The excitement of new technologies in the late 1990s spawned a flurry of activity to use the technology to assist in the lodgement, marking and return of student assessment. The objectives of utilizing the new technology were indeed noble, however, it seems that the raw use of technologies did not anticipate other elements involved in the academic environment of EMA.

The impetus for technology to deal with EMA evolved in the early to mid-1990s. It was widely acknowledged that full 'manual' assessment of student work without the assistance of automation was resource intensive and often impacted on turnaround times, and the quality and extent of feedback provided to students (Oliver & Mitchell, 1996). Few academics would disagree that the explosion of student numbers and the changing face of academia have only exacerbated the labour intensive task of

assignment management. It was anticipated that the introduction of this technology would improve the service to students and academics looking to balance ever increasing workloads and student demands.

There is ample evidence in the literature in the mid to late 1990s to support the advantages of automating various elements of the assessment process. For example, Oliver & Mitchell, 1996 as cited in Jones (1997), acknowledged that assessment was 'a perfect candidate for the application of information technology ... driving interest in online assignment management systems by many educators and institutions throughout the world.' Dalgarno et al (2007, p.169) also confirmed a 'widespread interest in the use of online marking' in the mid 1990s and cites Oliver & Mitchell, 1996, Price & Petre 1997, and Hansen, Salter, Simpson and Davies 1999 to support that contention. Mason and Woit (1999), also identified the emergence of trends to automate course operations and processes, and confirmed student support for such systems. The general thrust of the literature on these 'new' processes identified a number of advantages of electronic assignment handling. These are encapsulated by Price and Petre (1997, p.98) and included:

- more efficient administration
- improved turnaround time
- more environmentally friendly (less paper)
- improved accountability and better assignment tracking and security.

Interestingly Price and Petre (1997) also predicted that greater familiarity with electronic marking tools would allow the full advantages of such systems to be realised. This was a reasonable and sensible prediction at the time. Since the early literature on EMA and experience in use of the technology in its different forms, there are many issues that remain unresolved, and it appears that the advantages of EMA referred to by Price and Petre (and in evidence from the research undertaken in this paper) have not been realised. Indeed, it is the view of the authors that, since the mid 1990s, the academic landscape has changed as the expectations of students have become more intense with regard to both quality and timely feedback and there is even greater pressure to provide cost effective solutions to the efficient collection, effective marking and appropriate feedback of assessment. 'Students endorse feedback on assessment as being important in identifying their strengths and weaknesses, enhancing motivation and improving future grades' (Hyland cited in Lizzio & Wilson, 2008, p. 263).

In the opinion of the authors, academia has fallen under the spell of technology, assuming that it will itself evolve as the panacea to the assessment management problem. We believe the following comment by Behrens & Jones (2003, p. 1), although related to the implementation of technology in general terms, can clearly and succinctly reflect the history of EMA technology:

Implementing technology, even implementing technology well, provides no guarantee that the system will be used or be effective (Kling and Allen, 1996). There is a long history of failed technology based innovations in education (Reeves, 1999). Many such projects fail due to the innovators underestimating the consequences of new technologies (Sproull and Kiesler, 1991) and failing to accommodate environmental and contextual factors affecting implementation (Jonassen, 1998)

There is evidence in the literature that EMA has been embraced by academia; however it does not seem to have fully realised its potential. A study of 34 Universities and higher degree institutions by Byrnes and Ellis, as cited in Dalgarno et al (2006) identified 71% of respondents using online assessment in some form. The study (page 77) concluded that most students were positive about the use of paperless marking however some disadvantages still remain, including printing costs, assignment uploading problems, slow Internet connections, and assignment security. Also in evidence is a longitudinal study at Central Queensland University undertaken by Jones, Cranston, Behrens and Jamieson (2005). Significantly, the study reveals that the relative success of online assignment submission and marking continues to receive mixed responses from academics.

Ten years on from the introduction of these technologies there seems to be barriers preventing the total integration of these technologies into the assessment process. The study seeks to build on prior knowledge, and clarify the current state of play and provide some further impetus for future research into the EMA phenomenon.

