# Project Information

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1 Executive Summary

1.1 Project Description

The Evaluating the Benefits of Electronic Assessment Management (EBEAM) project was funded jointly by JISC and the University of Huddersfield. It was conducted in partnership with iParadigms who offered technical support and sponsorship to present early findings at several conferences. It ran from October 2011 through to March 2013. It offered an opportunity to evaluate an aspect of Higher Education assessment policy and practice, which is undergoing swift and significant change: the move from paper-based to electronic methods of managing assessment.

The main focus of this project has been on the EAM tool that currently has the widest UK and global uptake: the Turnitin suite of tools developed by iParadigms. 10,000 educational institutions in 126 countries with over 20 million licensed students currently use this platform, (“Turnitin - Home,” n.d.). Turnitin is widely known and recognised as a plagiarism detection tool and in this capacity it is just one of a suite of plagiarism detection tools developed by iParadigms, which also includes iThenticate (designed for professional publishing) and WriteCheck (designed for student use on a pay-per-report basis). It also includes an online marking tool called GradeMark and a peer-marking tool called PeerMark. The evaluation undertaken in this project focuses specifically on GradeMark and covers two different versions of the GradeMark tool; the one which was available in 2007 when an EAM strategy was first implemented in the School of Music, Humanities and Media at the University of Huddersfield and the substantial redesign which was launched towards the end of 2010. At the time of writing of, another redesign is nearing completion. This new design promises to bring with it a range of new affordances, including an iPad app to allow for offline marking. The key features of the suite of tools are:

- An esubmission tool, which allows students to submit their work from any web-connected computer. The tool logs, date-stamps and distributes the work to markers.
- An originality-checking tool, which matches the text in student submissions against a database of extant writing. On their website, iParadigms indicate that their database contains 24 billion web pages, 250 million student papers and millions of articles.
- An emarking tool with a document viewer, which allows graders to see the student submission, alongside a series of marking panes which allow graders to use a set of ready-made standard comments and to customise their own, a rubric, and a place to provide written and audio general comments. The tool also collects and stores data relating to the use of comments and the rubric, which are available for the purposes of learning analytics.
- A peer-marking tool, which allows students to review and provide feedback on each other’s writing.

The tool can be embedded (integrated) into most proprietary and open-source VLEs and can also operate as a stand-alone tool. The affordances of the integrations vary slightly.
The project was directed by the Pro-Vice Chancellor for Teaching and Learning and brought together academic, administrative and support colleagues from across the institution from two schools (the School of Music, Humanities and Media and the School of Education and Professional Development) and multiple services (including the Teaching and Learning Institute (TALI), Computing and Library Services (CLS) and Planning and Information Services (PINS)).

1.2 Purpose of Evaluation
The purpose of the evaluation was to provide evidential support to the benefit claims that individuals and institutions who have already embarked upon EAM strategies were reporting anecdotally. The project considered these benefits on three distinct levels: students, staff and institutions. These reported benefits include (but are not limited) the claims that EAM saves institutions money, saves academics time and effort, makes assessment easier to manage and the process of marking more rewarding and improves students’ perceptions of the security of their assessment submissions and the quality and usability of their feedback. The project considered these benefits in terms of both efficacy and efficiency, and paid particular attention to the emotions that are attendant to the adoption and use of EAM tools.

The project set out to investigate a specific set of research questions.

What kind of impact does EAM have on:

- student satisfaction, especially regarding assessment and feedback, and course administration?
- student retention, progression and achievement?
- institutional efficiency and cost savings in terms of quality assurance processes,
- administrative and academic staff workloads, and the average running cost of modules?

Which are the most effective methods for supporting EAM in terms of:

- staff development to achieve the pedagogical objectives of constructive alignment, reliability and practicability (specifically timeliness)?
- curriculum integration and student support to achieve the pedagogical objectives of transparency, validity and authenticity?
- supporting formative, summative, tutor, peer and self-assessment processes?
- sustaining the process so it is as future proof as possible?
- scaling the process to accommodate even the largest and most complex modules?
- easily and effectively using student-, cohort- and course-specific diagnostic evidence to?
- improve student skills development, achievement and satisfaction and to support?
- productive iterative professional and curriculum development?

1.3 Evaluation Methodology
The evaluation strategy adopted a multi-method approach using both qualitative and quantitative methods, in order to triangulate with regard to related research questions. Demographic quantitative data allowed the project team to interrogate whether responses to online assessment were related to student background. A large-scale questionnaire (appendix 9.2.1) also helped establish broad trends in student preference and their overall reactions to the online assessment
process. Statistical analysis of this qualitative data was used to establish the significance of findings as well as to identify any important correlations.

Qualitative approaches were then employed to supplement and add detail to these broader trends and to help explain and interpret the quantitative patterns. These qualitative approaches consisted of focus groups and interviews involving tutors and students across a range of provision. They were relatively formal events that were conducted face to face along semi-structured lines, directed by a member of the research team. They were recorded in audio, and in the case of the focus group, were supplemented by field notes taken by a second project team member whose role it was to observe and document non-verbal content from the sessions. The sessions were between 30 and 60 minutes in length. The audio from these sessions was transcribed and then coded into emergent themes and issues using the Nvivo 10 software package. The coding sought to develop subdivisions (code mapping) and patterns within subdivisions in order to draw meaningful conclusions. In this way, the project team was able to more fully understand the major themes, issues and concerns arising out of the research, to uncover substantiating and explanatory quotes in support of the qualitative data, to establish the relative frequency of the different themes within the discussion and to interrogate more fully the sample characteristics of particular groups of participants.

The work of administrative staff was evaluated primarily in terms of efficiency using a time and motion study. This was undertaken by a single member of administrative staff who measured the amount of time it took her to undertake various administrative functions associated with assessment management. She measured tasks that are now required in EAM as well as those which have now become obsolete in the EAM system as a point of comparison. The measurement was calculated according to an average number of students (1620) and an average number of assessment submissions (12 per year).

1.4 Summary Findings and Recommendations

Most of the findings and recommendations of this project are relevant to Further Education Institutions (FEI) and Higher Education Institutions (HEI) and, therefore, to senior managers who are responsible for policy and procurement decisions. Some of the findings and recommendations of the project are relevant to and directed to iParadigms and iParadigms Europe, the designers and developers of Turnitin, who have acted as supportive and generous partners to this project.

While the main focus of the evaluation and the project has been the Turnitin suite of tools, many of the findings and recommendations are likely to be transferable to other EAM systems. This project does, however, make certain assumptions that these would be systems which share similar affordances to those provided by the EAM system evaluated here, i.e. Turnitin (and GradeMark) integrated into a proprietary, institutional VLE (in this instance Blackboard V 8 and 9.1). The findings and recommendations of this project may not be applicable to systems because they do not have the same affordances as that which was evaluated. In addition, there are likely to be benefits of alternative systems that are not identified in this report because they are available in the tools studied here.

While EAM is strongly preferred by institutions, administrative staff and students, it is less popular amongst academic staff, primarily because of concerns relating to eMarking. This is hardly surprising given that the vast majority of the labour invested in Assessment Management comes from
academic staff in the form of marking. This is an important reminder that the three main stakeholders in any EAM strategy have very different needs, are asked to make very different types of investment and have very different things to gain (and lose). For any EAM strategy to be successful, it needs to be not just cognisant of but sensitive to these different needs.

1.4.1 Institution
At the institutional level this project has generated evidence to support the claim that adopting an EAM strategy will not significantly hamper or hinder student attainment, progression or retention. While there is some evidence to suggest that there was an increased rate of attrition for students in their second and third year of studies. It is impossible to know with any certainty whether this has been caused by EAM but it is possible that the project has moved an existing problem further down the line.

It has, however, demonstrated that institutions can save a considerable amount of money through the increased efficiency that is generated through the movement from paper-based assessment management to EAM. This saving comes in the reduction in administrative labour for both administrative and academic staff. It is important to note that there is not simply a reduction in labour, but rather a shifting of labour. Primarily that shift moves from manual tasks (handling things one by one) to batch handling and automation. The reduction in labour in terms of hours was significant, amounting to a saving of £1363.90 per year.

1.4.2 Academic Staff
At the staff level, the main impact from EAM comes in the form of marking. It is for this reason that the focus of this section will be on eMarking. Amongst academic staff attitudes are split into three main groups: those who are innovators or early adopters and have migrated enthusiastically to eMarking, those who have approached it more cautiously and those who have done so reluctantly or have tried it and then moved back to paper marking. Our experience has proven that a particularly effective way of managing the transition to eMarking is to allow each of these groups to continue working (i.e. to continue to undertake their marking) is the way that they feel most comfortable and the consequence is that the movement from paper to eMarking happens organically. This is a time-consuming strategy (in that it will probably take several academic years to achieve) but it is a process that will generate the least disgruntlement and hostility.

In practice, this means allowing those who are happy to mark electronically to do so while continuing to allow academics who prefer to mark on paper to do so by providing a print out of the student work after it has been submitted. This strategy led to eMarking spreading organically – incrementally, gradually and naturally – but only if there is a concomitant pressure provided by strategic policy decisions. This pressure comes in the form of change agency from early adopters, from systems (particularly administrative systems) which are designed to reward academic staff who adopt eMarking (e.g. by lightening their assessment administration load if they agree to do so) and finally from student demand. The aim is to achieve ‘critical mass’ whereby eMarking becomes established as the ‘norm’. This allows it to become not just a student expectation but an entitlement and makes those who are reluctant to mark electronically the exceptions rather than the rule. To achieve this critical mass, the bulk of academic staff (i.e. those who are neither early adopters or especially resistant or reluctant) need to find it easier and more rewarding to move onto electronic marking than to stay in a paper-based system. This middle group is, therefore, the most important
and it is for this reason that they have been a particular focus for this study. To achieve the goal of EAM, it is important to build a strategy and a system which provides each group with the support they need but also offers rewards and applies pressure in a consistent way such that moving away from paper-based marking and into eMarking makes the most sense to as many of them as possible. Because the attitudes of these three groups to eMarking are so different, these strategies need to be sensitive to all of them.

1.4.2.1 Early adopters
The early adopters tend to have chosen to use eMarking themselves or have been relieved when it has been required of them. This group of staff wanted to like eMarking and expected to do so when they adopted it. This group is perhaps best identified as those who adopted eMarking with the first version of GradeMark, despite the fact that it was quite cumbersome to use. This group has remained happy with eMarking and reports a wide range of benefits, a proportion of which were unanticipated. For the most part they report needing little if any training or support, having found the technology and interface to be both intuitive and pleasant to use. This group tends to prefer working with electronic rather than with paper-based systems. They identify as ‘tech-savvy’ and are happy (even proud) to admit that they are not good with paper. They also tend to be very resilient, particularly to outages and to absorbing aspects with the new system they find less than ideal. They tend to seek or readily accept ‘work arounds’ or new strategies to solve the problems or limitations they encounter.

These colleagues are the ones leading the way with eMarking and are already using electronic marking systems (very often of their own devising) in Higher Education institutions around the world despite the institutional policies and strategies that are in place. From an institutional and operational point of view, while this group are going to be the least ‘difficult’ in terms of convincing them into eMarking, it is vital that any institutional policy does not neglect them or their needs. While they will go out of their way to find ways to work in the way they prefer, it is in the best interests of any institution that wants to move to a wholly EAM system that this group find it easier rather than harder to mark electronically. In other words, while this is the group of staff that are the least likely to be disgruntled, it is vital that any EAM system that is adopted allows them to continue working in the ways they prefer and ideal that it also be a system that rewards them for doing so. These rewards should come in the form of a lightening of the administrative labour of their marking, allowing them to experience the benefits of economy of scale that comes with automation and batch handling and opportunities to experience their work being praised and appreciated by both the institution and its students. These staff should be allowed to plough any time savings back into their students, their research and/or into improving their work-life balance and they should not be burdened with additional responsibilities (particularly administrative ones); this should constitute one of the most significant rewards for this group. They should also be protected and supported by the institution and its policies if ever the EAM system fails. In no circumstances should their adoption of electronic marking cost them more time, particularly as a result of the administrative systems with which they are required to work. It should also not bring them any extra risk. The message here is clear: for EAM to work effectively and for its adoption to be smooth the administrative conditions for eMarking must be designed to accommodate and reward it prior to its adoption.
1.4.2.2 Healthy sceptics
The second group of academic staff have been more reluctant and less enthusiastic than the early adopters. They have approached eMarking with a healthy dose of scepticism in that they had no pre-established expectations of liking it or disliking it. It is fair to say that this group were the most objective of the three and evaluated their experiences without any bias in favour of or against electronic marking systems per se. This is probably best exemplified by the fact that even if they had anticipated problems with eMarking and these had not been realised, they were happy to say so. This group are characterised by not being prepared to tolerate interfaces with which or environments in which they were not comfortable or which felt unnecessarily difficult or cumbersome to use (this was particularly the case with the first version of GradeMark). They have, however, been persuaded to convert to eMarking (particularly since the development of the second version of GradeMark) either because of the benefits experiences by their colleagues, or because of other demonstrable benefits such as the promise of a lightening of their assessment administration burden or by student demand.

From an institutional and operational point of view, it is especially important that the move onto eMarking is comfortable and happy for this group of staff; their doing so offers the all-important critical mass for EAM that allows it to become normative. For this group to make the move, there are several important factors that need to be in place. First, it is important that they receive reassurance from colleagues who have already adopted the technology. For this, clear lines of communication need to be established between the early adopters and this group such that the early adopters can function as ‘change agents’. Having the early adopters support and train this group (rather than, say, technology support staff) so that they can communicate the benefits directly and first hand is an ideal way of achieving this. Secondly, the system must be set up in such a way that there are demonstrable and tangible benefits to staff when they move onto it. Finally, it is important that they clearly hear the student perceptions of electronic marking so that they can get a clear message that moving on to eMarking will improve their students’ learning experiences.

The simple act of forcing this group of staff to mark their work electronically can be an effective strategy but only if they are junior or less powerful than those requiring them to make the move. It has, for instance, worked well for the tutors employed as part of the specialist conference module and there is evidence that it has worked effectively for module leaders in the School of Music, Humanities and Media who are leading part-time or junior tutor teams. This strategy is less likely to be effective for staff who have autonomy over their own work and marking practices.

Both of the early adopters and the healthy sceptics reported that they had encountered difficulties or obstacles that limited their use of the technology. In each of these instances there were solutions within the tool or tried and tested workarounds that would solve their problem that they had not discovered for themselves. It is clear that some form of training or support (possibly in a self-paced, or a drop-in, one-to-one, internal user group or master class format) would have allowed these individual staff members to make even more effective and efficient use of the technology. The need for higher-level training resources (beyond ‘getting started’) for things using Grademark for assessment tasks that can’t be submitted to it and on building rubrics and Quickmark sets is needed.
1.4.2.3 Reluctant staff

Those staff who were reluctant users of the technology or who had abandoned the use of it report that the medium of online marking fundamentally alters the marking experience, compelling them to relinquish their own hard-won strategies for dealing with this often challenging and burdensome aspect of their role. This was described by them as a frustrating and even painful experience. There is, however, evidence that at least part of their reluctance stems from a resistance to change in general and to giving up the paper-based systems with which they are familiar and comfortable in particular. Their reluctance tends to be articulated in discourses that are suspicious of new technologies (such as screen-reading, typed feedback and audio recorded comments) while valorising older technologies (such as paper, handwriting and face-to-face communication). It is likely that the self-identification of these staff members is, at least in part, wrapped up in ‘old school’ and traditional values. For them, a move to something as radical as online marking can even feel like a betrayal of these values. It is fair to say that these staff do not want to like online marking. They tend to seek out, emphasise and hierarchize those aspects they did not like or those which did not fit with their established work-flow and/or their pedagogical approach to marking. These staff tend to make assumptions about the older technologies feeling more personal, more authentic and therefore more engaging than the new technologies even though our evidence shows that only a small minority of students share this opinion.

For successful adoption of EAM by this group of staff, patience is required. A policy of simply forcing all academics to mark electronically is going to be least popular and therefore least successful with this group. From a change management perspective, it is important to allow this group to retain a sense of agency and autonomy over their work and their decisions while at the same time challenging their assumptions (where there is little or no actual evidence to support them) and making it clear that their current way of working will mean that they will be required to continue at least in part, wrapped up in ‘old school’ technologies.

Reluctant staff give up the paper-and-pencil marking in ways that make sense to them and help them maintain their sense of identity and agency. A good example is the sense of shame or embarrassment that many of these colleagues explained that they had printed student work to read it rather than reading it on screen. This was often articulated as an ‘admission’ and the causes for it were explained by them as being a result of their age or previous experience. This is probably a way of displacing the true cause of their reluctance given that so many colleagues who are the same age and have the same previous experience did not report sharing that preference. But allowing these staff the licence to continue to articulate, and therefore displace, the real causes for their reluctance in this way is probably strategically useful.

1.4.3 Administrative staff

The benefits that accrue to administrative staff were not evaluated directly as a part of this project. The administrative benefits were measured in terms of efficiency in workflows, generally as a result...
of the automation of processes that had previously been manual. It has become clear, however, that the tasks that have been removed from the duties of administrative staff because of EAM are those that were particularly repetitive and therefore boring. These include date-stamping, logging and distributing assessment work. The work asked of administrative staff has changed. It is now more challenging and makes better use of the skills and experience of administrative staff (such as batch handling mark entry using spreadsheets and setting up assignment inboxes within the VLE). As a consequence, EAM has the capacity to make administrative staff feel a higher sense of job satisfaction and reward. The time that has been saved has also meant that administrative staff can be redeployed to do tasks that can offer extra support to students and academic staff. For us, this has included monitoring student assessment submissions and contacting students who have not submitted to encourage them to do so.

1.4.4 Students
Amongst students, there is very strong evidence to suggest that not only is electronic assessment management their preference, but that those who come to appreciate its attendant benefits then begin to see electronic assessment as their entitlement. When this happens, paper submission is spoken of in terms of a deficit and students report a range of problems with it that they see electronic assessment as addressing. This project considered two quite different cohorts of students: one for whom EAM was very new and one for whom EAM had been standard procedure for their entire University career (two academic years). The data from the group for whom EAM was a new experience clearly show that despite some initial anxieties and difficulties, they quickly became accustomed to it, with the vast majority reporting that after only three uses of the tools that it was either ‘easy’ of ‘very easy’ to use. The students for whom EAM was more familiar articulated almost no sense of anxiety or concern about the technical aspects of the process even though the EAM system had recently experienced a significant and prolonged ‘outage’. These students instead reported strong reservations and concerns about paper-based assessment management processes which they or students they knew had recently experienced. For these students the benefits of EAM clearly outweighed any drawbacks and EAM as a system was clearly favourable to any form of paper-based assessment management system.