The UniSA context

At the University of South Australia (UniSA) students can enrol in subjects in either Internal (on campus) mode or External (off campus) mode. A number of courses are also delivered in international offshore locations; Hong Kong, China, Singapore, and Malaysia.

UniSA introduced AssignIT in 2006 across the university as an electronic system for the submission and return of assignments and mandated that all text based assignments were to be submitted using this online system. Variations to this policy needed to be approved by a Head of School. Since the inception of the system authority has been delegated to course coordinators allowing them to choose which assignments will be submitted and/or returned using AssignIT. As a result there are currently several submission options available to students when submitting written assignments.

The options available to students will vary depending on the course and the nature of the assignment. Assignments submitted via AssignIT can be printed and then delivered via internal mail to the academic for marking. Once marked, the assignments are either returned to students in tutorials or mailed. Assignments can also be downloaded and marked online. Marked assignments can then be uploaded back into AssignIT for collection by the student.

Method

Evaluation techniques

The student survey was developed from the questions in the Dalgarno et al paper (with the author's permission) and was delivered using the University's TellUs2 online survey system and then emailed to students undertaking a first year accounting subject (Accounting Decisions and Accountability) in all modes, as well as internal students studying a third year subject (Auditing Theory and Practice).

Students were advised that responses to the survey would remain confidential and no individuals would be identified, and that data collected would be used to improve the quality of teaching and learning at UniSA and could also be used in external publications and presentations.

In all, 137 students out of 1507 responded to the survey, and this lead to 128 useable responses. Nevertheless we have not attempted to analyse the statistical significance of the response rate *vis-à-vis* the absolute number of responses and this may therefore represent a limitation to generalizing the results. The survey consisted of defining the mode of enrolment, six eight-item Likert scale questions, one yes/no question and five free form questions to allow for additional clarification and/or comment. The Likert scale ranged from Very Strongly Agree (VSA) to Very Strongly Disagree (VSD) and was used in line with the Dalgarno et al paper. The student questions focused on the students' preference for online versus paper-based submissions, and their opinions regarding the method by which they receive feedback. These questions are shown below in Tables 1 and 2.

Table 1: Student survey: Closed questions

- | |
|---|
| <ol style="list-style-type: none">1. Please select your mode of enrolment2. I prefer electronic assignment submission through the AssignIT system to conventional submission of assignments (in paper based format)3. I prefer typewritten or word processed feedback on the assignment to hand-written feedback4. I prefer typewritten or word processed feedback on an assignment feedback form ONLY5. I prefer typewritten or word processed feedback on the assignment as well as the assignment feedback form6. The existing AssignIT system is an effective tool for electronic submission of assignments7. The existing AssignIT system is an effective tool for the electronic retrieval of assignment feedback8. Do you think that electronic paperless assignment feedback should be used more widely across University courses? |
|---|

The staff survey was developed using the University's TellUs2 online survey system and then emailed to all staff in the School of Commerce at UniSA. Staff were advised that individual responses would remain confidential and no individuals would be identified, and that data collected would be used to improve the quality of teaching and learning at UniSA and could also be used in external publications and presentations.

Table 2: Student survey: Open questions

9. If you answered yes to this question (or you are uncertain of your answer), please provide up to three reasons for the wider use of electronic paperless assignment feedback.
10. If you answered no to the above question (or you are uncertain of your answer), please provide up to three reasons why conventional printed assignment feedback should be retained.
11. Please give us any additional comments or suggestions you have about the ease of use of the AssignIT system for assignment submission
12. Please give us any additional comments or suggestions you have about the ease of use of the AssignIT system for retrieval of assignment feedback
13. Please give us any additional comments or suggestions you have about the way paperless marking was used in your courses this study period

After two requests to complete the survey, 38 staff out of 92 responded. The staff survey consisted of four multiple choice questions, two yes/no question and twelve free form questions to allow for additional clarification and/or comment. The staff questions focused on staff use of AssignIT for assignment submission, the prevalence of online marking of assignments, issues encountered in online marking, and perceived benefits to students of using AssignIT for assignment submission and retrieval. These questions are shown below in Table 3.

Table 3: Staff survey: All questions

1. I use AssignIT to manage all or part of the assignment submission and marking process.
2. How do you use AssignIT to manage the assignment submission and marking process? (choose one and go to Q5)
3. Why did you stop using AssignIT?
4. If other, please give details and then go to Q8.
5. Why do you choose NOT to use AssignIT at all?
6. If other, please give details.
7. Why do you choose to use AssignIT for the purpose identified in Q2?
8. If you are a course coordinator, do you prefer your markers to mark online?
9. How do you manage markers who cannot/will not mark online?
10. When marking how do you prefer to document your comments/feedback? (choose all that apply)
11. Why do you use your preferred method(s) of marking?
12. If you have tried to mark online, what, if any, Occupational Health & Safety (OHS) issues have you encountered?
13. If you have tried to mark online, what, if any, technology issues have you encountered?
14. If you could have any computer based resource at all (money no object) that would convince you to mark online (or continue to mark online), what would it be? (e.g. voice recognition software, tablet PC, etc)
15. What is your perception of benefits to students from the use of AssignIT for submission of assignments?
16. What is your perception of benefits to students from the use of AssignIT for return of marked assignments/feedback?
17. What feedback, if applicable, have you received from students regarding online marking and feedback?
18. Do you have any other comments to make about the use of AssignIT or online marking?

Results and discussion

Student survey

Overwhelmingly students from all cohorts stated a preference for submission using the online system as can be seen in Figure 1.

Predominantly students are happy with the submission system. Comments included:

I have not experienced any problems with the ease of using AssignIT, I find it very straightforward and like that we are able to re-submit work up until the submission date/time if submitted early.

it's good since you could be anywhere in the world and send your assignment in time.

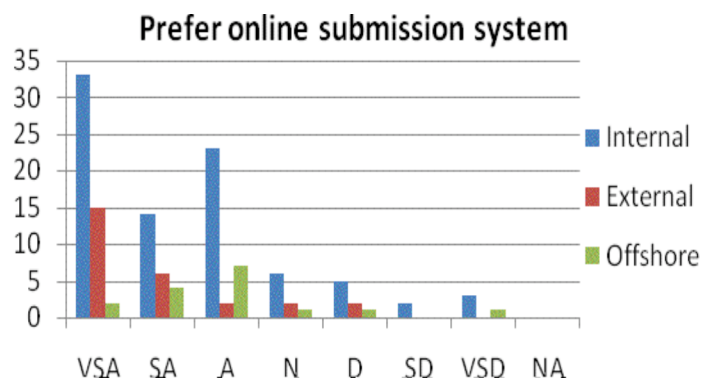


Figure 1: Student preference for use of online AssignIT submission system

I think it's a really good system because it saves paper and makes it so much easier for the student to submit an assignment from any computer

External students see fantastic advantages of the online submission system with comments such as:

Great system. As an external student it means I don't have to go into school or post the assignment in. Also I like getting a confirmation of receipt so that I know it has been received.

Some students were somewhat critical of the system; however this was primarily due to problems experienced over the summer with the change to MS Office 2007. AssignIT took until March 2008 to be able to accept files from in the new 2007 formats. Other students had problems with large file sizes and different file types. This is not a problem with the system itself but with the setup as done by the academic staff member who needs to estimate the number of files; file sizes and all possible file formats to be submitted by students.

I guess as you start writing larger assignments and reports, the system may need to allow larger data files (size) through the system.

should be able to submit excel files, this would be more practical for some courses rather than word tables

Student preferences for the receipt of feedback vary. Given that a majority of the internal students are studying first year courses it is possible their opinions are skewed due to the fact that at the time of answering the survey they would have had limited assignment feedback (most probably no more than four assignments in total). The variations can be seen in Figures 2, 3 and 4.