1.4.5 Learning Analytics
One of the key objectives of this project was to provide some preliminary evaluative evidence relating to the impact that assessment analytics may have on student learning. A key message that has emerged from this evaluation is that there is considerable further potential in the use of data generated through assessment (which can now be harvested through EAM) to inform decision making. This assessment analytics forms a new domain within the nascent field of learning analytics and offers considerable potential to students, tutors and institutions alike. The use of learning analytics in general, and assessment analytics in particular, comes with significant risks. This is particularly the case when assessment analytics data is student facing. As discussed elsewhere in this report, assessment and feedback is a highly emotive and therefore a very sensitive issue for students. While the impact of seeing assessment analytics was clearly very powerful, students also reported feeling very emotionally sensitive in relation to it. The two key messages that emerge from this are that assessment analytics should certainly be considered as part of any teaching and learning strategy, but students must be well supported in their use. Simply providing the data (in the form of a dashboard) is unlikely to be effective unless students are offered training in its interpretation and accessible strategies to act upon it.
1.4.6 Summary of Recommendations

It is manifestly clear from the evaluation work conducted by this project that students very much appreciate a swathe of benefits that come from the adoption of an EAM strategy. These accrue in the form of a sense of increased agency and control, reduced anxiety, improved privacy and security, significantly increased efficiency and convenience, and feedback which is clearer and easier to engage with, understand and store for later use. In best use scenarios, lecturers also make excellent, productive use of the digital data that is automatically generated during the electronic marking process, identifying detailed patterns of achievement across large cohorts that can usefully be shared with students and curriculum teams as part of a cycle of curriculum monitoring and development. These benefits are, however, only fully available to students if all or most academic staff are prepared to process the assessment (in terms of marking, feedback and grade reporting) electronically. The students’ sense of security and confidence with the system can also only be sustained if the institution is prepared to put in place clear, consistent and fair systems to support and compensate students in the event of a technical outage. Academic staff who ‘get on’ with eMarking find that it brings them significant benefits in terms of efficiency and efficacy. However, and very significantly, some of the very benefits that these people report were also identified as drawbacks by reluctant users of electronic marking and this underlines the highly individualised nature of the experience, which this research has uncovered. In light of this, it is highly unlikely that any institution is going to be able to provide an EAM system that will be uniformly accepted with enthusiasm by the range of academic staff working within it. It is a key recommendation of this project, therefore, that any EAM strategy that is adopted by an HEI or FEI offer at least some flexibility and, most importantly, agency to academic staff in terms of how they go about doing their marking. Giving academic staff the option to opt out of electronic marking and/or opt in to electronic marking when they feel ready and prepared to do so is worthwhile. This flexibility and academic staff agency needs to be carefully balanced against the strong sense of entitlement that students feel, particularly in terms of electronic submission of their course work.

Building a system, therefore, which is as robust and secure as possible and that allows for electronic submission for students wherever and whenever possible but which also allows academic staff to mark in the way they prefer (either electronically or on paper) is likely to be the one which generates the most benefits and the least angst for the highest proportion of stakeholders. This research suggests, however, that even those with strong initial reservations tend to be won over by the benefits of EAM and this suggests that a significant proportion of academic staff will work at least comfortably (if not always enthusiastically) with electronic marking. This indicates that there is the potential to eventually reach a level of critical mass such that EAM becomes accepted as industry standard. Should that point be reached, the likelihood is that a combination of student and institutional pressure will be brought to bear upon the minority of academic staff who remain resolutely reluctant to mark electronically. Some evidence of this pattern has already been identified in the cohort studied here. The potential savings that this research identifies in terms of the administrative burden upon institutions and the costs of that burden, also make this a desirable end point and goal, particularly in the context of an increasingly competitive, global market for education. In FEIs and Teacher Education within HEIs, Ofsted places an additional burden of care upon institutions to closely monitor progression and achievement and to use that data as part of the planning cycle. EAM also has much to offer in this regard, providing a further incentive for change.
2 Background and Context

2.1 EAM in the UK Higher Education Sector

Across the Higher and Further Education sectors, institutions are instigating new policies and procedures for Electronic Assessment Management (EAM). There are two main drivers behind this: increasingly vociferous student demand for better assessment experiences, especially in the context of fee increases, and the push for improved quality and efficiency in academic administration. Most institutions are not in a position to build bespoke solutions and are turning to proprietary tools for which they already have a licence. iParadigms is consequently experiencing a spike in interest in their GradeMark tool (part of the Turnitin suite), the licensing of which is widespread across the sector (see section 2.2.3.1 below). Whilst institutions already have the right tools, there is a pressing need to find the most efficient and effective ways to deploy them.

Senior managers in HEIs are keen to adopt new strategies for managing assessment, but many feel reluctant to do so because of the perceived risks involved. Key amongst these risks is the concern that implementing EAM strategies will invite strong resistance from academic staff and that a system which is not reliable and/or robust will generate distrust and dissatisfaction amongst students. Lesser amongst the risks, but which are nevertheless significant, are training, procurement and data management issues; these all bring with them potentially significant costs as well as risk. In terms of training, concerns that students will struggle with electronic submission systems remain high. So, while institutions are keen to adopt EAM strategies as quickly as they can, many are also feeling hesitant to do so. This leaves institutions running the risk of finding themselves constantly stalling or, alternatively, developing radically over-engineered solutions which are more cumbersome, costly and inflexible than they need to be.

The University of Huddersfield has been an early adopter of Turnitin for EAM across large and complex areas of its provision. Over the last five academic years, it has developed and implemented strategies to optimise the benefits of EAM for institutional efficiency, student satisfaction and achievement. The length of time this initiative has been running, the breadth of provision it covers and the range of quantitative and qualitative data we have available means that we have been uniquely and excellently placed to evaluate impact and to make transferable recommendations to colleagues in other institutions.

Prior to the start of this project and throughout it, members of this project team have been widely consulted by other institutions both inside and outside the HE sector, both within the UK and internationally. A full list of consultation and dissemination activities and products that have prefigured the work of this project or have taken place during it is provided later in the report.

2.2 EAM: policy and practice

2.2.1 Assessment Management Policy

This project in essence considers the problem of assessment management which all FEIs and HEIs are facing. It looks specifically at the potential for EAM to provide some solutions to the problem. While the issue of assessment management falls, as Mantz Yorke (1998) explains, into the interstices
“between a number of aspects of higher education (teaching and learning; assessment practice itself; educational management; and quality assurance)” its effective management is “of considerable significance for the student experience” and is ‘critical’ for institutions (p. 101). Writing in the late 1990s, he observed that this area is underrepresented in the literature and that this is a “need that has yet to be fully addressed” (pp. 101-102). A decade and a half later, this underrepresentation remains the case. Alistair Mutch’s (2002; 2001) work on assessment strategy, which also draws on Yorke’s research, is a notable exception. He asserts that while “[a]cademics are frequently enjoined to think ‘strategically’ about assessment” there is precious little time “spent on defining what is meant by ‘strategy’” (Mutch, 2002, p. 163). The advent of an ever-increasing array of EAM tools and strategies and the widespread move across the sectors towards EAM means that redressing this underrepresentation is more pressing than ever. This project, therefore, offers a contribution in this area. Yorke is interested in the ‘big picture’ of assessment management but this project is particularly interested in one subcomponent of it: what he refers to as operationalisation. Yorke defines operationalization as that which “converts the strategy […] into practical action” (Yorke, 1998, p.111). This project focuses on one aspect of this: what he refers to as “establishing systems for assessment activity” which includes “the collection, recording, and returning of assignments, […] and marking” (Yorke, 1998, p.112). In doing so it recognises the importance of that bigger picture which he describes, and even the importance of its place in a larger, institutional strategy for quality assurance (such as Total Quality Management (Kanji, Malek, & Tambi, 1999)).

Specifically, this project takes a particular point of focus: a response to Yorke’s call for the establishment of appropriate structures and mechanisms, which support systems for assessment activity and which achieve the dual imperatives of efficiency and effectiveness. He argues:

> a well-constructed system for the management of assessment will ensure that what is expected to take place actually does take place (i.e. that it is effective). It should also ensure that what is done is done efficiently, in that no time and effort are wasted as the institution pursues effectiveness (Yorke, 1998, p.106).

As such, this project considers the workload issues related to assessment management under these dual imperatives of efficacy and efficiency. The project challenges the widespread perception that these imperatives exist as a kind of ‘see-saw’ whereby improvements in one necessarily means deterioration in the other. While this can be the case, it is also entirely possible that some of our processes and practices are both inefficient and poor quality. Having said that, it does acknowledge that sometimes meeting these dual imperatives is a matter of finding a balance point, whereby students are not being short-changed (they perceive that they are getting good ‘value for money’) without over-engineering solutions. This project argues strongly for the pursuit of economy of scale in the design of Assessment Management strategies, such that duplication of effort is reduced or ideally eliminated and where staff are able to undertake multiple tasks at once. Similarly, it argues for the elimination of manual/individual handling, to be replaced with batch handling or automated processes wherever possible.

This can be visually represented using a ‘traffic light’ model:
2.2.2 Terminology and Acronyms
For the purposes of this project we are using the term ‘Electronic Assessment Management’ and the acronym EAM to describe the processes and strategies of managing all aspects of student assessment in a non-paper-based way. As is often the case in the nascent field of eLearning and eAssessment there are many different terms being used in different places which all mean much the same thing. Another term which is growing in prominence is Electronic Management of Assessment or EMA. The debate over terminology continues in the special interest group that has formed under the auspices of JISC.

Inevitably, perhaps, the work that is being undertaken in this field overlaps with other areas which are associated with assessment. The most prominent of these are the fields of academic/educational integrity (e.g. plagiarism, collusion, intellectual property) and academic/learning analytics, by which we mean “the measurement, collection, analysis and reporting of data about learners and their contexts, for purposes of understanding and optimising learning and the environments in which it occurs” (Fournier, Kop, Sitlia, & others, 2011, p. 3). As is the case with EAM, the terminology used in these fields is also ‘slippery’. Both of these fields are of at least peripheral interest to the work of this project and are sites for future development and exploration beyond the completion of the work of this project.

A glossary which explains the abbreviations and Acronyms is provided in the appendix (9.2.5).

2.2.3 EAM tools
One of the key considerations in the development of any EAM strategy is the evaluation of tools. Any procurement decisions must consider the issues of both efficiency and efficacy in the operationalization of assessment management. To do so it considers primarily the affordances of the GradeMark and Originality checking tools within the Turnitin suite. It has also taken the opportunity to identify and describe a selection of other EAM tools on the market. These include SafeAssign, Assignment Handler, ReMarks PDF and ReView.
2.2.3.1 GradeMark

Turnitin is widely regarded as the market leader in EAM tools. This is both due to the affordances of the tools and the extent of uptake in its use as an EAM tool. Data provided by iParadigms shows that the submissions of student assessment to Turnitin have risen from a monthly average of just under 55,000 in the 2006-07 academic year to a monthly average of well over 500,000 in the 2011-12 academic year. The proportion of those submissions that were also marked on GradeMark has risen from a monthly average of just over 1800 in 2006-07 academic year to a monthly average of over 122,000 in the 2011-12 academic year. This constitutes a rise from a monthly average of 3% of submissions being GradeMarked in the 2006-07 academic year, to a monthly average of 24% in the 2011-12 academic year. Already, the monthly average for the 2012-13 academic year shows an increase to 27% and that is prior to the heavy assessment months of March-May being taken into account. This increase in the volume of submissions and the proportion being marked on Grademark can be represented graphically as follows:

![Average Monthly Submissions and Grademarked Papers by Academic Year](image)

*Figure 2: Average Monthly Submissions and Grademarked Papers by Academic Year*
The evaluation undertaken in this project covers two different versions of the GradeMark tool:

- that which was available at the point where the first EAM strategy was implemented in the School of Music, Humanities and Media in 2007
- new developments that were introduced into the tool as part of a substantial redesign launched towards the end of 2010.

As this report is being written, we are aware that another redesign is close to being launched. This new design promises to bring with it a range of new affordances, which, based on the responses of staff to the last iteration, we anticipate will attract an even wider range of academics to electronic marking within GradeMark. The most attractive aspect of this relaunch will be an iPad app that will allow academics to mark work offline. This tool is due to enter beta testing in March 2013 and a member of this project will be involved in this testing.

2.2.3.1.1 Submission
Across all versions, the submission process for students has remained virtually unchanged. Students are taken through a series of upload and submit screens where they select the document they want to upload, they are given the opportunity to check that they have uploaded the correct document and then to confirm that and submit the document. The tool then offers a screen that confirms the submission. It also sends an automatic email to the students as a proof of receipt.
2.2.3.1.2 GradeMark

The version that was available in 2007 offered a marking tool called GradeMark in addition to the originality-checking tool. The key affordances of this tool were the ability to annotated the script using a combination of the following:

- QuickMarks: a palette of ready-made comments for common, generic issues (mostly errors). These were available to markers to drag and drop onto the appropriate section of the paper. These comments were collected under a variety of headings including ‘composition’, ‘punctuation’ and ‘usage’.
- Custom (or Bubble) comments: comment areas that could be placed on the study script and written directly by the tutor to that student. The tutor has the option to save this comment for later use thereby building their own, personal QuickMark library.
- Highlighting: this allowed tutors to highlight, underline or strikethrough words, lines or blocks of text. This tool came in a number of colours but could only form a rectangle shape and was not anchored to the text itself.
- Type: this allowed tutors to type words or comments directly onto the paper, effectively as marginalia. These comments were space limited in the same way that handwritten comments on a paper-based script are whereas the bubble comments allowed for much longer and more detailed comments to fit into a much smaller space on the page. This was because each comment collapsed to a small blue speech bubble icon and only expanded to reveal the fully comment when hovered over with the mouse.

The GradeMark window allowed markers to toggle between the marking view of GradeMark and the originality view of the plagiarism detection. It allowed tutors to use a rubric scorecard, which was either qualitative (offering comments only) or quantitative (calculating a final score).

This version of GradeMark was not widely liked, mostly because of its relatively clunky look and feel but also because of perceptions of unreliability. At least one participant in our study having previously used Mark-up in MS Word to annotated student work, had tried this earlier version of GradeMark but found himself going back to Mark-up. His comments are useful to consider at this point as they articulate some of the reluctance academic staff had to using GradeMark in its first iteration:

I remember going back to Word after I started it; [...] it was actually losing things. You’d mark and it wouldn’t save and so I just got frustrated because I was trying to use it for the speed. I went back to it. [...]The thing that used to frustrate the life out of me on the old version of GradeMark was when you cut and pasted in your general comments, it would only give you such a limited number of characters that I used to spend ages having to remove all the ‘Returns’ to take out all my Word formatting characters. [...] When it started it really was... it just didn’t feel right. And I can’t explain that. Even though I wanted to use it, it was awkward, it wasn’t intuitive [...]It used to feel like if you touched the mouse at all it wanted you to write a comment and that seems to have improved.

In late 2010 a new version of GradeMark was released. The new version offers many of the same features and affordances as the old version but in a redesigned interface called the ‘document viewer’. The system was designed to autosave, capturing new versions of work after every change.
The highlighting tool also allowed markers to highlight lines of text more easily and to attach quickmark comments directly to that highlighting. Our respondents reported that together, these changes made the ‘workflow’ of marking feel smoother, more reliable and therefore more efficient, and offered a more pleasing environment in which to work. It is easy to see from Figure 3 that this perception was not isolated to our respondents. The graph shows a 10 per cent jump in the average monthly proportion of submissions marked via Grademark between the 2008-2009 and the 2009-2010 academic years. It’s likely that prior to this many academics were keen to mark online using Grademark but were not prepared to do so until the tool that met their needs was available to them.

In terms of efficiency, an important new feature of the current release is a combination view which allows tutors engaged in marking within this GradeMark view to read and mark student work to see an ‘overlay’ that subtly highlights text in the piece of work that has been identified as unoriginal by the originality checking tool (and vice versa). The result, from the marker’s perspective, is that relevant ‘unoriginal’ text is both easy to distinguish from other ‘original’ text whilst remaining relatively unobtrusive to the marking process.

Further features that emerged as part of this redesign include voice comments and student response tracking. This feature is available in addition to the written comments. To our knowledge, this is currently the only audio feedback tool which also allows written contextual and general comments, is connected to a rubric scorer and which automatically returns the feedback to the correct student.

The response tracking keeps a record of which students had picked up their feedback and which had not. This allows tutors to prompt students who have not yet engaged with their feedback to do so. By mousing over the icons, tutors are able to discover precisely when students picked up their feedback and one of our respondents commented on the valuable insight and firm basis for negotiating with students that this provided: ‘I also like it that now, you can see whether a student’s looked at their feedback, which I think is brilliant.’ Our students were also aware of this facility and remarked upon how it had been acted upon by one of their module tutors.

2.2.3.1.3 Future Developments
As this report is being written, we are anticipating the release of the latest version of the Turnitin suite of tools. It is important to report on this as this project makes its recommendations on the understanding that the tool that has been the focus of this evaluation will continue to develop in the years ahead. These recommendations, therefore, are made on the understanding of the direction in which these developments are heading. Members of this project had the opportunity to hear about and contribute to the plans for these new developments at a focus group held in Newcastle in July 2013. Central to these new plans seems to be a shift in focus from originality checking to assessment management in general with originality checking as a subcomponent of that. The new designs are derived from the development of an iPad app. Not only do the new designs seem cleaner and more intuitive but they employ ‘directionality’. This principle of ‘directionality’ is critical to the design of the Apple iPhone and iPad software and is starting to influence the design of desktop software as well. It is a term used to describe the provision of tools at the point where they are needed rather than relying on drop down menus or buttons located elsewhere. So, when commenting on a section of a paper in this new design, for instance, the marker would be able to highlight the relevant text at which point the tools that the marker may potentially require become available for selection at that location rather than in a separate location (such as the QuickMarks palette which is located to the
side of the screen). This already exists in the iPad and iPhone software where selecting a section of text opens a balloon with options such as ‘cut, copy, paste’ appear for selection. Directionality will speed up the workflow of marking considerably, especially when it comes into the desktop version as planned.

Also presented at the focus group was a vision of being able to use the tool formatively to support iterative development over several drafts of a paper. In practice this means being able to see how, where and to what extent a paper has changed from one draft to the next. With this becoming practicable, the idea of being able to offer meaningful iterative writing support might have an impact on assessment design as the option of marking multiple drafts of the same piece of work is certainly not commonplace in the UK. This also opens up the option of using ipsative instead of or as well as criteria- or norm-referenced marking systems. In any case, this would certainly be of use for postgraduate writing support.

The future vision for voice comments is for comments made in the audio recording to be directly linked to signposts within the paper. This effectively turns it into video feedback rather than simply audio feedback. This makes a big difference to the usefulness of voice comments with respect to feedback vs feedforward. There was also an indication that there would be greater flexibility for multiple marking and to share rubrics and QuickMark sets more broadly. This has the potential to turn GradeMark into a social tool and puts it in competition with iRubric.

There was also a strong indication that they are considering the role of analytics seriously. As part of this, they are planning to enable markers and institutions to keep track of the amount of time marking takes: capturing this data has been notoriously difficult and having access to this data would have been extremely useful for the evaluation being undertaken in this project. One recommendation of this project, therefore, is that future evaluations of this tool and of EAM in general take this data into account. As part of their analytics platform they are also considering collecting data on vocabulary use. There were firm indications that they had a clear sense of how this data needs to feed into a wider data ecosystem to be of use to the Academic and Learning Analytics strategies that institutions are already using or are trying to build. They are also proposing richer ways of tracking the extent to which students are engaging with their feedback: something that many tutors report as desirable. In addition, their intention is to build a tool that offers automatic interventions. This is something that is emerging as a trend amongst a wide range of eLearning proprietary tool providers. There was also mention of stylistic analysis and ‘stylometrics’ as a way of identifying ghost writing, which is again something that many academic staff will find useful. This aims to find similarities in style inside writing across different documents submitted and then trace them back to a single author. The question of whether this might in itself constitute evidence in an academic misconduct case or whether it might just be a trigger to further investigation (such as a viva voce exam) is important to consider.

The final idea that is part of the future plans for this tool is to make better use of crowdsourcing to ‘tune’ the originality ‘noise’. This involves harnessing the professional judgement that is engaging with their resource. This would be of particular use for those disciplines (particularly Law and Music) where particular turns of phrase are routinely used. This crowdsourcing means that the more the tool is used the better it gets.
The roadmap which was revealed at the focus group is material which is much closer to release. The most important developments from the point of view of this project are:

- Core Rubrics: this is designed to support State-level learning outcomes for the US secondary education sector but it might be useful for course and level learning outcomes in HE in the UK.
- Receipt Retrieval: allowing students to access their proof of receipt in ways other than via email.
- Flexible Grading: including letter grades and decimal points.
- Simpler Rubric: which offers much more flexibility.

By far the most groundbreaking advance is the new iPad app. A live demonstration of it was given at the user group held the same day as the focus group. As outlined above, it has triggered some rethinking for the main online document viewer in terms of directionality. It will also allow for offline marking such that the marking can be synched with the iPad, marked offline and then synched again to upload it to the server. The current absence of offline marking was often cited as a reason for non-engagement with GradeMark amongst academics who like to mark whilst they travel and in other contexts where there is no internet connection. The planned launch date for it is January 2013 but at the time of writing, no release news was available. The silence and relative unobtrusiveness of typing on the iPad in comparison to a laptop will be very attractive to some academic staff, particularly those working in Performing Arts or conducting teaching observations, who want to use GradeMark to record and return feedback on live performances and presentations.

### 2.2.3.2 Other EAM tools

Part of the work of this project identified and examined other EAM tools on the market. This was undertaken in order to offer a comparison to the Turnitin suite but also to offer alternatives to it or tools that might work in complimentary ways with it. It is important to note that there do not appear to be any tools on the market that completely replicate all of the affordances of the Turnitin suite. There are tools that compete with it (in some cases favourably) on some of the affordances it offers, but there are none which compete with it as a whole. The evaluation of a selection of these tools is offered here under the three key ‘headings’ of the affordances found with Turnitin: Originality checking, feedback and eMarking. The other EAM tools are listed below and some are considered in greater detail than others.

**Table 1 EAM tool comparison**

<table>
<thead>
<tr>
<th>EAM Tool</th>
<th>Originality Checking</th>
<th>eSubmission</th>
<th>eMarking</th>
<th>Feedback</th>
<th>Self-evaluation</th>
<th>Peer-evaluation</th>
<th>Audio Feedback</th>
<th>Analytics</th>
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<tbody>
<tr>
<td>GradeMark</td>
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<td>Assignment Handler</td>
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<td>PebblePad</td>
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2.2.3.2.1 Originality Checking Tools
The main competitor to Turnitin in terms of Originality checking is SafeAssign ("SafeAssign by BlackBoard," n.d.), which has been developed as part of the Blackboard Virtual Learning Environment. It operates in a similar way to Turnitin but does not include an in-built marking tool for tutor or peer marking, but relies instead on other tools available within the Blackboard VLE suite. There are several other online or downloadable tools, Viper, Grammarly and Copycatch to name a few (see Barrón-Cedeño, 2012). Some of these tools have been linked to essay purchase sites and there is widespread speculation that they are a means of students unwittingly having their work acquired for sale.

2.2.3.2.2 Feedback Tools
These tools provide a means for distributing and collating student results and feedback but are not marking tools in their own right. The two tools that were identified that fall into this category are Blackboard Assignment Handler and ReView.

Assignment Handler was developed at Sheffield Hallam University in collaboration with Blackboard. The key feature of this tool is that it requires students to engage with and reflect on their feedback before their grade is revealed to them. While it requires tutors to download papers and annotate/mark them offline (using such things as the document mark-up on Microsoft word) it does allow these to be batch uploaded for return to students.

ReView was developed at the University of Technology, Sydney and is being trialled at the University of New South Wales and elsewhere. It is examined here in more detail because it offers some affordances which could operate very effectively if articulated with GradeMark. The real strength in ReView for the Australian Tertiary Education sector lies in its capacity to link through to Graduate Attributes, which perform a similar function to bench-marking in the UK. The tool requires markers to nominate and mark to a set of learning outcomes or assessment criteria – something that GradeMark does not make mandatory. While this may sound limiting, but could potentially be a change-management catalyst if used in the right way in the UK. This tool may prove particularly useful for assessments other than standard essay submissions: things like art works, performances (in music or drama for instance) where there is a product which the student generates that needs to be marked. This is especially so given that ReView works really well on tablets such as iPads.

As tutors mark using ReView, they generate a grade based on student achievement against defined Assessment Criteria. This is done to improve the transparency of marking for students (making it clearer to them how their final grade was arrived at). While the critical scholarship on the use of scored or calculated rubrics and assessment criteria in this way, particularly Royce Sadler’s work (Sadler *, 2005; Sadler, 2007, 2009a, 2009b, 2010), the benefits it affords students may outweigh the potential or actual drawbacks in terms of integrity. The tutors using this tool determine student attainment using ‘sliders’ which work in much the same way as the rubric calculator in GradeMark.

ReView generates a ‘dashboard’ that shows rich and valuable data on student achievement harvested from the marking. It is more advanced than simply the raw data generated by GradeMark. The portability of the tool means that this is very well suited to the marking of studio-based work (such as design, textiles, fine art) and it is also fantastic for marking hand-written exams because it does not need assessment to be submitted to it in order for it to be marked and returned.
Unlike GradeMark, this tool includes a student self-evaluation tool. Students can indicate what they think their work deserves. To achieve the same thing in GradeMark requires a workaround and lots of data entry. The student self-evaluation is clear to the tutor as they mark and this may influence their judgement in unhelpful ways.

Currently ReView is not well integrated or integrable in that it is a stand alone tool (it is not yet a building block for any of the major VLEs) and in that it is only a feedback tool not a marking tool. In other words – students cannot submit their work to it and tutors cannot comment directly/contextually on their work with it. The danger of this is that it will generate false economy. So even if it saves tutors time in the marking of student work, it may cost them or their institutions more time in terms of mark entry, handling submissions, returning student work etc. Tutors may find themselves moving between two or even three different systems to received, read, annotate, plagiarism check, return and enter the marks for a piece of student work. Additionally, the transparency it achieves through the rubric ‘sliders’ may be counteracted by the lack of clarity as to precisely where the strengths and problems in the work are located if they cannot be marked on the work itself. For instance – a comment saying that some sentences are poorly constructed is useless to students unless they are clear which ones are poor and which ones are not. The integration within VLEs will no doubt come with time, but there do not appear to be any plans to develop a marking tool. As such, while it does generate analytics data, it is not at the ‘granular’ level that GradeMark generates.

This tool is quite expensive in comparison to its competitors. Given that this is likely to be a tool that would need to be used in conjunction with other marking tools and that the affordances it offers overlap with some workarounds within GradeMark, it may prove difficult to sell to procurement officers within cash-strapped HEIs in the UK.

2.2.3.2.3 Marking Tools
The two tools that were identified as marking tools are the Remarks suite (Remarks PDF and Remarks XML) and Lightwork. RemarksPDF was developed in Australia and is being considered by two of Australia’s leading distance education providers: the University of New England and Griffith University. It is, in essence, a PDF annotation tool and is already available as an iPad app. It has many of the features of the GradeMark marking tool in that it has a rubric scorer, automatic comments, coloured highlighting and can be integrated into various VLEs. It does not, however, offer originality checking.

Lightwork was developed in New Zealand in 2009 and is in use at Massey University. It offers many of the affordances of GradeMark, including originality reports that are generated by Turnitin. Lightwork is a Moodle integration and is Open Source. Its development has been informed by a wide range of pedagogical theories and prioritises the capacity to moderate marking being done by a large tutor group. It is particularly strong in terms of being able to distribute marking to multiple tutors and is likely to be attractive to institutions and sectors which work with very large cohorts (such as the Australian and American sectors). The fact that it relies on Turnitin and it replicates many of the affordances of GradeMark begs the questions as to why an institution would be interested in purchasing an extra tool that replicates affordances of a tool they may already own.

Both of these tools are in their early stages of development and have been adopted by a very small number of institutions and do not yet appear to be at the point of commercial viability.
2.2.3.2.4 ePortfolio tools

Several of the leading ePortfolio tools now have sophisticated EAM facilities built into them. One of the leading proprietary ePortfolio tools on the market is PebblePad. Its EAM capacity supports both informal and formal assessment strategies. The formal assessment is managed via Gateways. The tool offers many affordances that are not yet available in Grademark, including an extension management system, double blind marking and moderation. The marking tool includes a comment bank that can be shared across course teams and it also allows for feedback forms to be added in to it. It has Turnitin integration and has a kind of organic, built-in early warning system in the form of milestones which trigger alerts if they are not met. The leading Open Source ePortfolio is arguably Mahara and is designed for integration with Moodle. In a way that is similar to PebblePad, Mahara users can submit ‘views’ of their portfolio for assessment purposes.

2.2.4 EAM strategy

The evaluation which has been undertaken in this project has, in part, focussed on an EAM strategy that has been adopted in one of the schools included in this study. It uses a business process solution which structures assessment management as a workflow and which sees the academic module or subject as the basic business unit. The workflow approach is informed by Yorke’s work on Assessment Management, and is, in effect, what he is referring to when he says:

[t]he institutional system for assessment should be based on a thorough functional analysis of who is expected to do what, and why. Critical issues are whether the functions articulate coherently, whether there are any ‘gaps’ or duplications in the system; and whether there any assignments of task [sic] to an appropriate level or member of staff. (Yorke, 1998, p.114)

The workflow, therefore, seeks to chart all the processes within it, from validation to archiving and including such things as timetabling, assessment submission, logging and date stamping of submissions, extension requests and approvals, academic misconduct processes, mark-entry, moderation and external examination (this list is far from exhaustive). This workflow approach allows existing processes within the system to be mapped alongside alternative approaches that can be planned, trialled, piloted and eventually implemented into the system. The visual approach is particularly useful in terms of making it much easier to ‘see’ what’s not working, where there are ‘knots’ or overcomplicated aspects of the system, where effort is being duplicated and where it is necessarily to plug ‘gaps’ in the system or to build workarounds.
Figure 4 Workflow Example 1: Mark Entry Over the Web (MEOW)

Figure 5 Workflow Example 2: MEOW Modified
Figures 4 – 6 offer a good example of this approach. Each represents a different version of Mark Entry procedures that have been adapted and streamlined as a result of using this visual workflow strategy. Figure 4 is designed for paper-based marking and requires academics to duplicate the same procedure three times and to undertake individual handling of student marks (i.e. enter the marks one by one three times). Figure 5 also supports paper-based marking and requires academics to duplicate the same procedure twice. The mark entry is moved from an individual-handling process undertaken by academic staff to a batch-handling process undertaken by administrative staff. Figure 6 is the mark-entry procedure available to staff marking on Grademark. There is no duplication of effort for the academic and marks are entered via batch handling. Even without being able to see or understand the fine detail of these workflows, the increased simplicity and the reduction in steps and processes is clear to see.

The key design feature of this approach, therefore, is to map the processes involved in assessment management and to join together different tools to support these processes electronically wherever possible in a way which satisfies both the efficiency and efficacy imperatives that Yorke identifies in his research. Informed by Mutch’s (2002) call for “a clear set of principles” (p. 167), there are three key design principles behind this solution: institutional agility, affordability and role clarity. These should then be used to inform and support procurement decisions. These will now be briefly amplified one at a time.

### 2.2.4.1 Agility

The principle of agility is bound up with concepts of lightness and flexibility. This concentrates, therefore, on a system which uses tools already in widespread use, which is easy and quick to build and test, and easy to change and adapt as circumstances change. Inherent within this system is the ability to quickly and easily build elements of the system to fill gaps (these can be understood as
workarounds, or alternatively as ‘glue’ to get different tools to talk to each other). Concomitant with this is the ability to easily discard aspects of the system as they become obsolete.

2.2.4.2 Affordability
The second design principle of affordability comes from several factors in combination. The first of these is the fact that it harnesses the affordances of ubiquitous tools that are already in use in the institution. Where bespoke tools are required (to fill gaps or ‘glue’ tools together) these are usually relatively small and easy to build, using the skill set already within the institution. The sustainability of the system is also important to its affordability in that the cost of the on-going support, updating and development of the component tools is built into the system as they are ‘covered’ by the cost of the site licences in the first place. The general principle behind this, then, is that institutions probably already own most if not all the tools that they need to support EAM; the trick comes from getting them to work reliably and seamlessly together.

2.2.4.3 Role Clarity
The final design principle is role clarity. This refers specifically to distinguishing clearly between roles that are administrative and therefore require administrative skills, and those that require academic judgement and therefore must remain the responsibility of appropriately qualified academic staff. In this design approach it becomes a priority to move as many roles or duties as possible from academic members of staff onto administrative members of staff. Similarly, any role or duty which can automated and therefore be taken away from staff altogether is equally important. The principle here is that if you can get a machine to do it, get a machine to do it. This is exemplified in the specific examples offered in the workflows in Figures 4-6 where administrative tasks were moved from academic to administrative staff and processes were moved from individual handling to batch handling. The ideal next step is to automate processes that are currently batch handled.

2.2.4.4 Implementation
This strategy has been implemented over six academic years. The implementation process has been gradual with new cohorts and features added over a period of time. This implementation strategy is outlined below:

2.2.4.4.1 2007-2008: First year implementation
In this academic year Electronic submission of coursework was introduced for all first year modules. Students in this cohort were given training in induction and a screencast set of instructions was also made available. Students were given an academic year calendar onto which they were encouraged to mark their assessment dates. Students in the first year cohort were also required to submit their work in paper form using the assignment submission boxes. A bar code system for logging the submission of other assessment types was introduced. This system also issued an automatic proof of receipt for students via email.

2.2.4.4.2 2008-2009: Second year roll-out
In this academic year the first and second years were required to do electronic submission. The requirement for students to also submit a paper copy was dropped. Printing was undertaken via the print shop on the basis that those not requiring paper copies (because they preferred to mark online) could opt-out.
2.2.4.3 2009-2010: Third year roll-out
In this academic year students on all three years of undergraduate study were required to submit their work electronically. The use of GradeMark was piloted for the first time in a number of modules. An online extension management system was introduced because the paper-based system that had been in use could now not function. This was developed and built in-house and has since been adopted across the institution. It operates using the email system and keeps an online log of extensions that have been approved or rejected. The use of uploaded excel spreadsheets to the student records system was trialled for the first time which allowed batch mark entry. Assessment Analytics data was mined for the first time.

2.2.4.4 2010-2011:
Batch mark upload was offered as an option to academic staff across the school for the first time. The downloading of marks directly from GradeMark and the uploading of them to the student records system was trialled for the first time.

2.2.4.5 2011-2012:
A wider offer of GradeMark mark entry was made available to academic staff. The School had to take on the responsibility of printing assignments due to a significant increase in print shop prices.

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<tr>
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<th>09-10</th>
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<td>Foundation</td>
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<td>Intermediate</td>
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<td>Honours</td>
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<td>Extensions</td>
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<td>Excel mark entry</td>
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<td>Learning Analytics</td>
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<td>GradeMark mark entry</td>
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</tbody>
</table>

2.2.4.5  EAM Strategies elsewhere
As outlined above, institutions across the country, and indeed around the world, are working to develop their own strategies and policies for EAM. Again as outlined above, many institutions across the Education sector in the UK have consulted members of this project for advice and guidance as they develop their own policies and strategies.

Several cross-sector organisations have been working hard to support institutions in this process, not least of which has been the heavy investment in this issue by the Heads of eLearning Forum (HeLF). For two years, HeLF has conducted research into the state of EAM across the sector (Newland, Martin, & Bird, 2012; Newland, Martin, Ramsden, & Byrne, 2011). In June 2012 an Online Submission Day was jointly run by HeLF and the Higher Education Academy and was hosted by Manchester Metropolitan University. At this event Barbara Newland from the University of Brighton reported on this year’s survey of UK HEIs and their use of EAM. The results of this survey were offered in
comparison to the previous year’s survey – the results of which were reported at the first Online Submission Day hosted by members of this project team at the University of Huddersfield the previous year. The results show that institutions are taking a staged approach towards EAM, starting with online submission and moving to eMarking and eFeedback later on. It is also clear that there is a wide variety of how assessment is being managed from entirely electronic management to various mixtures of paper-based and EAM. The provision of training is also a very mixed picture with very few choosing compulsory training. The data is showing what is widely known anecdotally: that academics are happy with esubmission but much less so about eMarking. The evidence suggests also that students and administrators are much keener for the whole process being electronic than academics (Newland et al., 2012). Very powerful points were made through this survey about the challenges we face including regulations, guidelines, support and the technology itself. The comparison to the previous year’s data shows a move away from the patchy implementation of the previous year to a more widespread adoption, but that the focus remains on the administrative side of things rather than the pedagogy.

2.3 Learning Analytics

One of the key affordances of the tool that was the focus of the evaluation within this project was its ability to collect and collate assessment data that could then be used for the purposes of learning analytics. Learning Analytics is a relatively new field of inquiry and its precise meaning is both contested and fluid (Johnson, Smith, Willis, Levine, & Haywood, 2011; LAK, n.d.). CETIS have recently published a series of Learning Analytics working papers which offer very detailed and useful guidance on a wide variety of issues to do with Learning Analytics. Sheila MacNeil’s Briefing Paper offers a good overview of the series (MacNeill, n.d.).

Ferguson (2012) suggests that the best working definition is that offered by the first LAK conference:

> the measurement, collection, analysis and reporting of data about learners and their contexts, for the purposes of understanding and optimising, learning and the environment in which it occurs. (Ferguson, 2012 n.p.; LAK, n.d.)

Assessment analytics has the potential to make a valuable contribution to the field of learning analytics. This is because, as far as students and teachers are concerned, assessment is both already ubiquitous and very meaningful. All students are, and expect to be, assessed and all teachers are already involved in marking student work. For students, assessment is fundamentally important and is widely recognised to motivate learning (Bloxham & Boyd, 2007; D. Boud & Falchikov, 2007; Dochy, Segers, Gijbels, & Struyven, 2007; Scouller, 1998; Snyder, 1973). It is also what they pay for. As Taras (2001) puts it, in a fees-based culture “students as paying customers have invested in higher education and their returns are seen to materialise in the form of assessment grades” (Taras, 2001, p. 606). For teachers, marking student assessment is where their academic expertise is explicitly useful and is directly applied to the learning of individual students. Sadler (2011) describes grading as “professional consensus among experts using student work as the primary evidence” going on to say: “[t]here is nothing more direct, nothing more fundamental” (Sadler, 2011, p. 89). This expert judgement and tacit knowledge is, to return to Taras’s point above, what students and therefore institutions, are investing in when they pay for academic staff labour. Assessment analytics, therefore, offers the potential for student attainment to be measured across time, in comparison to individual students’ starting point (ipsative development), to their peers, and/or against benchmarks or standards. In all of these scenarios, assessment analytics is explicitly useful and easy to envisage
which, therefore, makes it much easier to operationalize than analytics strategies without these key qualities.

In the scholarship on learning analytics, assessment data is almost never considered or referred to as part of the available data-sets that can inform learning analytics. Assessment data is not mentioned in Campbell and Oblinger’s table of Types and Sources of Institutional Data (Campbell & Oblinger, 2007). There is no mention of assessment analytics in the SOLAR report (Siemens et al., 2011), in Ferguson’s overview paper (Ferguson, 2012) or the 2011 Horizon Report section on Learning Analytics (Johnson et al., 2011). It is likely that one of the main reasons as to why this blind spot exists is because the level of granularity that most (if not all) HEIs currently store (down to the level of assessment task results) does not offer enough detail about what individual students did well or poorly or, more importantly, what they need to do to improve.