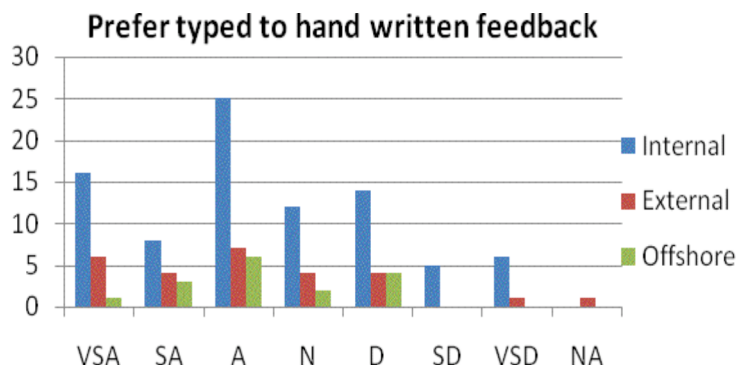


Figure 2: Student preference for typed feedback rather than hand-written feedback

Figure 2 shows that there is a genuine personal preference to how assignment feedback is given. Those preferring typed feedback commented on the illegibility of some academics' handwriting making it

difficult to understand what the feedback actually meant whilst other students preferred the handwritten feedback as they saw it as being more personalised and relevant only to them.

I would prefer a written paper feedback instead of electronic feedback only. I do like the idea of getting your mark in electronic form with a feedback sheet however I like to see the markers comments in relation to the assignment as well

Figures 3 and 4 show that most students preferred feedback on the assignment and not just on the feedback form. Most comments related to the fact that students could identify specifically where the errors were made, or what the comment related to, rather than trying to work out which were the important marking issues from generic comments in a feedback form.

please have comments throughout the assignment where relevant. This provides better feedback and quickly identifies areas where the student may need further development.

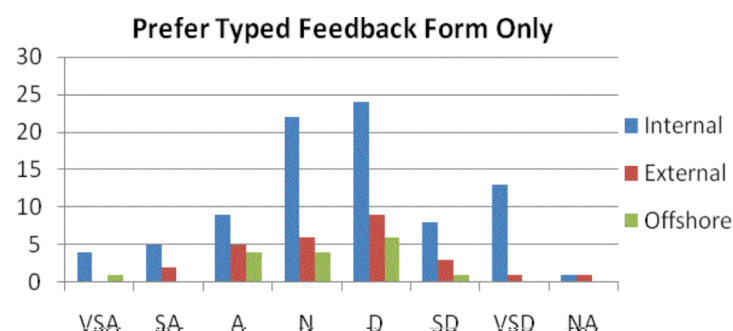


Figure 3: Student preference for typed feedback on a feedback form only

Comments from students showed clearly that they preferred feedback to be on their assignment, with a number of students (such as the following comment) stating they preferred the feedback to be on a hard copy of the assignment.

I prefer to hand up a paper copy, because it is more obvious if I have made a mistake. Some tutors do not write much on the feedback sheets, or on the paper itself.

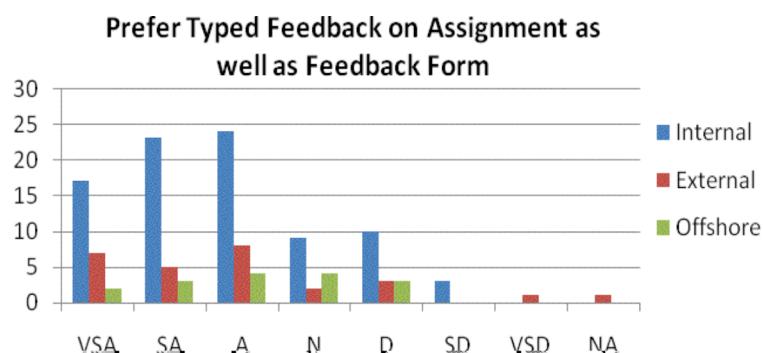


Figure 4: Student preference for typed feedback on the assignment as well as on the feedback form

Surprisingly, some students are not aware that they are able to download feedback for their information.

the only assignment feedback I have received for my assignments so far is the grade only. this [survey] has left me unsure as to whether I should have received more [feedback] or [is] this all.

I have not attempted to retrieve a marked assignment back as was not aware this was a possibility

Overall there is a positive response to the use of the AssignIT system from the student perspective. It is seen as an effective tool for assignment submission and most students see it as being an effective way to retrieve feedback as can be seen in Figures 5 and 6.