This more finely granular level of data (such as student achievement against assessment criteria) has been, up to now, too difficult to collect and collate. This is a direct product of the continuing prevalence and persistence of paper-based marking systems that are difficult if not impossible to use for the purposes of learning analytics. Until relatively recently, the possibility of collecting and collating assessment data at a level of granularity that is meaningful and useful has simply been unthinkable. With the advent of useable, affordable and reliable electronic marking tools and the upsurge in interest across the sector to move towards EAM this is, arguably, about to change. The point about granularity is relevant to procurement decisions. In the EAM tools evaluated above, for instance, GradeMark gathers assessment data that is more granular than that collected by ReView. Depending on the analytics strategies being adopted by the institution, this may, therefore, prove significant.

Below is a preliminary definition of what assessment analytics might constitute. Assessment data include, but are not limited to, the following:

- completed degree attainment (eg. degree classifications or end-of-degree grade point averages)
- progression results (eg. End-of-semester or end-of-year grade point averages)
- module results (eg. Final grades for individual subjects, classes or modules within a degree programme)
- Individual assessment results (final grades for individual pieces of coursework/exams usually in the form of a number/percentage or letter grade (A, B, C etc))
- Achievement mapped against explicit learning outcomes or assessment criteria (eg rubric results)
- Specific strengths and weaknesses within an individual student’s work (eg. Existence and/or frequency of common errors such as punctuation, expression, statistics, reasoning etc)

Alongside this are ipsative achievement data. These can be at the institution, school, course, subject and individual-student level and include:

- Level of improvement from a formative to a summative task, level of improvement from one assessment task, module, semester or year to the next (sometimes referred to as ‘exit trajectory’)

...
- Persistence (or lack thereof) of strengths and weaknesses (e.g., common errors that recur from one task to the next).

Collectively these can be usefully understood as constituting the basic data upon which we can undertake assessment analytics.
3 Evaluation Approach

3.1 Institution

3.1.1 Evaluation strategy
The project aims to explore the impact of EAM on student satisfaction, retention, progression and achievement and on course administration. It seeks also to identify effective approaches to staff development, quality of assessment, and sustainable, scaleable and diagnostic use of EAM for productive, iterative professional and curriculum development. The project aimed to monitor the achievement of these aims and to ensure that data was collected, stored and analysed in methodologically sound and consistent ways. It also sought to ensure that the approaches adopted and deployed were congruent with the intended aims and outcomes of the project from the outset and throughout.

To this end, the Teaching and Learning Institute provided consultancy services, reviewing and reporting back on emerging project approaches, data and outcomes. Written feedback and meetings at key points in the project were the methods used to share their findings and recommendations with the core project team.

The progress and emerging outcomes of the project were also shared throughout with a wider audience both through the project blog and through an ambitious and extensive programme of dissemination, via presentations, conference attendance, liaison with other JISC assessment and feedback projects, with iParadigms and via publication in refereed scholarly journals. The feedback received from this wider audience, their concerns, questions and recommendations were used to evaluate and inform the development of the project strategy and to shape how the findings were analysed and presented.

Data was collected and collated by members of the Planning and Information Service (PINS). Data relating to student demographics, achievement, attainment and retention was collected. Two baselines were considered: the results of the student cohort before the implementation of EAM and those studying in another school without an EAM strategy.

3.2 Students
Qualitative evidence from the academic staff working with the specialist conference students indicates that a significant proportion of them are ‘needy’: requiring a lot of ‘hand holding’, guidance, reassurance and support, particularly when it came to technical issues. It can be assumed, then, that the evaluative evidence from this cohort of students would be at the ‘high maintenance’ end of the spectrum and demonstrates the upper limit of support requirements. In contrast, the English Literature students are much more representative of an average undergraduate cohort in terms of their technical ability, resilience and resourcefulness. Most (but not all) of the English students were younger than the majority of students on the specialist conference and this may also
be a contributing factor in determining their levels of technical confidence and digital literacy. Though there was clear evidence that a significant proportion of the specialist conference participants were technically confident such that their engagement with EAM was unproblematic, the data gathered from the English students showed that they were, in general, more comfortable and familiar with online environments and social networking.

The specialist conference students were all working within a hybrid learning context which was, for the most part, supported by distance learning provision with a one off residential conference. The evaluative evidence from this cohort of students, therefore, is particularly relevant to institutions that are considering adopting an EAM strategy to support distance or distributed learning provision. The English Literature students were mostly full-time students and all of them were studying on campus. Some of them were living in residential halls, some in shared housing, some of them living in their parents’ home and some living in family homes with their children and/or partners. Most if not all would have had home internet access and their own personal computers as well as full access to computing and network facilities on the campus.

### 3.2.1 English Literature Students

#### 3.2.1.1 Cohort description

This group of students (cohort size of around 90) was coming to the end of the second year of their degree in English Literature at the time of the evaluation. These students had experienced a variety of assessment types by this stage in their academic careers, including the submission of a poster (in hard copy) and a portfolio (for which they had the option of submitting a hard or an electronic copy). Apart from that, however, the majority of their assessment experiences had been in the form of essays all of which they had submitted electronically via GradeMark integrated with their institutional VLE (Blackboard 8 in their first year and Blackboard 9.1 in their second). For the bulk of these assessments, their work was marked electronically using GradeMark, but a small proportion of academic staff marking their work chose to mark on paper using handwritten comments or offline using Mark-up in MS Word. These students also had friends on courses in other schools where electronic submission was not the norm and some who were required to submit both electronic and paper-copies of their assessment. Their perceptions were often framed in relationship to these other students’ experiences.

#### 3.2.1.2 Evaluation Strategies

Three evaluation exercises were conducted with these students: assessment analytics resources and a workshop (which will be explained in more detail below), a focus group, and a survey. This, alongside the workshop data and focus group data forms the main evidence for this report.

#### 3.2.1.2.1 Assessment Analytics Resources and Workshop

As outlined above, one of the key affordances of GradeMark is its ability to gather and collate assessment analytics data that is more granular than has previously been possible. The evaluation design made use of assessment analytics data that had been harvested from the same module in the previous year which had been gathered from the previous cohort of students. The assessment criteria and task remained unchanged between the two iterations of the module. The data were presented in graphic form to this cohort of students via a screencast which was released for student view prior to their assessment due date. The analysis focused on common errors and the rubric results (which mapped student achievement against the assessment criteria for this assessment
task), which graphically demonstrated where most students lost or gained most of their marks. The analysis was presented to the students in a way that emphasized that it did not presume that this cohort was the same as the previous, but that they were likely to run into the same difficulties as the previous cohort had done. Upon submission, this cohort’s work was marked using GradeMark and the data were harvested and analysed in the same way. The student work was returned at 1pm on a Wednesday three weeks after their submission and the following day the cohort was invited to attend a feedback workshop where the data from their assessment were presented to them in graphic form. Prior to seeing the analysis, students were given a two-sided worksheet that prompted them to reflect on their performance and their perception of how it sat in relationship to the cohort (in terms of percentiles) as a whole and on their motivation to act on the feedback they had just received. The students were then shown data that allowed them to identify where they were actually placed in relationship to the cohort as a whole and showed similar data to that offered in the pre-submission feedback screencast. Students were then asked to complete the second side of the worksheet which replicated the questions asked of them on the first side. This time they were able to answer the questions in a way that was informed by the data they had just seen. In addition, on this second side, the simple question: ‘Any Surprises?’ asked them to note anything which had particularly struck them during the workshop. A copy of this worksheet is included in the appendix of this report.

3.2.1.2.2 Survey
A survey was distributed to all students on the module via the Bristol Online Survey. It asked questions relating to their feelings about electronic submission and return, the assessment analytics material they had engaged with and some other workshops that had been conducted in the module. Unfortunately there were only 20 respondents: not enough to achieve statistical significance. However, valuable qualitative data was gathered in this process.

3.2.1.2.3 Focus group
A small group of six students volunteered to participate in a focus group facilitated by Cheryl Reynolds. This was undertaken at the end of term, after their final assessment task had been submitted. A copy of the questions asked at this focus group is included in the appendix of this report.

3.2.2 Specialist Conference Students

3.2.2.1 Cohort Description
These focus groups were conducted with three groups of students all undertaking the specialist conference module. These students are all graduates, some of whom have postgraduate qualifications such as Masters or Doctoral degrees. All of them are working as teachers in specific disciplines in sixth form or further education colleges, private training providers and work-based learning. They are spread around the country and are often isolated in terms of their disciplinary expertise within their home institutional settings. The purpose of this module is to link them with other teachers in their area of disciplinary expertise and to provide tutor support for them from within that same area of expertise. This is almost always, therefore, a matter of them working at a distance from both the other students within their cohort and their tutor. These students are all mature-age and are in the unusual position of being both teachers and students. Their reflections on the use of EAM from both perspectives, therefore, are particularly interesting and valuable.
For the vast majority of these students their use of Turnitin and GradeMark on this module was their very first experience of EAM. For these students their previous experience had not only been paper-based, but also very personal, involving face-to-face contact and support with both tutors and administrative staff in a small, closely knit and familiar physical environment. The act of submitting work electronically to a tutor that they had never met in person, therefore, presented two new experiences at the same time.

3.2.2.2 Evaluation Strategy

3.2.2.2.1 Survey
The main form of evaluation undertaken with these students was in the form of a survey. This was undertaken with a paper-based questionnaire which was administered when these students were attending the conference on the main campus of the University of Huddersfield on 3rd April 2012. There were 804 respondents to this survey. Data entry was conducted using Google Forms and the analysis was undertaken using a combination of SPSS (for the quantitative data) and NVIVO (for the qualitative responses).

3.2.2.2.2 Focus groups
Three focus groups were facilitated by Cath Ellis with a total of 14 students. This was undertaken during the on-campus conference and students volunteered to take part. A copy of the questions asked at this focus group is included in the appendix of this report.

3.3 Academic staff
A total of 11 academic staff were evaluated for the project. Six academic staff were interviewed for the project and 5 took part in the focus group. Most of these staff interviewed were within the School of Music, Humanities and Media with one staff member from the School of Education and Professional Development. These staff taught in a variety of disciplines including Music, Music Technology and English Literature. All of the staff that participated in the focus group were tutors working as teaching staff on the specialist conference module.

The subject specialisms for the academic staff evaluated covered a wide range of disciplines including English Literature, music, mathematics and sciences. As a direct result of this, evidence relating to quite distinct disciplinary requirements forms an important part of the findings of this project.

For the most part the academic staff that were interviewed were keen adopters of electronic marking, having made independent and autonomous decisions to change their marking practice from paper-based systems. In some instances, academic staff members were reluctant adopters of electronic marking. Some had been pressured to adopt electronic marking by colleagues, students or by their line managers. In some instances these had found themselves becoming less reluctant once they became more familiar with the technology.
4 Findings

4.1 Institutional impact

4.1.1 Student retention and satisfaction

The below table shows the completion/retention rates of those students in the department of Music, Media and Humanities that started both before and after the implementation of the EBEAM project at the University. The study of retention below follows the project as it was implemented with the cohort entering the university in 2006/07 considered as the control and those entering in 2007/08 as the test population.

<table>
<thead>
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<th>Prior to EBEAM study</th>
<th>Post EBEAM study</th>
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<tr>
<td></td>
<td>Not entering</td>
<td>Population size</td>
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<td></td>
<td>subsequent year/</td>
<td></td>
</tr>
<tr>
<td></td>
<td>not completing</td>
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<tr>
<td>1st Years</td>
<td>19.0%</td>
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</tr>
<tr>
<td>2nd Years</td>
<td>3.53%</td>
<td>510</td>
</tr>
<tr>
<td>3rd Years</td>
<td>2.2%</td>
<td>416</td>
</tr>
</tbody>
</table>

The first year students that took part in the study (2007/08 cohort) were more likely to enter their second year of study at the University than those from the previous academic year (2006/07). The differences amongst completion and retention scores and the population size allow for a statistically significant comparison of the two scores, with a probability of the above result occurring by chance alone of more than 1 in 150,000 (p value of 5.6x10^-6 for an assumed binomial distribution).

It appears then that either the project had a positive impact on the retention of first year students or alternatively it did not have a large enough negative impact to counteract other unknown influences.

The same cannot be said for second and third year students; however, it must be remembered that these are the same students from the previous calculation, it is possible that the project moved the retention problem further down the line but the overall impact is considerably less than it was for those students from the previous year’s cohort.

A further interesting test is that of student satisfaction. The concern could be stated that the project may have had an effect on this indicator.

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<th>Post EBEAM study</th>
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<td></td>
<td>% agree</td>
<td>Population</td>
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<tr>
<td>Music</td>
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<td>127</td>
</tr>
</tbody>
</table>
There is no statistically significant effect on student satisfaction as a result of this project in either a negative or a positive way.

4.1.2 Administrative costs
A time and motion study was undertaken by an administrative assistant which allowed us to measure the difference in workload for paper-based and EAM. While the GradeMark tool brought savings (such as the ability to automate or batch manage processes that had previously been manual) it also brought new tasks which previously had not been required (such as the setting up of Turnitin inboxes within the VLE). In total, however, there was a workload saving for administrative staff. Based on a student load of 1620 students per year, the reduction in labour in terms of hours was from 172 hours in the paper-based system to 35 hours in EAM, a saving of 137 hours. Based on the staffing costs for an administrative assistant at mid point (pt 14) grade 4, this amounted to a saving of £1363.90 per year.

These savings were most accrued through the automation of date-stamping, checking details, logging and distributing student work prior to marking. Our previous paper-based assessment system had not incorporated the issuing of receipts to prove submission therefore this was not factored into our study. If it had been, the savings would have been even greater given that this is another process, which is automated by the Turnitin system. Even with the EAM system, some assessment is still submitted in paper-form. Our system requires students to download a cover sheet, which includes a bar-code which is individual to each piece of student assessment. Our calculation of savings includes the administrative tasks required to process these physical submissions using the bar-code system which logs and date-stamps the submission while also automatically emailing the student with a proof of receipt.

4.2 eSubmission
One of the key design principles of the implementation strategy used by the School of Music, Humanities and Media since 2007 was to use eSubmission as a point of departure towards the long-term goal of EAM. What this meant in practice was that we concentrated our energies in the first instance on getting a set of policies, protocols and then procedures in place to ensure that all students could have a consistent electronic submission experience. This was decoupled from other aspects of EAM (including eMarking, batch uploading of results etc) to allow academic staff the flexibility to make choices about their work patterns without compromising the submission experience for students.

What follows from this is that it is of great concern, in the first instance, that electronic submission is something that is of benefit to students. As a consequence, a great deal of our evaluative focus was on the experience of electronic submission for students. As has been discussed elsewhere in this report, students feel strong emotions when it comes to assessment. One of the most important findings from our evaluations was that the emotions that students felt prior to electronically submitting their work for the first time changed significantly and rapidly once they had become accustomed to the process, to the point where electronic submission became normative and emotionally neutral. There is even evidence to suggest that most students find the process of
submitting their work electronically to be less anxiety inducing than submitting work on paper or via the postal system (for distance learning students).

In the focus groups conducted with the specialist conference students the first question students were asked was about their previous experience of submitting assessment work. This was asked to establish a baseline against which their next responses could be measured. All students’ previous experience had been limited to or dominated by paper-based submission with only a small number of students having very limited experience of any form of eSubmission, usually in the form of submission via email. This paper-based submission was often handled by administrative staff with whom these students were familiar, in person. This was born out in the results from the survey, which indicated that there was a small proportion of students in this cohort (5 per cent) who were already familiar with the Turnitin submission system but for the remaining 95 per cent it was a completely new system to them.

These students were then asked to describe their initial emotional reaction to being told that they were going to be required to submit their work electronically for this module. The reactions to this were varied and extreme. When asked to explain their feelings upon hearing the news some students’ reactions were quite extreme: ‘terror’; ‘absolutely petrified’. While others used less extreme words nevertheless their sense of anxiety is what prevailed: ‘scary’, ‘panic’, ‘a little concerned’ and ‘slight fear’. One student actually put this down to the reputation of the tool, referring to it as ‘the great fearsome Turnitin system’, ideas that were perpetuated via ‘horror stories’ and ‘urban legends’.

Others were much less alarmed and many felt perfectly comfortable with it, noting that it felt very similar to other processes of uploading material with which they were already familiar:

- uploading a document to submit would be no different to uploading a photo onto facebook if you like; it was a very similar process so it felt very familiar
- it was just almost like attaching anything to an email and sending that really
- we upload stuff to our VLE at college, it’s similar process - no problem

When asked to describe their feelings at the point where they actually came to submit it was sometimes the case that their anticipated feelings did not come to fruition. For some their initial feelings had been calm but had turned to panic at the point of submission:

- I was actually ok and then because [...] somebody else in the group actually turned their draft in a lot earlier than everybody else, I was at the last minute type of thing, and she actually had problems actually uploading it and that’s actually that’s when I started worrying

For other students it was the other way around:

- thinking [voiced intake of breath] ‘it’s not going to go, I’m gonna have problems what am gonna do! I’m gonna have to ring them up in Huddersfield’ actually it went through first time [heh heh] I was like ‘woohoo!’ so yeah I was actually ok initially until I heard all these horror stories.
In general, however, most reported feeling much calmer after they had managed to successfully submit. These feelings were also clearly further assuaged as they had undertaken further, subsequent submissions and had, in the process, become much more familiar with the system.

It was trying to remember the next time where [heh] where I’d actually downloaded it to go and get my feedback and I was like ‘oh’ um but after you’ve used it a couple of times it was quite: “yeah I know now where to go straight away”

the second or third time [...] you just pressed the buttons that you needed

once you know what to do it’s fine, not a problem it’s really good, it’s just that initial...

These findings were borne out in the results of the survey of the whole student body. While the majority of students in this group (76 per cent) had not found the system either familiar or intuitive, all but 3 per cent of them had managed to submit their work successfully, either by using the instructions or guidance available to them (“[I] just followed the instructions and it worked!”) or by calling on the assistance of others.

Table 2 Initial Feelings regarding eSubmission

<table>
<thead>
<tr>
<th>Initial Feelings</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Already Familiar</td>
<td>5%</td>
</tr>
<tr>
<td>Intuitive</td>
<td>15%</td>
</tr>
<tr>
<td>Not Intuitive, Used instructions</td>
<td>49%</td>
</tr>
<tr>
<td>Not Intuitive, Helped by others</td>
<td>27%</td>
</tr>
<tr>
<td>Too complex</td>
<td>3%</td>
</tr>
<tr>
<td>Other</td>
<td>1%</td>
</tr>
</tbody>
</table>

When asked to describe their current feelings with respect to the eSubmission process, only 20 per cent of these students were continuing to find the system quite or very difficult with the remainder finding it quite easy or very easy. Despite the range of emotional responses to the initial discovery of being required to submit electronically and their first experiences of doing so, there was also a general sense of acceptance that this is a logical and perhaps even inevitable step to take:

it’s like the norm of technology moving on […] like ‘just seems the next logical step to handing it in from paper’ – saving resources
This shows two important results: first, that the system is designed in such a way that the majority of students will already be familiar with the system, will be able to figure it out for themselves or will be capable of submitting their work successfully with the help of a basic set of instructions. However, it is vitally important that students be reassured that it is a simple and relatively intuitive process in order to assuage any initial feelings of anxiety or fear that they may be feeling prior to using it for the first time.

Taking a closer look at the data it becomes clear that students become acquainted and comfortable with the eSubmission system very quickly indeed. For the vast majority of specialist conference students (95%) their submission of work via Turnitin for this module had been their first experience of using this tool. When the survey was conducted, these students had experienced the submission process three times within the space of three months. The data was analysed to quantify the significance of shifts in opinion over that course of time. In particular, we focussed on those students who, in answer to question 1, recalled that on first use they had found Turnitin to be too complex, such that they were unable to submit their paper on time. These students were in the minority, making up only 3% of respondents. Their responses are, nonetheless, important, as representative of that proportion of the student body that might be expected to struggle the most with the technology. We therefore looked at how they responded to question 2, which elicited their view of Turnitin after two more attempts at submission, asking them to rate whether they now...
found it very easy, easy, difficult or very difficult. 35 per cent of them rated the process as either easy or very easy, showing a clear shift in perception. A Pearson Chi-Square test was applied to test whether this shift was significant, giving a Chi-Square value of 0.000. This indicates that there had been a significant shift to a more positive perception of Turnitin, even amongst those students who had found it most difficult on first acquaintance.

Our conclusion was, therefore, that it would be disproportionate to invest excessive time or energy in mandatory training for all students in the eSubmission process prior to their first submission. The majority of students in this study simply did not need it and it would consequently represent a waste of time and effort, particularly as it would have to be repeated for each new intake. It is evident, however, that some training and support needs to be provided. This is because even after submitting several pieces of work through the system, a proportion of students will still require on-going support and instruction in order to successfully submit their work. Therefore, investing time and energy into the provision of self-paced online resources (eg. Screencasts or how-to sheets that can be printed) as well as optional one-to-one or face-to-face training for students in the process is likely to suit almost all students’ needs. It is likely that another cost-effective means of managing this process might be to provide ‘buddy’ relationships, connecting those students who are comfortable and confident with the process with those who are not to provide peer training as this appears to be something those who are struggling are comfortable turning to for support. It is, therefore, one of the recommendations of this project that the appropriate level of training for students be at that level.

Table 4 Overall Submission Preference
4.2.1 Convenience of electronic submission

It is clear that for students who have used EAM for a while that they have a strong preference for it over other types of submission system. The evidence for the increased convenience that it brought to them at the time of submission is strong and compelling. This was true for all students evaluated.
When surveyed, the majority of students expressed a preference for using Turnitin as their submission system. When asked to comment further on their response, the most common responses were to do with convenience. The most commonly used word in these qualitative responses was ‘easy’ which sums up their sense that not only was the system easy to use but it also made their lives easier. This sentiment was also shared by the group who indicated a preference for either Turnitin or Email; for this group, convenience was even more prominent in their responses. These students identified that the improved convenience brought benefits in terms of a reduction in time spent submitting work, particularly in terms of having to print work and travel to and from the campus. It also brought benefits in a reduction in ‘hassle’, particularly in terms of dealing with printers, paper and toner, dealing with the postal system and having to get to the campus. Many reported that it just made sense because the work was already in electronic form, because we now live in a ‘so-called paperless society’ and electronic submission is ‘up to date’.

In the focus groups this sentiment was repeated with many commenting that it allowed them to fit their submission more easily around other aspects of their busy lives. One specialist conference student put it this way:

it means that you don’t have to worry about time to print and take it to somebody

So even though several of the specialist conference students had reported a preference for the familiar process of handing work to someone they knew, there was for some of them at least, a growing appreciation that being required to do so was a bit of a hassle in comparison to eSubmission. The English literature students agreed that avoiding the due-time traffic jams for printers and manual proofs of receipt was a huge benefit of the system:

it’s such a faff to try and come in at four o’clock to have to hand it in and everyone else is trying to hand theirs in as well and to print off the bar code sheet and it’s unnecessary in my view

It was certainly seen as more convenient for the specialist conference students as distance learners in comparison to relying on the postal system:

then we would have to be waiting for it through the post or have to be coming here in person which would take a lot longer so I can see the advantages of having it online rather than us having to wait for the post or wait for visits

[of] course you’d do it electronically; it wouldn’t make any sense to be posting it how many of us are confident of putting that letter in the postbox?

The English Literature students felt very similar things in terms of the convenience of eSubmission. One compared the experiences of her boyfriend who was studying in another school:

he has to submit every single assignment he does in paper and they’ve got the turn in time at ten o’clock in the morning, which I think is ridiculous!

While the illogic of having to submit two copies of the same thing was clearly not lost on the student, it is the inconvenience that this generated, which attracted her scorn.
For both the specialist conference and the English Literature students the due time was set at 11.59pm and there is a strong sense that this later time is preferred to an earlier time.

It was quite a positive thing to be able to know that you can send it up to [...] midnight for example

it allows you more time basically to do it in the evening you know later on

being able to submit it at midnight I think is really good. There’s no point in having at four o’clock in the afternoon cos after four o’clock the tutor is not going to look at it, let’s be realistic, they’re not going to sit there and mark through sixty essays between four o’clock onwards on the work day. So why should they not have it electronically? They’ll get it the next morning when [...] they come into work fresh and they’ll have them there sitting there for them and, like, we can work on them as far late as we want to.

This was seen as more flexible and therefore convenient even if it brought additional risks:

I actually liked the flexibility of it so the fact that you could Turnitin literally at 11.50pm er my only problem then is [...]’what if the internet suddenly went down on Sunday night!? I’d be in a world of hurt’ but then [...] I’ve just brought that on myself

This later time was acknowledged as more convenient in terms of fitting around their busy lives and helped them with their time management:

We’ve all got busy lives we don’t just work as teachers certainly for me [heh] I’ve three children so it’s [...] good to know

you can also hand it in whenever you want like if you want to hand something in early, if you want to just get it out of the way especially sort of at the end of the year like if you’ve something done and you want to get rid of it you can

if you’re sitting there at four o’clock in the morning you’ve gone “yeah I’m done, cool” you can’t come into uni and just give it to someone

One of the English Literature students started getting quite evangelical about the impact that electronic submission had had on her:

I think electronic submission is the best thing that has come to scholarship for a long time because it’s so much easier on everybody

It is useful, however, to place these responses in relation to those offered by students who had indicated on the survey that email was their submission preference. These are students who clearly appreciate the benefits of electronic submission but found email preferable to the system they had been required to use which was Turnitin. Again, the most commonly reported reason for this preference was convenience. This tells us something significant about the importance of this to students in general but it is also a prompt to consider why this substantial group of students found submitting their work via email more convenient than via Turnitin. For this group it is clear that their reasons were that email felt simpler, more familiar and less of a ‘hassle’ than logging in to and navigating their way through Turnitin, a system which one reported as being ‘cumbersome’ and
another said was ‘almost an assignment itself to get through’. Several of these students reported that they had found Turnitin difficult to access (because of such things as firewall or browser problems, because they struggled to remember their login details or simply because their own IT skills were lacking). The student whose contribution perhaps sums the attitude of this group up said simply that email ‘is easy, accessible, immediate and familiar.’ Given how many students who indicated a preference for Turnitin over email reported that they had not found it any more complicated than submitting via email, this shows that perceptions of what feels complicated and what does not can vary considerably. It is important to bear these things in mind when designing the support and training for students. Providing clear and accessible self-paced, on-demand training resources in a variety of formats (including printable help-sheets and screencasts) as well as opportunities to attend hands-on training will remain important for this group. It is also important to remember how quickly students become familiar with the process of submitting work via Turnitin as evidenced by the comfort felt by the English Literature students. Considering building tasks and activities which require more regular use of the tool for the submission of work (perhaps small formative tasks) early in the academic life-cycle may also help make the tool feel more familiar more quickly for students who feel this way.

Another significant justification offered for having a preference for email was that it felt more personal than Turnitin. For these students it is clear that email felt much more like a conversation with their tutor than Turnitin. Several mentioned that one of the key benefits of email was that it allowed them to add a note, a comment or a covering letter to their work as it was submitted and that email meant that they would get a personal reply from their tutor. This, of course, brings to mind the work of Diana Laurillard and the emphasis she places on dialogue. She argues for an ‘epistemology that situates learning as a relationship between the learner and the world, mediated by the teacher [...] which is] essentially dialogic [in] form’ (Laurillard, 2002, p. 86). In coining her ideas for the ‘conversational framework’ she draws on the work of other influential scholars including Paul Ramsden, David Kolb and Gordon Pask arguing that the importance of conversation has ‘at least face validity’ (p. 88). Arguably, the role of conversation in assessment and feedback is no less important than it is in teaching and learning. For these students, the importance of feeling that they were engaged in conversation with their tutors was clearly of prime importance and it is worth considering how that sense of conversation can be improved or strengthened with the use of Turnitin. It could be that offering more conversational and dialogic feedback in the comments offered (for example using more first and second person pronouns) or making more explicit opportunities or mechanisms for students to continue the dialogue (eg. by inviting them to attend follow-up tutorials or to engage in reflective activities monitored by the tutor) may strengthen students’ perceptions of the personal connection between them and their tutor. It might also be worthwhile considering the inclusion of additional fields in future developments of the Turnitin Grademark tool which allow students to submit comments or notes, and to engage in reflective and self-evaluative activities after their work has been returned.

It is interesting to note how few students in any of the groups that preferred electronic submission (Turnitin and/or email) found the plagiarism detection tools within Turnitin to be off-putting or unhelpful. Only one student reported finding it ‘intimidating’ and as representing ‘an element of mistrust’. All of the other students who commented on this aspect of the tool indicated that it gave them peace of mind. As one student put it: ‘you feel secure in the knowledge that you haven’t
cheated and no one else can.’ Institutional anxieties relating to Turnitin being used as a punitive tool seem to be unfounded with these two groups of students at least.

In the group that reported a preference for hardcopy submission, convenience was a much less significant factor in relation to other factors, particularly confidence. Even though this group was a minority of students, it was nevertheless a substantial group (around a fifth of the total). Therefore, it is important to consider what motivated these responses. For these students, submitting work online felt less convenient than physically submitting a hardcopy at their campus. Not all of these students indicated precisely why that was but several indicated that this was a result of not having internet access at home. For these students, the inconvenience of having to find a computer, log on, upload their work and wait for a proof of receipt constituted more hassle than printing the work off, typing it or handwriting it and physically handing it in.

Not everyone in the world owns a computer or has internet access at home. Deadlines of midnight on a Sunday penalise these people to an extent

Internet is very limited to me, I feel handing in written or typed is easier electronically I would have to make time and find a PC just to view my work

This feeling of it being more inconvenient may also be a product of their feeling unfamiliar with the system. Around twice as many of the students who reported a preference for paper submission did so in terms of familiarity. A recurring theme emerged from these responses where students repeatedly articulated their preference as product of their being ‘old fashioned’:

*Old fashioned* values apply - this is just something I prefer to do

I’m *old school* and prefer hard copy

I am not a natural "techie" person and simply prefer an "old school" approach. (Emphasis ours.)

This is a clear acknowledgement that the world is moving on and is a tacit acceptance of the logic and inevitability of a move towards EAM across all educational institutions. Given that all of these students were also training to become tutors working within educational institutions, this represents a distinct challenge for their professional development. An awareness that their current level of skills was inadequate, therefore implying that this was something they knew they had to work on, was something several acknowledged:

Being old school I am not confident with all the aspects of computers. *I do try* and I do develop resources for my learners to the best of my ability.

I’m *still* a little "technophobic" so anything that involves using a computer means extra stress for me at this stage.

*My computer skills are not great at the moment.* (Emphasis ours.)

We were interested to find out more about these students whose preference was for hardcopy. We therefore cross-tabulated their responses to the question regarding submission preference with
other responses. Of the 18 students who indicated that they preferred to get their feedback in a group setting, 12 (two thirds) also indicated that they preferred to submit their work in hardcopy. We found, however, that just over half of the 168 students who indicated a preference for submitting their work in hardcopy also indicated a preference for picking up their feedback in private. This shows that students are not necessarily linking the perceived benefit of privacy as part and parcel of electronic submission and something that is difficult and expensive to manage in a paper-based system. This and other responses indicate that students’ expectations of what is feasible, manageable and affordable in an assessment management system are sometimes unrealistic and, at times, irrational.

Similarly, when compared against the question relating to their confidence in the successful submission of their work, a slightly higher percentage of respondents indicated that they were not confident than those whose preference was for electronic submission (11 per cent versus 2 per cent but still 89 per cent of students who indicated that they preferred a hardcopy submission felt very or fairly confident that their work had been submitted successfully.

Recognising that electronic submission will remain a challenge for some students is important. However, it is worth considering how to best support these types of student through this process, bearing in mind that as their familiarity with the system improves so too will their sense of its inconvenience reduce. Those students who found the process challenging or difficult were nevertheless aware that moving onto an EAM approach makes sense and is the way of the future. There was a clear sense from these students that they needed to take responsibility for developing their skills to cope with this changing world. Therefore, couching their engagement with the tool in ways that emphasizes the importance of it to their professional development (regardless of whether the students are aspiring to a career in an educational institution or not) is likely to offer appropriate motivation to them. Taking the opportunity to emphasise the benefits that accrue as a result of using an EAM system (such as the privacy of feedback and an automatic proof of receipt) may also encourage more reluctant users to become more tolerant of using a system with which they are less familiar or feel less comfortable.

As discussed below, it is clear that managing assessment via email is simply not workable or desirable for academic staff responsible for marking student work so it is unlikely to ever be a feasible solution for an institutionalised EAM strategy on anything other than a very small scale. It is useful, however, to consider what steps might need to be taken at the institutional level to support students who have these preferences and feelings regarding the Turnitin submission system.

4.2.2 Security of eSubmission

One of the biggest areas of concern for senior managers and administrative managers within Higher Education Institutions is the security of the system and, particularly, students’ perceptions of this. For the students surveyed whose preference was submission via Turnitin, confidence in the safety and security of the system was the second most frequently cited reason for this preference. For these students this increased confidence was manifest in several ways:

- that their work had been successfully submitted
- that their work would not be lost in the system ("you press the button, you think ‘god did it go into cyberspace’")
• that it had been securely submitted to the correct person

Confidence was a priority in all the focus groups and the response was overwhelmingly positive, especially when compared to paper-based systems. In the student survey, students were asked: Thinking about your current views on Turnitin, which of the following best represents your confidence in the submission process? Only 5% reporting that they were not confident.

Table 7 Perception of security of submission

![Security of Submission Graph]

This sense of overall confidence was reinforced in the focus groups. When one group of specialist conference students were asked how confident they felt that it was safe and secure their response was an immediate, unanimous and adamant ‘very’. An English Literature student put it another way:

never worried about it electronically

Even those students who had initially had some concerns regarding security found their fears allayed:

it’s just the questions always […] whether anything’s going to go wrong with the system [and] if something doesn’t go through for whatever reason or if […] something happens to your file […] But I think the systems are fairly secure there to be honest

and what reassured me about it […] your concerns about your submission: has it worked? […] the system does seem very very robust

For the students in the focus groups, it was clear that much of their sense of security in the system came from the automatic proof of receipt which the system generated:
that’s when it’s gone in my view it’s not when I click submit, it’s when I get the receipt, that’s when it’s done, that’s when it’s gone, I can’t do anything to change it, move on

it’s that security of knowing that you’ve got something that says you’ve submitted it at this time so nobody can come back and say your work’s missing, you can say I’ve got this proof

The automated and rapid nature of the receipt compared favourably to manual receipts that were generated for hardcopy submissions:

it’s cos you have to hand it into postbox so if it’s out of office hours you don’t get a receipt initially and so if it goes missing in that time [...] it] takes three seconds to get a receipt in [...] your email and that’s it. You’ve three seconds of waiting to get it in your email and then you’ve got the relief, than if you’ve handed something in you’d be waiting quite a few hours or maybe a day and then that’s a horrible, horrible time

Another aspect of the system which increased their sense of confidence in its security was knowing that the work, once submitted electronically, was securely backed up: both on their own computer and on the system. This compared very favourably to paper-based systems:

in paper [...] if they go “it’s missing” I’d be like “oh, no!” but [...] if it’s on electronic, I can just go “yep, there you go, there’s another one” and it’s exactly the same, exactly the way I left it

two of us got a non-submission yeah and I went to speak to [my tutor], well this essay I handed it in, I know I did, [...] and so I would have had the receipt somewhere but [...] I was in the university [...] I went straight to the lecturer. He went away for a matter of about five minutes and went “yeah I’ve found it, it was just a case that I missed it” [...] so everything was fine, everything got sorted and there was no problem but you know if he wasn’t able to find it [if it had been paper] that would have been a big big problem

It is important to consider these responses in relationship to those students who indicated, via the survey, that their preference was for a hardcopy submission system. For these students, confidence in the reliability and security of their submission was by far the most significant reason for their preference. For these students the security of hardcopy submission outweighed that afforded by any online system. A commonly cited reason for this was that they felt that submitting something ‘real’ equated to something having ‘really’ been submitted. This sense of hardcopy being ‘real’ (as opposed to electronic submission being ‘virtual’) because it is visible and tangible was amplified elsewhere in their comments:

With a hard copy I can see for myself that the essay has been handed in

Sounds funny, but like to have it in my hand, hand it in, and know it has got to who it was supposed to go to

Just prefer having something in front of me that shows I have done the work

It just feels safer - more like I've actually done something

Having an actual copy gives ownership, a physical object to (hopefully) be proud of
These comments, which reinforce the importance that some students place in the real and the physical, were reinforced by a frequently articulated sense of mistrust of electronic and IT systems. For these students, an anxiety that the system, their IT resources and/or their IT skills would let them down at the last minute was their major concern. This response was typical:

with electronic submission there is a worry that it won't work whereas handing a hard copy to your tutor you know they have received it and you don’t worry about technical issues

Finding ways within the Turnitin system to reassure students that the submission has really happened, perhaps using haptics (eg sounds or movement to make the submission process feel more real), are worth considering.

For several respondents, their success with the Turnitin submission system also improved their confidence in themselves and their ability to use IT systems:

[it] enabled me to become more confident using IT systems

It gives me confidence using technology and the ability to use it with my HE learners when they hand work in

For someone who isn’t very good with ICT it was a challenge however the experience has made me more confident when using technology

For students who are naturally reluctant to engage with technology to manage aspects of their study, being required to do so as part of their course is likely to be a useful prompt.

Several made mention of the fact that Turnitin improved their confidence in the institution with which they were dealing:

There's something final and official about Turnitin

Turnitin made the process a little more professional

It felt professional and academic

These responses indicate that Turnitin offers an interface that feels appropriate to the academic context in which students are working.

Confidence in the system is a significant aspect of any Assessment Management system. Given that no system is going to be completely fool proof or totally reliable, developing transparent, fair and robust contingency policies to cope with outages is vitally important. This returns us to the work of Yorke who argues that “it is more important to remark that the practical anticipation of possible difficulties is at least as important as dealing satisfactorily with the failures that have occurred” (Yorke, 1998, p. 113). It is also important that students are warned to leave ample time for submission to accommodate any last-minute technical difficulties that may occur at their end (eg. their home broadband failing, power outages etc). Ensuring that students have access to 24/7 phone-based help desk support (and reminding students of that facility) will also be an important factor in helping students build their confidence with the system. It is important, however, to resist
the temptation to push the problem onto the students by making dealing with technical difficulties or failures entirely their responsibility.

4.3 Electronic feedback and return

4.3.1 Clarity

Another common comment in both student focus groups was to do with clarity. Their responses related to several aspects of the assessment and feedback process. These include the clarity of the date of return for their assessment result and the clarity of the feedback they received.

4.3.1.1 Clarity of date of return

The English students agreed that Turnitin made it ‘very clear’ when they were going to receive their feedback in a way which they clearly had not experienced before. This related to a school policy decision to uniformly set the ‘post-date’ (or the date at which student work would be returned) at the date prescribed by institutional policy (three working weeks). As a consequence, in this, their second year of student, the date of return had been reported consistently to them and was consequently uniformly clear to them.