Reduced turnaround time (removes mailing time and also a bonus for students not having to go to the post office). It reduces the chance of a student being unable to read teachers comments (or a teacher being unable to read a student's submission)

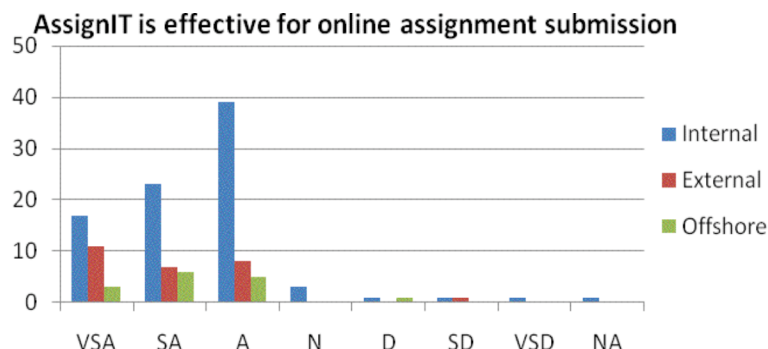


Figure 5: Student perceptions of AssignIT for submission of assignments

saves coming to uni to get assignment to read feedback can save file for future reference, paper copies get lost better for group assignments, since the receiver can send it through via e-mail

Some students still do not trust technology have the concerns such as:

it is troublesome having to send online. online submission of assignment is worrisome as there could be technical problems eg: failed submission, poor internet connection, mess-up of files. assignments feedback via online seems less personal

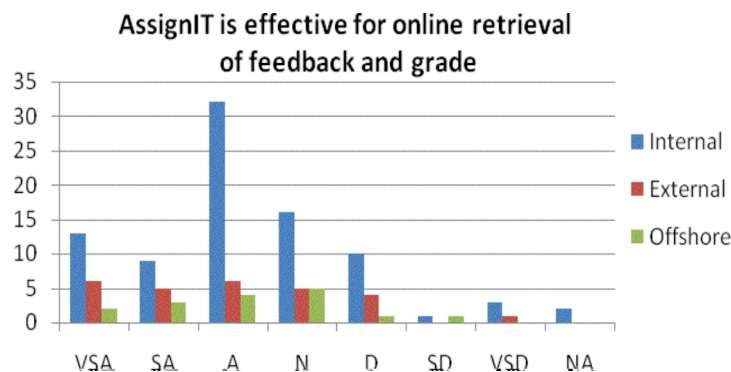


Figure 6: Student perceptions of AssignIT for retrieval of assignment feedback

Assignment feedback appears to be quicker electronically. It is also secure as it is retrieved only by the person that submitted it. Also, for the obvious one, paperless saves paper. I strongly prefer the paperless/electronic method.

On the other hand, students who were not happy with the electronic return of their assignments made these comments.

Better to receive hard copy of marked assignment - Can be difficult for markers to leave feedback electronically if there's not enough room, so they may not put as much feedback as is possible

I tend to read and understand the feedback given to me better when it is in front of me rather than on the computer. This is because I tend to skip read things that are on the computer and not fully take the feedback in.

Given all of the student comments above AssignIT is still seen predominantly as a useful tool and, overwhelmingly, students from all cohorts believe the system should be more widely used across the University as can be seen in Figure 7.

Students cite environmental and time management issues as being the most important when it comes to the use of this system. Other issues such as being able to submit from home (or anywhere in the world) as well as ensuring the assignment is not lost in the mail were key to many students.

Time efficient. If saved correctly, less chances of losing it. saving paper.

You don't have to go into uni to hand in your assignments, so its more convenient. Saves wasting paper. Ensures assignments are received by tutors and don't get lost.

It reduces chance of it being misplaced between handing it in and the marker getting it. Assignments can be submitted from home.