This same perception of the clarity of return date was also reported by the specialist conference students. For these students information relating to the time and date of assessment feedback return was provided for them in two ways: within the submission tool (Turnitin) and in a specially constructed timeline provided for them by the course leader. One student was even up to see it happen:

    on the Turnitin pages the dates were made very, very clear, you had a timeline on there and it says your paper ‘you have to submit by such a date and your feedback will be available by’ and it was midnight and it was literally [clicks fingers] a second past midnight it came down just like that

Knowing the date of expected return of their work was especially important to all students. When asked how important it was for them to know the date of return, one of the specialist focus groups chorused in unison: ‘very!’ When asked to amplify why that was, students reported that it eased their anxiety.

    it puts you at rest doesn’t it?
    it takes a bit of fear off. What if the response doesn’t come for a while and you’re waiting. It takes a bit of anxiety from the whole process

How this anxiety can sometimes manifest was articulated by one of the English students who related a story from a module from her joint discipline where the feedback on a formative submission had been returned after the subsequent summative was due. This student reports being ‘furious’ about this, and talks about the tutor’s behaviour in terms of laziness, repeatedly remarking that they hadn’t ‘bothered’ to return it. This student’s anger is focused on the fact that the students had ‘lost a substantial portion of their time to improve’ and that they were consequently ‘working blindly’.

The significance of the timeliness of feedback is well reported in the literature on assessment and obviously an EAM system won’t guarantee that work is returned promptly or within the time defined within an institutional feedback turn-around policy. The fact, however, that an EAM system allows
for the return (or ‘post’) date to be made so uniformly clear to students improves their awareness of their entitlement and consequently shapes their expectation. This became clear through one student’s contribution that is, frankly, difficult to argue with:

    we’ve got a due date to get stuff in, they should have a due date to give it back because it’s not fair for us to rush to get it in and then to be waiting two months back for feedback

There was also clear evidence from the focus group that this improvement in clarity had had a positive impact on the timeliness of the feedback they had experienced with this same student reporting that ‘it’s been a lot better this year’. This would seem to suggest that the improved clarity of return dates to students has applied pressure to academic staff to return work promptly to students.

These findings were supported by the survey of the specialist conference students. Students were asked to respond to the question: could rely on the feedback always being available on the date on which it was due? Over 90% of students were either certain that it was or as far as they were aware it was.

Table 8 Perception of certainty of date of return

<table>
<thead>
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<tbody>
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<td>Certain</td>
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</tr>
<tr>
<td>As far as aware</td>
<td>38%</td>
</tr>
<tr>
<td>Occasionally late</td>
<td>4%</td>
</tr>
<tr>
<td>Not normally available</td>
<td>1%</td>
</tr>
</tbody>
</table>

Again, these findings do not relate specifically to the use of GradeMark alone and rely on the compliance of academic teaching staff to the institutional assessment turnaround policy. It is, however, important to note that the tool offers a clearer and less ambiguous indication of when the date of return should be to both students and the line managers of the academic staff responsible for marking it. While academic staff may not uniformly welcome this increased level of awareness and surveillance on the date of return for their marking, the heightened exposure of the date of return to both their students and their line managers almost certainly results in more academic staff meeting it.
While the tool had clearly had a positive impact on the timeliness of the return of work, there was also evidence that at least some of the reduction in anxiety came from the way it assisted with time management. One of the specialist conference students said:

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It wasn’t so much wanting it quickly, it was knowing the date so I’d forgotten when the final feedback was coming so it was just easy to [...] check [...] ‘do I need to do anything else for this particular paper?’ ‘oh no I’m not going to get my feedback till next Monday that’s fine’ and it helped you actually time other assignments you had to write, you knew where it fitted into what I had so I knew that I could work on other things this week and then look at that on Monday when it arrived
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in terms of your planning around other things you had to write about it’s really useful, especially when you submit just your initial paper before the draft

Because these students were also teachers, they could see the way this could work from both perspectives. Several reported that the clarity of the date of return made it easier for tutors as well:

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if you don’t give them a date of when you’re gonna return work to them, they will expect it the next day and they’ll keep e-mailing you and asking you and it probably takes the pressure off the tutor a little bit as well I think
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An interesting point that emerged from several of the discussions regarding the clarity of the return date showed that students were less invested in the actual return deadline being met than they were with the transparency of the process and quality of the feedback they received. One of the specialist conference students reported:

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I personally would have accepted a flexibility of like two days later or whatever as long as the feedback was sufficiently detailed
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Students are clearly aware that marking takes time and they understand that to get the detailed feedback they want and need is not going to possible in a short space of time. On balance, getting good quality feedback may be more important to them than it being available on the post date. It is likely that students will tolerate tutors missing the return date by a few days if there are reasons for this (eg. staff illness) and if these reasons are clearly communicated to them. Students will, however, feel very dissatisfied if these deadlines are missed by a significant amount (such as weeks or months). Students have a clear sense of entitlement and value their feedback greatly. Given the importance this has to them, placing emphasis on requiring academics to meet post-date deadlines is going to become increasingly important to institutions in an increasingly competitive Higher Education market. GradeMark as a tool cannot guarantee that turnaround times are met but its ability to decrease the academic administration that comes with marking and the time taken in marking itself will almost certainly make it easier for tutors to meet their deadlines. The ability for tutor teams to moderate work online and to moderate work after it has been returned to students (if institutional policies allow for this) also means that turnaround times can be more easily met. The simple fact that return dates are so clearly advertised to students also means that tutors are under more pressure to meet these deadlines. Of course this pressure needs to be recognised and accommodated in academic staff workloads and is a significant management issue. Once again, this
tool cannot solve all of these problems but it can certainly contribute to the easing of the volume of staff labour required to turn marking work around within a reasonable timeframe.

4.3.1.2 Clarity of result and feedback

Students also reported that the feedback they had received on their work was clearer when it was presented through GradeMark rather than through handwritten comments. Their struggles with handwritten comments were powerfully presented with one English literature student saying ‘my tutor’s handwriting’s awful, so the deciphering of feedback is not pleasant’. Once again the specialist conference students could see this from both perspectives:

\[\text{it was legible as well I mean [...] handwriting sometimes can be a little illegible can’t it? Especially if you’ve got thirty scripts to write. By the time you get to the last one you’re a little bit tired. And so it was legible. You could actually read it!}\]

Several of the specialist conference students remarked upon how similar the GradeMark layout was in principle to the process of marking work on paper. This was important to them because even though it was a new tool and environment to them, the process still felt familiar:

\[\text{the main thing for me is that it mirrors the way I’d expect somebody to mark a written [paper-based] piece of work or to annotate it [...] so if you handed someone a paper printout of your work I would expect notes written in the sides and like things pointed out in the work underlined and it mirrors that which is I think ideal. You don’t want something that’s radically different to what you’ve sort of used in the past I suppose.}\]

The students were clearly confident in their engagement with the bubble comments and QuickMarks used in GradeMark. One student described the comments as being ‘like little notes’. Another student reported the experience as: ‘you hover over it. There’s like a tab that you can do as well that brings up everything they’ve typed on the box so you can see everything that’s been typed’. A third student picked up the thread of the conversation saying: ‘and then you click it and it takes you to the point in the essay’. These remarks are describing engaging with the bubble and QuickMark comments as well as the comments list which allows them to navigate through the essay one comment at a time. From this it is evident that they found the feedback presented through GradeMark to be both clear and interactive and clearly contextualised. It was also obvious that they find different pathways through the feedback and have different preferences for how they engage with it (eg printing it out, mousing over the bubble comments as they re-read their paper, using the comments list to work through them one at a time systematically). This highlights the flexibility of the system and its ability to suit different strategies and preferences.

These findings relating to the clarity of the result and feedback in GradeMark were supported by the survey of the specialist conference students. When asked ‘were assessment decisions clearly conveyed to you through Turnitin?’ 88 per cent of students responded saying it was very or fairly clear.
It is important to note that for this assessment task, the specialist conference students did not receive a number grade but instead their achievement was recognised as a series of module outcomes that are either 'addressed' or 'not met within this work.' Managing this is unusually
complex because of the collaborative nature of the provision. The paper that is marked online counts 10 credits towards a 30 credit module, with the remaining 20 credits assessed by a face-to-face tutor within the trainees' local institution. The scope to address outcomes in more than one place within the module is felt to be very important because it is a marker of the autonomy and agency over professional development with which we want to imbue students at this point in their studies. However, this presents the challenge that at feedback stage, some equivocation becomes inevitable. As a result, the feedback for ‘not met within this work’ advises the student that they can meet the outcome elsewhere within the module, for example through their reflective journal, or their teaching observations at the Centre.

Some respondents from this cohort reported some problems with the interpretation of the rubric, particularly as it appeared in the printed version of the feedback. As a result, the specialist conference students (who were more likely to print their feedback prior to engaging with it) reported much more confusion with the rubric than the English Literature students (who were more likely to interact with the rubric online). The printed report of the rubric generates each ‘cell’ of the rubric table as a list falling under a heading. Each of the cells are available, with the cell that has been selected as relevant to that student’s level of achievement highlighted in bold, black font and the other remaining cells ‘greyed out’. It was this listing of all the cells which cause the confusion for the specialist conference students with it taking several of them a while to interpret the difference between the greyed out text (as not relevant to them) and the bold text (as relevant to them).

I had trouble with the rubric [...] because it lists the positive and the negative and to be perfectly honest that did confuse me to start with because I was reading it and it did cause a little bit of [...] anxiety [...] because in reality there was only one area that I had missed yet the way I was reading it, I thought I’d missed quite a few

it took me a while to figure out that er my tutor was only commenting on some aspects of it but all the others had printed off [...]I did find it confusing

it took me a while to figure out what the black bold ones was [...]I thought ‘oh gosh I’ve got to do all the other things as well’ [...] and I didn’t have to

In contrast, none of the English Literature students reported this confusion. Instead, they made mention of how the rubric had increased the sense of clarity and improved their understanding of their result:

it also had the rubric on which showed you where your mark was pulled down, [...] like she said to me “if you were better in these areas, you would have got the higher mark” and it was kind of like you could see where you were sort of doing well and [...] the fact was that the rubric was on there to read and she didn’t have to give you a paper copy and it’s there for you to look at

This sense of clarity clearly fed directly into what they felt they needed from their feedback in order to improve and stood in contrast to other experiences they had had. The following conversation spells out this desire and makes it plain how important the rubric was in satisfying that for them:

A I think at the end of the day if you’re not getting a first they should be telling you how to get a first
B yeah I don’t think it’s really transparent what you have to do to get a first
C I think as well if you somehow manage to get a first and you’re not entirely sure how you’ve done it
((laughter))
C they should tell you what you’ve done well, not just tell you what to improve but so you can do it again
[…]
A how do we know what’s gonna amaze them, I mean how do we know what they know and what they don’t know, I mean they know a lot so it’s kind of like how the hell do you impress them, you just have no idea

Hearing students discussing their feedback needs in this way and in doing so demonstrating such a clear sense of aspiration to achieve and improve is surely going to warm any academic tutor’s heart. Reflecting on how what we do when we offer feedback and, particularly, the mechanisms we use to do this might, impede this aspiration is sobering indeed. This presents food for thought and sheds new light on the much-spouted gripe amongst academic tutors that students never act on their feedback. What this suggest is that the reason for this could have more to do with how we present that feedback than the students’ motivation (or lack thereof). The information presented in the rubric these students received was, in substance, little different to that which was presented by their other tutors. What was different was the means by which it was presented. It is clear, therefore, that the tool does bring substantive benefits to students in terms of better meeting their needs and therefore better enabling them to meet their objectives and achieve their aspirations.

4.3.2 Convenience of electronic feedback and return
Understanding the impact that electronic feedback may have on students is only possible if the role and importance of feedback within assessment per se is first understood. As Royce Sadler makes clear, “information about the gap between actual and reference levels is considered as feedback only when it is used to alter the gap” (emphasis original) (Sadler, 1989, p. 121). David Boud puts this a slightly different way when he says: “The only way to tell if learning results from feedback is for students to make some kind of response to complete the feedback loop” (David Boud, 2000, p. 158). He adds: “this is one of the most oft forgotten aspects of formative assessment” (David Boud, 2000, p. 158). A perception that most students do not act on their feedback is a source of considerable frustration for academic staff who invest such a significant amount of time and energy into the marking of student work. Anything which would increase the likelihood of students engaging with the feedback written on their work, and thereby closing the loop, is likely to be warmly welcomed by academic staff across the sector. At the same time, and as has been discussed above, the possibility that students choose not to engage with the feedback offered to them might be an indication of its usefulness to them rather than an indication of their motivation (or lack thereof) to act on it. In other words, the quality of the feedback offered might mean that students are unable to use it to close the loop. This, in Sadler’s words, constitutes “‘dangling data’ substituting for effective feedback’ (Sadler, 1989, p. 121).

The scholarly evidence relating to the importance of students closing the feedback loop also means that it is likely to have a strong beneficial impact on student performance and therefore on their achievement. Several students reported that having the feedback available in electronic form made it easier and therefore more likely for them to revisit it at a later date when they are preparing for
other assessment tasks than if it is in paper format. One of the English students mentioned an experience she had with a tutor on another module who had used track changes in MS Word to comment on the assessment work remarking: ‘for some reason they print them out and they hand you back like physical [...] hard copy of all the notes’. This student’s use of the phrase ‘for some reason’ demonstrates a feeling of general bewilderment at this experience which not only demonstrates how normal it had become for them to receive their feedback electronically, but also how illogical it seemed to them to receive on paper something which was clearly originally in electronic form. It also suggests that receiving feedback in a paper copy feels less practical and useful to them, something which another student explored later in the focus group. When discussing the usefulness of having feedback available to them in an electronic form, this student described her practice of engaging with the feedback when working on a later piece of work:

about having it on the computer, having it electronically, you can just grab up an internet tab and have it there which is particularly useful I think. If you’ve done an assignment where say your formative was to submit an essay plan and then your summative was to write the essay, ‘cause we’ve had one of those recently, and you could just get up the feedback for the plan while you were writing the essay to see “well what do they say about this bit?” and then go back to your other tab.

Having the feedback available for them online and in an electronic format was also seen as beneficial. Another student painted this picture:

another benefit I think to the electronic feedback is if you get it in a paper copy my organisational skills are not known to be you know sort of er to be good [...] The amount of times I’ve gone back to feedback online because when you’re writing an essay it’s easy to just pop open an internet tab, bring up Unilearn and look at your feedback that you got from your other assessments and then being able to sort of incorporate that in your essay while you’re writing it. But if I’ve got a piece of paper with feedback and I’ve got to root through bags and folders and bits of you know er... having it online I know where it is, I’m always gonna know where it is and it’s always gonna be there.

It is clear that, for these students at least, having feedback electronically makes sense to them and fits in effectively with the way they manage their lives. In contrast, having things on paper simply does not make sense to them. In addition, they struggle to organise it and incorporate it into their lives. These students are of a generation where they have always had online bank statements, where they have received the vast majority of formal communication from institutions via email rather than paper-based letters and where their music library is stored on various electronic devices rather than on CDs. The concept of having data as valuable as assessment feedback in only one format and for that format to be something as ephemeral as paper does not just feel illogical to them, it also makes it less likely that they will revisit it and less likely that they will be able to retrieve it. This makes it less likely that they will be able to close the feedback loop.

The way that these students made use of their electronic feedback and their reliance on it being available to them online is important to consider, particularly when Turnitin is offered to staff and students through a VLE integration. The way that VLE sites which are linked to modules tend to be used within institutions is that they remain ‘live’ (and therefore accessible) to students for the duration of the module but are then closed down at the successful completion of that module. If, as
is the case for all students evaluated in this project, they have not downloaded or printed their feedback prior to the VLE site for their module being closed down, they will lose access to that feedback. In any case, they will not retain access to it in the ‘live’ online version (where they can interact with it by, for instance, by mousing over comments and navigating through the essay via the comments list as described above). Two important points emerge from this: first that students should always be encouraged to download and/or print their feedback prior to the module closing down and b) institutions and the proprietary tool providers should consider ways that enable students to retain access to the ‘live’ (i.e. interactive) versions of the feedback for the duration of their academic courses and perhaps even beyond. Being able to link or transfer these to ePortfolios would seem an obvious solution to this issue.

The perspectives of these English students stand in stark contrast to those offered by the specialist conference students who articulated not just a strong desire to print their feedback out, but also frustration at the difficulties they had encountered trying to do so. The differences in their perceptions of the convenience of feedback offered in electronic rather than paper format is, perhaps, a strong indication of a generational difference between the two cohorts but also offers us a strong reminder that for some students, paper-based formats for assessment feedback remain important and should not be neglected. To many of these students, having the feedback on paper was the only format that made sense to them. A good example of this is one of the specialist conference students who reported that her confidence in the system improved significantly only after she realised she could ‘print it all out with all the comments on the bottom’ and that this was because it was then ‘in the format that [she] wanted.’ Another student reported the desire to get a paper version of the feedback with a slight sense of shame, almost as if making a confession:

I have to admit I printed it off because [heh heh] um because I wanted to see exactly what they were referencing, whereabouts and I work better with paper, I’m old ok [heh heh] goes with my age!

This indicates that electronic systems can feel like a bit of an imposition for individuals who are much more accustomed to working with paper documents and are also more comfortable doing so. Recognising and respecting their needs to have important documents like assessment feedback available for them in paper is important.

Several other specialist conference students reported finding it difficult to print out their feedback:

actually getting a printout was tremendously difficult the first time

This student actually reporting resorting to an incredibly cumbersome ways of trying to do so, including taking screenshots of their feedback online, then transferring those images to a PowerPoint presentation and finally printing these out. One focus group conversation revolved for some time around the issue of finding (or not finding) the ‘little button at the bottom there’ which enable an easy way of printing the feedback in a way which was useful and easy to engage with. One student reported only discovering this ‘little button’ when another student had pointed it out. The fact that this ‘little button’ was not obvious to these students was reinforced when other students in the focus group piped up with ‘which one?’ Some students who had managed to discover how to print their feedback reported dissatisfaction with the format, layout and clarity in the paper format. They reported that the way the comments were overlayed over the text was unclear (‘unhelpful’),
that the organisation of the comments at the end of the document made for unnecessarily printing and was ‘wasteful of resources’ and that the PDF image of the document which Turnitin generates was ‘a bit fuzzy’. Others clearly loved the printed format reporting that it was ‘perfect and brilliant and fantastic.’

From this evidence it is clear that an EAM system needs to meet the needs of students who have a strong preference for their feedback to be available in electronic form as well as for those who have a strong preference for it to be available for them to engage with in paper form. An EAM system which provides feedback electronically and which can also be printed is the only way this can be achieved.

4.3.3 Control over feedback and return

For several of the specialist conference students it was clear that the reduction in feelings of anxiety relating to their assessment were also closely linked to their sense of control – particularly over when and where they engaged with their feedback. One student reported: “you can control what time you want to do it, even what frame of mind you’re in [...] you know ‘right ok I’ll have a look at my feedback today’ or ‘maybe I’ll just leave that till tomorrow’ so you’ve got some control and privacy over it.” This was in marked contrast to their experience of receiving feedback on paper in a classroom, which was characterised by a distinct lack of control:

if you got paper feedback or electronic feedback, the anticipation was the same, you know “how did I do?” except when you got electronic feedback, you’ve got more control over it: when you do it because when it got back and the class was talking “oh you know I got my feedback today” “oh, shall I do it tonight or shall I do it tomorrow?” whereas if you’re in a class, there you are, you’ve got it you know[you’ve got control over it].

It also compared favourably with a paper-based method for handling work for distance education:

then we would have to be waiting for it through the post or have to be coming here in person which would take a lot longer so I can see the advantages of having it online rather than us having to wait for the post or wait for visits.

One of the well-reported benefits of using electronic marking is the ability for tutors to delete easily and completely comments that are being made on student work without leaving a trace – something which is difficult or impossible to do in paper-based marking. The fact that some of the students assumed that tutors could not delete their comments (because of the presence of comments on their work saying things like ‘I can see you took my advice!’) suggests that this may be an affordance that not all academics are choosing to use and, furthermore, that that might be a good thing. Students certainly weren’t perturbed by these comments (they found them amusing), with one reporting:

sometimes it’s more interesting though when you’ve seen they’re reading it through, it’s like you’re sitting over their shoulder as they’re reading it in a way ’cause then you get their view of it as immediately [...] as they’re doing it, I kind of like that ’cause it shows me whether I’ve actually signposted my argument properly.

The fact that this experience was volunteered in relation to electronic marking and not paper marking suggests that the medium might even improve their sense of contact and connection with
the tutor marking their work. This image of ‘looking over their shoulder’ is certainly pleasing to hear because it relates to the idea of assessment feedback being a dialogue between teachers and students about the work rather than a monologue from teacher to student. It is possibly the case that this feels more real and authentic and perhaps even more lively and engaging within this environment than in a paper-based one. While this warrants further investigation, it also suggests that providing professional development and training opportunities to academic staff to help them to develop this capacity in their approach to marking and composing feedback is probably well worth pursuing.

The quality of the comments made using the bubble or QuickMark comments was also clearly important to them. This is a powerful reminder that GradeMark is a tool and a medium through which feedback can be communicated. As such, it does not make poor marking good. One student reported finding comments with nothing more than ‘good’ written in them particularly frustrating demanding: ‘like “why?” “why is it good, tell me!”’ The fact that there are no pre-made QuickMark comments in GradeMark which say just ‘good’ or allow academics to place ‘ticks’ in the margins of student work has clearly been a deliberate decision on the part of iParadigms, but it is also a pedagogically sound one. Most if not all of the readymade QuickMark comments share a similar design: they offer students a clear explanation of the problem alongside what they need to do to address it. This simple principle of feedback which offers ‘feedforward’ is clearly something students appreciate and feel frustrated by if it is absent. This same principle should be applied by academic staff as they compose their own comments or build their own QuickMark sets. This reminds us of one of the key affordances and benefits of electronic marking tools like GradeMark: that they automate the process of adding generic comments to student work. Having the time and energy to provide comments which offer the kind of detail that students need (in terms of offering both feedback and feedforward) was always a problem with paper-based marking. The simple act of rewriting such detailed comments by hand every time they were needed is very labour intensive and most academics simply didn’t have the time or energy to do so. This has been substantially (although not completely) alleviated with the use of pre-composed comments. It is important to remember, however, that these need to be able to identify strengths as well as weaknesses in student work. So – simply writing ‘good’ next to something that is strong is not enough: students need to know what was good, why it was good and, perhaps, where they might try to redeploy that strength in another context.

The English students particularly appreciated the use of the rubric and how this clarified where they needed to concentrate their attention. One student reported that it showed you where your mark was pulled down, like [...] she said to me “if you were better in these areas, you would have got the higher mark” and it was kind of like you could see where you were sort of doing well

Of course this would be equally true of a rubric provided in a paper-based marking system, but, as this student reported, there was something particularly compelling about it being presented electronically saying: ‘the fact was that the rubric was on there to read and she didn’t have to give you a paper copy and it’s there for you to look at’. Exactly how this is different from a paper copy is not clear. What is clear is the student’s perception that it was somehow more visible, more available and more substantial because it was presented electronically. The fact that the rubric can be
manipulated in a follow-up tutorial, as this student describes it here, with an academic showing how improvement against individual criteria can have an impact on the final mark was clearly motivating for this student.

These students reported that the experience of engaging with these electronic rubrics was in contrast to other feedback experiences they had had (they all agreed that this had been their first experience of feedback being presented through a rubric). These other experiences had clearly frustrated them saying such things as: ‘you just sort of get a random mark really’ and to get a first ‘you have to do everything for a 2:1 but do something slightly better’. It was clear that their other experiences in comparison had offered little advice on how to improve their work and that this had been accompanied with feelings of bewilderment and frustration. It was also clear that their experience of the rubric in GradeMark had been a substantial improvement. One student reported:

we’re not lecturers, none of us are, we don’t know what lecturers are looking for and the only person who’s gone even half way there er telling us what lecturers are looking for is [our tutor] with the rubric

From this it is evident that the role that a rubric might play in supporting students in the development of their tacit knowledge and their self-evaluation skills is potentially very powerful indeed. In his work on sustainable assessment, Boud argues convincingly for the importance of developing students’ skills for self-evaluation. He argues: “in order for students to become effective lifelong learners, they need also to be prepared to undertake assessment of the learning tasks they face throughout their lives. They should be able to do this in ways which identify whether they have met whatever standards are appropriate for the task in hand” (Boud, 2000, p.152). Again, while this is no doubt equally true of paper-based resource, the convenience of this being presented in an electronic means meant that they perceived it differently and that it was consequently clearer and easier for them to engage with it.

4.3.4 Privacy

One of the benefits that students had reported anecdotally in terms of having their feedback and result sent to them via GradeMark was the increased privacy this generated for them. It was for this reason that we decided to probe this particular issue in the evaluation we undertook. The students were asked to respond to the question: Which of the following best represents your thoughts on the opportunity to pick up your feedback privately (not in class with other learners)? Over 50% of students responded saying that were very glad it was private and only 6% of students indicated their preference was for receiving their work in a face-to-face context.
This preference was borne out in the focus group discussions where the privacy of feedback return was clearly important to the students and where the privacy of the electronic return system was seen as preferable to paper-based systems. For the English Literature students, most of their work was returned electronically to them but some of their work (such as posters and portfolios) had been submitted in hard copy. Even for some of their electronically submitted work some tutors had chosen to mark the student work offline and print it out or had marked it with pen and paper.

on results day last year they just put them in boxes and you just had to root through and find your assignment and what’s the chance that someone could pick up your assignment with theirs, I mean I just don’t like that idea [...] I don’t find it very secure, whereas when it’s online, it’s only for you to see

when we went to go and collect ours you were picking other people’s up [...]and you were trying not to see what anybody else had got [...] it’s a personal thing

we were just called in and the posters were just in a pile. I think really the lecturer should have got up and found ours in the pile rather than letting us root through because [...] you could see everyone’s marks and you could also take someone else’s poster in theory cos it was like she didn’t check whether you’d taken yours, it was just kind of like [...] just go ahead.

C I think the other thing is when you get feedback electronically it can be a lot nicer than getting it in a classroom[...]when they just come over and give you your assignments back and if you’ve done really badly you’re sort of sat in a room with a load of other people and you don’t want anybody to know

A and they always ask what you got
This sense of privacy was also valued by the specialist conference student with one reporting electronic return was preferable because it was “more discreet [...] more personal”. One student reported that this was at least as good as having the work marked with pen and paper:

I thought at first that before I got the draft feedback that [...] it wasn’t going to be personal but she did manage to get her point across in a way that it was just the same as if someone had actually you know done the annotations by hand.

Another reported it was “nicer” because:

it’s your own discourse with that person. There’s no no-one else who can [...] be privy to that [...] you’re discussing your paper with someone privately. It’s almost like you’ve got your own little mini-tutorial across the ‘net rather than like just a quiet five minutes in a classroom where someone could overhear. Say if you’ve had a particular issue with your assignment that you’ve struggled to do one particular thing, I don’t necessarily want the other people on my course to know that there’s this one little thing that I don’t find as easy as I want to.

This sense of intimacy that the students reported emerging from the electronic return of their work stood in marked contrast to an overriding sense of concern reported by these students relating to their sense of a lack of connection with their tutors in the distance learning context. The lack of personal connection with the tutors marking their work was clearly very new to many of the students. This contribution was typical:

I think there’s a little bit of anxiety because you don’t get face to face contact. You’re literally going to receive this back and if you don’t understand something you have to e-mail or get in touch somehow whereas if you’re handed your work back by the tutor and you don’t understand something, you can ask them there and then.

Given that these students were studying this module via distance learning, the sense of disconnection with or distance from their tutors they reported was, to a certain extent, inevitable. Many of the students acknowledged that whilst also articulating a preference for face-to-face support:

prefer the face to face contact, but also realise the need to do so electronically due to distance.

If tutor physically present I want physical feedback to answer any questions I have.

I feel more confident in handing in work as hard copy although I had no problem in handing in via Turnitin. There is also an opportunity to discuss outstanding issues with staff or tutor.

The fact that the electronic means of receive their feedback might bring an increased sense of intimacy with it is an indication that this is probably going to be a useful way of overcoming at least.
some of the sense of isolation and disconnection that is such a notorious characteristic of distance learning.

For a small number of these distance-learning students, the sense of alienation they felt from their distance-based tutors was amplified by the use of EAM. One student put it thus:

Person to person is much more positive and less demotivating. Gives chance to voice opinions rather than feeling dictated to.

This was echoed by several contributors to the focus groups:

it was it was in the raw wasn’t it, you know, it came back you read it, you did what you had to and you submit it again.

it was impersonal and it’s just the way the system is.

This is a reminder of the importance of retaining a sense of dialogue with students through the feedback offered via EAM as a way of alleviating any sense of it being impersonal, demotivating or ‘raw’. At least some of this may come from the tool itself, but this can and should be compensated for by communicating a clear message of encouragement and support through the way that the tool is used. Ultimately, this is something that should be happening regardless of the tool being used, as one student recognised:

It’s the quality of the feedback that is important - not the method used.

4.4 Perceptions relating to the (un)reliability of the EAM system

Another area of concern for senior managers and administrative managers within Higher Education Institutions is the reliability of any EAM system and, particularly, students’ perceptions of this. The English Literature students, who had used the EAM system the most, reported feeling confident in the system despite the fact that they had experienced problems with it. The only problems they reported were with outages with the system rather than any problems they had had using the system itself. At no point did anyone mention anything to do with finding it difficult to submit their work or retrieve feedback on it.

This was confirmed by the academic staff who were interviewed for the project. Their attitude tended to be ‘no news was good news’ in the sense that they had not heard any complaints from students regarding the EAM system:

We’ve not had any people saying ‘I can’t use it, I don’t understand it…’ […] We’ve not had any negative responses

It’s worth saying that we’ve had, to my knowledge no complaints about GradeMark, and often if a student doesn’t complain it’s often an indication that they’re quite happy with things. They’re not short of energy for complaining, so…
In contrast, there is a wider (although still very small) sense amongst the responses from the specialist conference students that they had encountered significant technical difficulties that, in some instances at least, hampered their ability to submit their work successfully. This discrepancy, between the two groups of students, would seem to suggest that the sorts of difficulties that students in the specialist conference reported were mostly a result of their lack of familiarity with the system and/or their relatively weak IT skills. This is further supported by their responses to the survey where they reported a significant improvement in their perceived ease of use of the system after their first submission.

The students in the English Literatures focus group had been using electronic submission for the bulk of their work for two academic years by this point and it is clear that they find it easy and simple to use. Their responses show that their confidence in the electronic submission far exceeded their confidence in any form of paper-based submission system, and that they were consequently resilient to any unreliability that they experienced. This is particularly significant given that they had only recently experienced quite a significant outage of the electronic submission system (due to Turnitin going down only a few days before this focus group was held). One student remarked:

> you see I don’t worry about [the system going down] because I know that I’ve done everything that I could have possibly done, it’s not my fault if it’s gone down so I again I take a screen shot I’ve handed it in, not my fault (...) it’s not there because the technology’s gone wrong.

This shows that the students feel confidence in the EAM system despite the fact that they know that it is not 100% reliable. This also demonstrates that the impact that any outages have on students may not be as significant as we might have expected. One thing that is clearly important to them in relation to the reliability of the system was the reassurance they received from the institution regarding the outage with one student mentioning:

> when it went down the other weekend they did give the students that were affected extended time to hand their assignments.

So even though this student wasn’t affected directly by the outage, it is clear that students are well aware of the contingency procedure that the institution has in place. They know that if there are technical problems with the system that are out of their control, that this will be taken into account and handled in a way that is clear, transparent and fair.

This is a powerful indicator that for institutions choosing to adopt an EAM strategy that they should not be dissuaded from doing so simply because of the possibility of occasional outages. On the one hand, students understand that technical systems will never be totally reliable. As one student put it:

> Things can still get lost whether they are a hard copy or sent electronically.

On the other hand, students are also remarkably resilient when technical issues arise. They will only feel like this, however, if institutions clearly demonstrate through both their policy and practice that they have good contingency strategies in place to cope with outages. These strategies must be clearly communicated to students, particularly during unscheduled outages, must be instigated fairly and transparently (and be seen to be so by students), and offer fair and reasonable compensation (for instance in the form of blanket extensions). This is not to say that frequent outages and
consistently unreliable systems should be tolerated by institutions, staff or students. It’s reasonable to say that EAM systems are ‘mission critical’ and evaluating reliability should always be an important part of any procurement decision.

4.5 Assessment Analytics

The evaluation of the assessment analytics resources and workshop provided some compelling evidence to suggest that engaging with assessment analytics can support student learning by increasing their motivation to act on their feedback while also focussing their attention strategically on aspects of their feedback they may otherwise neglect.

Anything that encourages or motivates students to engage with and act on their feedback is going to be music to any academic tutor’s ears. As noted above, the vast majority of the energy and labour that is invested in assessment management in higher education comes from those people doing the marking. For many academic staff, the work of marking student assessment is not just labour intensive, but it can be an unrewarding, frustrating and disappointing experience. This sense of frustration is particularly acute when students continue to repeat errors (particularly common errors) which have been identified and explained to them several times before. Marking student work can feel a bit like Groundhog Day when the same errors and weaknesses return time and time again. As Pat Hill explains in her research, the process students go through to ‘fix’ their writing errors is by no means straightforward or simple. Using a longitudinal study, Hill argues for ‘more openness in dealing with writing as a social system where ‘visible’ writing differences are used to discriminate, and an acknowledgement of the complexity that students face in minimising these differences’ (Hill, 2011, p.213). She has demonstrated that even if students learn how to fix common errors (in things like punctuation and expression) that these errors are still likely to return, particularly at times when students are under increased emotional and time pressure. She argues that this demonstrates that ‘those who do have the dominant writing practices as part of their schema for writing cannot always recognise how difficult it can be to change writing habits, and that there are many issues involved in the learning process’ (Hill, 2011, p.218). While many academics may feel frustrated that students are continuing to make errors that have previously been pointed out, corrected and even explained to them, the simple fact may be that that is not enough. Demonstrating, through the use of learning analytics, the frequency and persistence of errors and the impact that they can have on students results may offer a new kind of motivation that has previously not been available to us or to our students. This returns us, once more, to Boud’s important work on feedback and feedback loops. Finding ways to motivate students to close the feedback loop and finding ways to check whether this has happened and rewarding students for doing so is important. Learning analytics may give us some new and powerful tools to use for this purpose.

This project wanted to evaluate how effective learning analytics might be in motivating and encouraging students to engage with and act on their feedback in ways which were demonstrably different to that provided by traditional marking practices. The motivation behind this experiment was a passing remark made by a student at the end of an analytics workshop run the previous year. The tutor in question had noticed that the data was available via GradeMark, downloaded it and
fiddled about with it in MS Excel primarily for her own benefit: to see if she could get a better understanding of how the students had performed as a whole. On a whim she decided to show the students this data in their next class for little more reason than because she could! At the end of the workshop, a student, who was clearly demonstrating their surprise at the material they had just seen, exclaimed ‘why hasn’t anyone said this to me before?!’ The key point here, of course, was that this had been said to this student countless times before, in the form of annotations and comments on their written work. The significance of this remark was, however, that while these issues had been shown to this student, they had not been seen by the student. This remark demonstrated that there was something about the way this analytics data had been presented in graphic form, and further there was something about how it had allowed not just the tutor but also the students to see a bigger picture, that made it substantively different to what this student had experienced before.

Again – it is important to note that while the recording of assessment analytics data at this level of granularity has been going on for as long as marking has been, the collection, collation and manipulation of it has never before been viable or feasible. It is only with the advent of tools like GradeMark that this kind of work has been possible.

A comparison of the data from the ‘before’ and ‘after’ worksheets shows that none of the students were less motivated in general and very few students were less motivated on specific issues. In general, all of them reported either the same level or increased levels of motivation to act on their feedback after seeing the analytics data. The level of increase in motivation was greatest for the two criteria of structure, and expression and punctuation. Students were least motivated on the criterion of Secondary Resources.

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**How likely are you to use this feedback on your next assignment? - Before**

- Very Likely: 32%
- Likely: 48%
- Neither Likely or Unlikely: 11%
- Unlikely: 7%
- Very unlikely: 2%

*Figure 7 Likelihood of using feedback: Before*
How likely are you to use this feedback on your next assignment? - After

Neither Likely or Unlikely: 5%
Unlikely: 0%
Very unlikely: 2%
Likely: 29%
Very Likely: 64%

Figure 8 Likelihood of using feedback: After

Application of Theory - Before

Very important: 34%
Important: 32%
Neither important or unimportant: 23%
Unimportant: 7%
Very unimportant: 4%

Figure 9 Importance of feedback for application of theory: Before
**Application of Theory - After**

- Very important: 48%
- Important: 25%
- Neither important or unimportant: 20%
- Unimportant: 2%
- Very unimportant: 5%

**Use of Secondary Resources - Before**

- Very important: 30%
- Important: 41%
- Neither important or unimportant: 18%
- Unimportant: 11%
- Very unimportant: 0%

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Figure 10 Importance of feedback for application of theory: After

Figure 11 Importance of feedback for secondary resources: Before
Use of Secondary Resources - After

Figure 12 Importance of feedback for secondary resources: After

Structure/Introduction - Before

Figure 13 Importance of feedback for structure/introduction: Before
Figure 14 Importance of feedback for structure/introduction: After

Figure 15 Importance of feedback for expression/punctuation: Before
Figure 16 Importance of feedback for expression/punctuation: After
The positive impact on motivation that was achieved by collating and graphically presenting the data harvested from the student assessment both prior to their assessment submission and afterwards is a clear indication that assessment analytics is worth pursuing in the future and evaluating in more detail.

An analysis of the responses to the ‘any surprises’ question offers some further amplification of the nature of this motivation. The most common response to this question shows that the analytics data prompted them to identify a strategic point of focus which they needed to concentrate on in the future including: ‘run-on sentences’, ‘improve intro’ and ‘PUNCTUATION!’. These were almost certainly issues in their writing, which had been pointed out to them previously, probably multiple times, but which had clearly gone unnoticed or had been considered unimportant. It was pleasing to see that even students who had received strong marks and had done well against particular assessment criteria were still feeling motivated to continue to improve. One student who achieved a first class result noted: “On my personal feedback I had full marks for expression and structure however I had around 7 [QuickMarks], 3 of which regarded paragraph structure. Even with full marks I feel I need to work on structure.” Another student who received a first class result remarked: “sentence structure is an area that I MUST improve as it is something that I am consistently told is my weakness.”