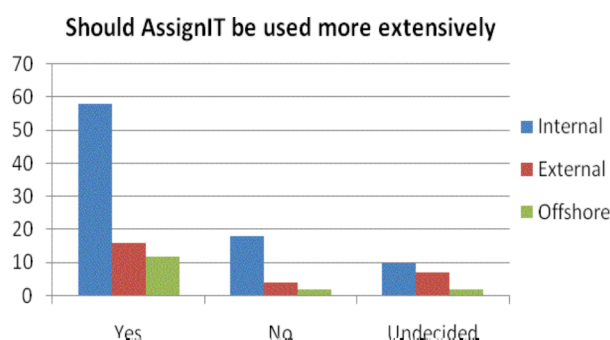


Figure 7: Student perceptions on the use of AssignIT across the University

Staff SURVEY

Why used

Results from the staff survey showed that of the 38 usable responses 32 staff (84%) stated that they used AssignIT to manage all or part of the assignment submission process (Figure 8).

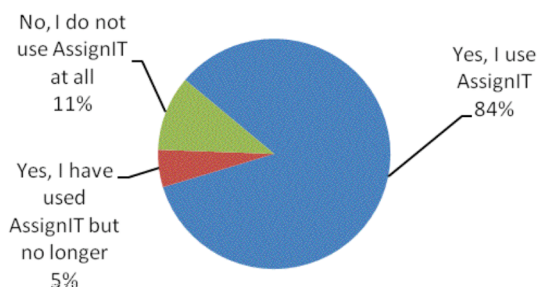


Figure 8: Staff use of AssignIT for assignment submission

The majority of respondents identify that they only use the system for the submission of assignments (refer Figure 9). This figure also shows that the next most common method of use by staff is for submission as well as return of the original assignment with a feedback form and a grade. The least used methods are those where students are sent minimal feedback, ie return of grade only or return of grade with feedback form.

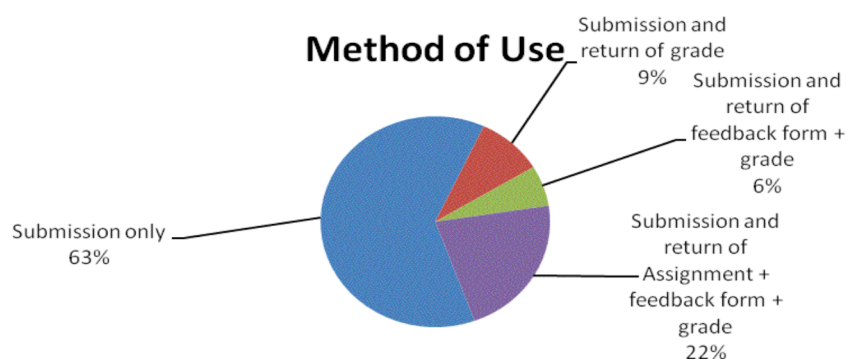


Figure 9: Staff method use of AssignIT for assignment submission

Reasons that the respondents choose their preferred method varied but some of the more common comments included:

The return technique is cumbersome and time consuming. I now use an automated process utilising mail merge and email

It gives me extra time to mark assignments to return to students. It makes sense to mark on the computer.

Because it is easier to collect, electronically comment on and return students assignments. Saves time, and effort in printing and carrying around student papers.

Required as policy but also has advantages that records submissions and can re access and check

From the previous results it is reasonable to expect that a majority of respondents prefer to record their assignment feedback by handwriting comments onto printed assignments. This was confirmed through the survey (refer Figure 10) however this was not an exclusive answer question and staff chose more than one response in this situation. The results showed that 40.6% of respondents identified a clear preference for recording feedback manually (single response by these participants), whilst 18.8% showed a clear single preference for typing their feedback and 6.3% preferred the use of voice recognition software. This low percentage for voice recognition correlates with the fact that this software has only recently been made available to these staff and therefore only few have attempted to use it for assignment feedback. Finally 28% of the respondents choose 2, 3 or all four options from the list.

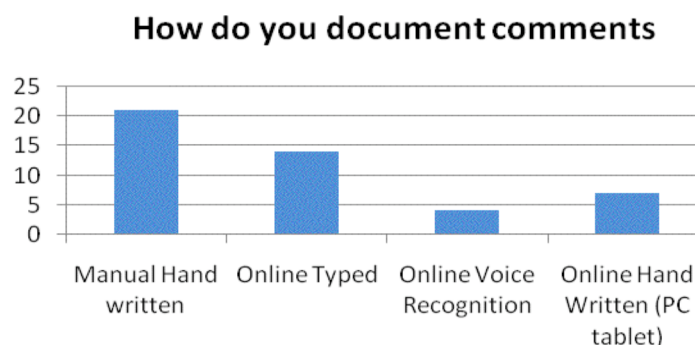


Figure 10: Staff preferences for documenting feedback

Managing markers

Twenty-nine respondents answered the question related to course coordinators asking if they preferred their markers to mark online. More than two-thirds of these respondents stated that they preferred their markers not to use online marking. When asked how they manage markers that prefer not to mark online staff made very few comments, however those that did stated that they worked around this by allowing staff to continue mark manually on assignment printouts or other less technological taxing strategies. For example:

They are required to have assignments marked earlier and place electronic comments on feedback sheets for return to students via AssignIT. Assignments are then returned to students or made available for collection.

I have only one tutor in this category and for this and other reasons I would be seeking to phase her out.

Ask them to input marks and comments into structured Excel sheet

OHS Issues

The greatest issue identified by the respondents was eye strain, followed closely by neck and back pain as well as stress on shoulders and elbows. Staff noted that when marking one was less inclined to take deliberate breaks and that the physical nature of the marking of hardcopy papers meant that moving, shifting and sorting the papers provided implicit stretching and downtime. Many respondents commented that the university policy on turnaround time meant that significant time was being spent in front of computer screens thus exacerbating many of the physical impediments identified above.

Eye strain (monitor) and screens being too small to accommodate both the source document and any additional documents needed (eg answers, marking summary, etc)

Only the amount of time it requires you to be in the same position (getting stiff etc). Requires taking deliberate breaks etc. The physical nature of hardcopy (eg moving papers from one pile to another), shifting piles from desk to desk, etc actually provides implicit stretch and down time.

Technology Issues

Strategies conveyed to staff for the marking of essay type assignments online include using track changes, inserting comments, typing in a different font or colour, or just completing the mandated feedback form without returning a marked assignment. Only 50% of respondents chose to comment on technology issues; however technology literacy appears to be the major obstacle with this online submission system and the ability to mark online. Most of the comments from staff dealt with the ability to use the strategies mentioned above as well as problems encountered with computer speed.

Slowness of the system - each doc needs to be sent back to the students individually.
Restrictive - must be at a computer eg can't mark on the bus (no laptop)

I don't know how to add comments and return the paper to students, so I end up saving it to my hard drive, marking in and then emailing it back to the student - I did this with a few late submissions and it was a pain in the neck

Perceived benefits to students

Most respondents agree that the ability for students to submit from anywhere at any time combined with the automated receipt process confirming student assignment submission were the greatest benefits of the system. Their comments also linked to those of the students with regards to environmental factors.

The main benefit is to off-campus/off-shore students as it saves on postage and can be marked earlier. The only real benefit to internals is a copy of their work is kept (some see this as a disadvantage)

Feedback from students

Few staff responded to this question however those that did identified that the majority of students are positive in the use of this system. Three staff commented that students had provided negative comments regarding the quantity of feedback being received on assignments. This links with the responses from the students who identified feedback as the key issue in terms of the marking of their assignments online.

Conclusions

The evidence from the questionnaires shows that from an academic's viewpoint whilst most prefer an electronic assignment submission system, only 37% of respondents used the system as more than a mere electronic drop box. OHS issues are common and remain unresolved; tendency to reject technological change and some technical issues are still common. Students show a clear preference for the use of the system however a majority identify specific concerns about the quantity and quality of feedback when receiving electronic return of their submission. Evidence from the questionnaire suggested that students

are more appreciative of comments throughout their assignments rather than just receiving minimal feedback on the mandated feedback forms. Staff concerns relating to workload and time spent in front of computer screens revealed a tendency to revert back to manual marking and return of assignments. The findings of this study are not inconsistent with those identified by Dalgarno et al (2006) in a study of IT students. The similar results achieved with Commerce students in this study, tends to indicate that the issues related to EMA are diverse. While the potential and realized advantages of EMA are evident, this study confirms that there is a way to go before the EMA becomes a panacea for both academics and students. Future research should focus on alternative technologies, and the optimisation of existing processes to identify a way forward instead of merely 'marking time'.

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