Other responses indicated that seeing the assessment analytics data had allowed them to see a bigger picture: of the cohort as a whole and their place within it. This stands in marked contrast to the bulk of their engagement with assessment results which is for the most part a one-to-one
interaction with their tutor and comparisons they are able to make within their immediate friendship circle. This will at best give them a partial sense of where they sit in relationship to others and at worst will give them a number and degree classification against which they have little or no point of reference to compare it beyond that which they have received in the past. While this offers them a clear sense of their ipsative and iterative development, it doesn’t allow them to identify where they sit in relationship to others. Having errors or strengths identified in their work in isolation also doesn’t allow them to evaluate how this sits in relationship to others: are they making more errors than others? Are the errors they are making of an acceptable level? The responses showed that knowing this information was helpful to them on a number of levels. In the first instance, it allowed them to identify not just what these common problems were also that they were important and deserved more of their care and attention in the future.

punctuation is such a big problem for so many people (me included!)

How many people make [the] same mistakes and how all the highest marks didn’t involve any of these mistakes.

For one student at least, knowing that lots of other people were struggling with the same issues and problems provided a sense of comfort which, concomitantly, made them feel more motivated to act on to improve:

Surprised at how many people fail from/get bad marks through punctuation. I do this so I don’t feel as bad to know others do but it makes me want to be better than them and fix my failing.

For other students, knowing they were good at something that lots of others struggled with allowed them to reflect on their strengths with pride and also make more sense of why their work deserves the grades it receives.

The amount of people who didn't have an introduction! I'm grateful I can do that.

For other students the surprise came in the form of the inaccuracy of their self-evaluation. This inaccuracy clearly operates in several directions (i.e. both under and over estimations):

I expected an average 2.1 in this assignment and was really surprised with my grade.

I worked so hard and still got a 2:2, 

yeah that I am average and not as bad as I thought

It also focussed on the overall grade as well as specific aspects of their work (i.e. at a more granular level):

Didn't expect to get a good mark.
I'm surprised the vast majority of my feedback was on grammar/punctuation as it's something I feel I am good at.

There is considerable potential for this approach to learning analytics to contribute to students’ life-long learning skills. As many scholars have pointed out, empowering students to become self-regulated learners is a vital part of the development of life-long learning skills (Boekaerts, 1999; Weinert, Schrader, & Helmke, 1989; Zimmerman, 1990). Self-evaluation is an important part of self-regulated learning and is, in turn, an important graduate attribute. We cannot expect students to develop and ‘calibrate’ their self-evaluation skills if we don’t give them access to the ‘big picture’ of student results as a whole. Without this background information, students will always struggle to fully understand what their grade means.

As confirmation of this, understanding where they sat in the cohort as a whole clearly came as something of a surprise to several of the students:

Not happy with a 62 when 50% of people got over 60.

Clearly seeing the ‘big picture’ represented graphically offered some students greater clarity on the quality of their work and that of the cohort as a whole:

How terrible my grammar is yet it hasn’t been mentioned on previous essays.

How the graphs show the differences so startlingly [startlingly?] in different areas.

What was perhaps most striking from this evidence was the power of the emotions that accompanied this experience for the student. For some students it had obviously been quite thought-provoking. In response to being asked ‘any surprises?’ one student replied:

Yes quite a lot. Has been challenging.

It is interesting to note that this response came from a student whose work had been submitted late and who therefore had not yet received any feedback. This goes to show that even if students do not have their result and feedback for the specific task in question, they can still benefit from the engagement with it.

For some students the experience had been challenging, but perhaps not in a productive way. Some indicated that they found the experience demoralising and even shameful with one student simply saying:

I’m absolutely stupid.

For other students, however, the experience had had little impact on their perceptions or merely acted to confirm what they already knew or suspected. In response to being asked ‘any surprises?’ one student stated:

No not at all.

The emotional side of this workshop was, nevertheless, significant and is worth considering in greater detail. It was for this reason that this was specifically highlighted as a topic for discussion in
the focus group. Several students in the focus group emphasised how emotionally difficult it had been to see the results for the whole cohort on the screen:

I think it was useful to [...] go through the rubric again after we’d submitted the assignment but I do think it was awkward (having) everybody’s marks on screen. [...] Imagine if you got a fail and you had to put that you were in the one per cent bottom.

If I’d been the person that got the lowest mark I wouldn’t want to come to classes any more [...] I’d feel devastated.

It is interesting that their sense of emotional discomfort was not for themselves but, empathetically, with others in the group. Even though all of the data was fully anonymised and no student’s results could be identified, this highlights how important it is to present this data sensitively and to treat students with care. Academic staff do need to carefully the potential risks of displaying this data to students and weigh it up carefully in relation to the potential benefits.

The students did agree that, despite the emotionally difficulties they experienced, the process of seeing the results as a whole was useful to them.

Because I felt like I needed to do better no matter where I had done: there were people above me therefore I needed to be better [...] It’s like horses: they see each other [...] they have to be the one in front.

University’s a tough experience and we’re always going to feel uncomfortable doing things because there’s going to be certain things [that] we have to do that are going to be way, way out of our comfort zone and making sure that this sort of feeling is done in a controlled environment with people who can turn it into something constructive is the best way to do it if it has to be done [...] and I think it does have to be done. [...]The way [the tutor] did it, she turned it into something that’s constructive, that we can use in the future and we can see where we are and we can see where everybody else is and we can see what we need to do to get better.

With respect to the pre-submission feedback screencast, the students all noted that receiving feedback prior to submitting their work was unusual:

none of the other lecturers do any of these pre-submission feedback things so it was different.

Others noted that it helped them emotionally because the reassurance and guidance it offered improved their confidence:

I think it kept me a bit more calm while I was doing it and I didn’t have as many doubts that I was gonna turn in something that wasn’t really related to what she wanted to get from the students. [...] I did watch it a couple of times both before I started, while I was doing it and close to the end before I submitted it. It was quite useful in that sense to be able to go back over it and just remind myself that “yeah” actually I was going towards the right kind of thing with it.
it gave you the focus that you needed ‘cause it was kind of like you’re “ah! I’ve got to write this assignment” and then you watch this and it’s kind of like “actually I know this” you know “I know what I’m doing” and just kind of follow the instructions

for me it was beneficial because I’d been out of education prior to university for a couple of years and so you forget how to write and you forget how to … perhaps structure an essay the way someone’s wanting to read it or the way someone’s wanting it to be structured, to have someone saying “do it like this” was so helpful because I’d been doing things that I thought was ok that perhaps weren’t […] to other lecturers and so to have someone there going “this is what I’d like to see in an essay, this is how I’d like it to be structured and this is how I’d like your secondary sources to be laid out” was so helpful because it gave me a chance to either confirm what I was doing or perhaps change it if it wasn’t right

The emotional calm that this information generated was in contrast to the feelings of uncertainty and panic that they had felt in other assessment instances:

with others you kind of feel a bit lost cos they tell you something and then that’s it

One of the hypotheses of this experiment was that despite having errors in punctuation and expression pointed out to them frequently in their assessment feedback, few students felt motivated to engage with this feedback and act upon it. It was clear from the statistical evaluation that students had a more significant increase in motivation to act on the feedback relating to punctuation and expression than for other aspects of their assessment performance. The impact this had had on them was demonstrated clearly in the focus group:

when it’s there on the rubric and she’s going “this is how much per cent of your mark is related to having decent grammar and spelling”

This was clearly in contrast to experiences they had had previously, even ones which had made use of GradeMark:

not a lot of lecturers point it out I mean they did last year […] we did have rubrics and stuff but we never had these rubrics actually properly talked through like that like

some of the others they just hand out the rubric and they just like when it gets to the grammar one they wouldn’t really explain it […] it’s just “oh well that one’s self-explanatory, I’ll just move onto the next one”

they assume you just know but actually for our essays […] last year we had “comma splice” written all over it from [but] we never actually knew what that meant!

Cath has taken the time to explain exactly what a comma splice is

I think you sort of ignored the feedback in a way I know it sounds bad but erm because I had like on my essay for [a previous module] I had “comma splice” written on, didn’t actually know what it meant and then just none of the other tutors had pointed it out so I just thought “just leave that”
It seems to suggest that, despite the increased clarity afforded by eMarking technology in comparison to paper-based and handwritten technology and by GradeMark in particular in relationship to other forms of eMarking (particularly document Markup in MS word), there remain limitations to the level of engagement that students will have with their feedback as well as their motivation to act on it. In other words, just pointing out the errors and even offering an explanation of what and where the problem is did not, in the end, provide sufficient motivation to these students to then act on that feedback. Given what Hill’s research tells us about the difficulties that students face in dealing with their transcriptional errors, if the way we are marking errors doesn’t even get them to acknowledge them as something that needs to be addressed then we’re facing a significant problem. Investing the effort and time to show students how widespread the problem is, explaining to them why it is significant, demonstrating to them the impact it has on their final result and supporting them in finding ways to solve the problem do seem to have had an impact in terms of motivation. Given how much time is spent on identifying the errors in the first place, this extra investment of time and effort (to produce pre-submission resources and to facilitate post-return workshops) seems to be worthwhile. One of the principle recommendations of this project, therefore, is that to maximise the impact of the feedback offered to students through GradeMark, it is important to make strategic use of the data it collects. This means, in practice, analysing it and presenting it graphically to students at a time and in a way that allows them to act on what it shows them.

4.6 Academic Staff

The attitudes and responses of the academic staff who had used GradeMark, while varied, exposed some significant and distinct themes and experiences.

4.6.1 Comparison to paper-based and other electronic marking systems

For almost all of the tutors in this study, their use of GradeMark was relatively new and it was therefore frequently compared to other marking systems. The most common and widespread was paper-based marking, but for a significant proportion of these tutors, they had moved on to GradeMark having started eMarking using some other system, in most cases downloading documents and using Mark-up (reviewing, track changes etc) in MS Word. There were some aspects of paper-marking that some of them missed, particularly the ability to mark in places that were offline (“gone are the train journeys when you were able to mark”) and to avoid having to start up a computer or laptop (“you have to set the machine up and get on […] sometimes you feel as though you’re in a mood for marking and you might just pick the paper up […] and mark it then”). This was perceived mostly as a loss of flexibility – but it was often cited as a really very small one (“a minor pain”) that was well compensated for the increased convenience and flexibility they felt they’d accrued elsewhere by using the system.

One of the significant concerns that many academic staff cite when electronic marking is suggested to them is the increased ‘screen time’ this will generate. These concerns were shared by some staff in our study, but many found that, in practice, these weren’t borne out:
doing this all the time at the computer generates a bit more screen time and those were some of my concerns in the beginning but I've not found it a problem

Others expressed an outright preference for screens over paper in terms of reading:

As I get older my eyesight's going and I don't have glasses [...] so I like screens...

I think whether you are looking at a computer screen or whether you are looking at a print out it's still the same amount of effort and strain. [...] I am actually used to spending a lot of time in front of the computer so it doesn't actually bother me.

Only one tutor encountered significant physical difficulties as a result of marking online: increased incidence of migraine and a general feeling of disorientation afterwards. Importantly, this comment came from the most reluctant user of GradeMark and he did not report whether or not this occurs after other prolonged screen-time or just after using GradeMark.

Some expressed an enormous sense of relief to have the burden of paper-based marking removed from their life:

it was mountains of paper then lots of ticks in lots of boxes [...] and signatures and dates on millions of pages

I don’t do paper [...] just seeing the paper [...] bogs you down

I’m terrible with paper. I lose it.

This was often discussed in terms of making their marking easier to manage and keep in order:

It needs to be contained in that little box so that you go there and it’s [...] all there together I couldn’t be printing out paper; it’d be all over the place!

it allows me to get in, get it done and get back out again

the fact that it also gets around that problem, which he says pointing to the uncollected work from four years ago that’s still sitting in a box. So the electronic submission and the electronic return, it tidies up a lot of that sort of stuff, the convenience of it.

if you marked in Word and you didn’t write down immediately into a spreadsheet the mark you’d given then you’d have to go back through and open each one to look for the marks. So I like [GradeMark] because what I can do is just put the mark in and if I’m thinking about how things are going on a module I can just click and see all my students' marks in one go

Others reported that they still felt the need to engage with the student work (in the first instance at least) on paper and so had printed out the assessment to read before entering the feedback, comments and grades onto the system:
I like to mark off paper based and so I print it out. I use [...] the palette and the system is very excellent but I still print the paper out I mark it and then I input and that’s just [...] a personal preference. [...] I see the paper and [...] the words (are) a lot clearer than when I’m looking at the screen.

When I print them out I actually take out the double line spacing so I’m only using half the paper and [...] I’ve got a font that [...] I can read. But [...] when you’re actually going back in you can put the comments wherever you want you’re just clicking on a comment box and [...] I’ve noticed where I want to make a comment [...] and then quickly read again and it’s there.

Several participants reported having previous experience of using Document Mark-up tools in MS Word prior to using GradeMark having had the documents emailed directly to them by students or uploaded to a shared drive or something similar. The GradeMark inbox was seen as preferable to email submission because it compartmentalised the assessment process in a discrete location that couldn’t become tangled up with the ‘noise’ of daily email correspondence and because it was less time consuming:

with the emails I just lose them you know I open my email box and they say ‘but I handed it in’ and I say well...

in the past what I’ve been doing is marking students’ work using track changes on Word and the big issue of that, particularly with big numbers, is that what I was doing was emailing students with their feedback and saying, 'email me your essays and I’ll reply and attach your essay' and that just seemed to take forever. [...] So GradeMark where you can collect their work directly from Blackboard [...] that would probably save me a good hour.

It seems from the evidence that the move from Mark-up to GradeMark is a relatively natural one given that the shift from paper-based to screen-based reading has already been made and that GradeMark offers key affordances which alleviate some of the time consuming elements that still remain when using Mark-up. These include the re-typing or cutting and pasting of common comments and the need to manually upload/return each individual assignment to the students. One participant reported a perception that the look and feel of GradeMark was superior to that of Markup:

part of me was wondering if it had a greater authority. Because I do a lot of electronic marking and because I’ve used comment boxes, that can look incredibly messy and quite hard, sometimes if there’s several comment boxes to actually link the comment box back to the actual comment that you’re making and if you’re doing that by hand then, again, that can look a little bit alarming to students if there’s quite a lot of stuff.

4.6.2 Getting started
Perhaps the evidence that is of most interest to senior managers across the sector is how to convince academics to start using electronic marking tools like GradeMark, or at least give them a try. It is for this reason that we were interested to discover how academic staff first started using
GradeMark for their marking. For all the specialist conference tutors the answer was the same: because they were effectively forced to by the managers of the module. This means that for this cohort of participants, their decision to use GradeMark was not their own and their reluctance or enthusiasm for the tool is completely disconnected from their use of it. Their emotional responses to being required to use the system were varied but generally positive:

Excited [...] looking forward to trying something new

A bit of apprehension at first but glad that we’ve gone onto this system

For the academics that were interviewed, their reasons for starting to use GradeMark are varied. While two participants reported having a bit of a false start with their attempts to use the earlier version of GradeMark, for most of the other participants their first engagement with GradeMark had been in the second version, released in 2010. Some reported more or less stumbling upon it and giving it a go: “because it was there really” and “I thought I might as well have a look”. This is important to note. Because Turnitin are web-based software systems, it is not possible to restrict access to it; for many of its features (GradeMark included) it is either switched on or off. As a result of its ubiquitous availability, academic staff who are searching for solutions to their assessment management problems are likely to start using it because it is there. For at least one academic tutor who participated in this study he ‘started using it as soon as [he] became aware of it’ because he recognised that GradeMark ‘fulfilled some things which [he] wanted anyway’. While there is clearly widespread academic staff resistance to electronic marking, there is also a significant proportion who are searching for alternative ways to manage their marking and the needs of these group should not be ignored in favour of those who are resistant to it.

Others reported gradually starting to use it over the course of several academic years, starting out “using it in a fairly basic form as simply a way of making feedback electronic” to then “experimenting with different ways of using the rubric and the criterion based component as well”. There was a clear sense from several participants that working together with colleagues in a team marking a batch of student work was important to their adoption of the tool. One participant admitted to using his seniority to force more junior colleagues to use the tool, which suggests that this may be a relatively effective way of generating widespread take-up, especially across junior and part-time staff who have little option to refuse the directives of their more senior module leaders.

One participant reported that a colleague (who was also interviewed for this study) was forced into it by student complaints which were communicated at a student panel. He was the last academic staff member in his particular discipline area still marking on paper and this participant reported that the students demanded he start marking electronically. When questioned about what motivated him to start using GradeMark, this staff member (who had agreed to start using the tool) made no mention of the impact that student pressure had had on him, citing other reasons (such as the need to travel internationally at the time he was doing his marking and his inability to carry volumes of paper-based essays with him on the flight). This offers an interesting first insight into the attitudes and perspectives of our most reluctant GradeMark user amongst those interviewed. While student pressure is almost certainly going to be an important factor in convincing the most reluctant and resistant academic staff to start using electronic marking, it is likely that these staff are also going to be equally reluctant to acknowledge that this has influenced their change.
4.6.3 Convenience

4.6.3.1 Assessment Management

Several participants reported that the GradeMark system made their management of assessment feel more convenient and easier to manage in comparison to other marking systems they had used. This convenience included very practical issues:

I do like not having to carry forty essays in my briefcase on the train, and then sort of having to come in for another forty.

The convenience of having all assessment neatly filed away in a secure, online folder that was remotely accessible was something that several people mentioned as preferable to paper-based systems.

It’s nice to have it all online. I’m quite a tidy person and it’s just nice to have it all marked in one place, and not to have to use gallons of Tip-Ex on things. [...]I like the neatness of it, the tidiness of it.

Almost all participants identified some pieces of assessment that they still hadn’t figured out how to manage through the Turnitin system (for instance physical pieces, performances etc). Turnitin has a limited range of formats that can be submitted directly to it and it is impossible to return feedback on anything which hasn’t been submitted directly into the system. For many academic staff, the idea of being able to manage all of their assessment in one location was the ideal:

That’s a brilliant idea; [...] that would solve a whole load of issues.

It would be much better actually if you could [...] just have one system. [...] It’s kind of difficult to give feedback, for other things, like presentations [...] We’ve had to devise other mechanisms for that but it would be nice if you could just put everything through one interface, including feeding back on things that they haven’t actually submitted necessarily electronically [...] the one mechanism for providing feedback because that way it makes it easier to give that stuff to the external examiner as a sort of a log on. You can create a sample that runs across all the different assignments that the sample of students are doing.

It was clear from these responses that their preferred system was Turnitin which they found preferable to paper-based processes and to alternative electronic submission and assessment management systems, including the one available within the Blackboard VLE (GradeCentre) which one participant described as “random” and “just weird”. As explored above, all staff considered GradeMark a better system than managing student submissions and returns via email. The consistent desire that was expressed by these colleagues was to find ways to bring as much of their marking into GradeMark as they could rather than to have GradeMark integrate with other systems. This was even the case for colleagues who were dealing with things that are notoriously difficult to manage in online marking systems: mathematical and scientific calculations and formulae, and music manuscript and notation. The fact that even colleagues in these disciplines were envisaging an ideal
system where all their marking could be managed in GradeMark shows how strong the overall desire is to have a ‘one stop shop’ for all academic marking.

Even the most reluctant GradeMark user interviewed for the student acknowledged that it made several aspects of marking management more convenient, including making marking possible while undertaking international travel, although he found it very difficult to engage with it while using a small laptop screen. He also liked being able to access students’ feedback ‘at the click of a mouse rather than having to spend five or ten minutes going through a filing cabinet trying to find it’.

Others reported that they found the moderation process to be considerably improved with the use of GradeMark:

the fact that marks can be moderated between colleagues very easily and there’s no need to physically get copies of essays to colleagues, we can work at home and moderate each other at home, I think that’s a very good feature of it.

He also reported finding it more convenient to return work to students:

I think there’s other benefits in it: returning work easily, we have a coursework collection room across the corridor which is, well was stuffed with uncollected work, and at the end of every academic year the office staff had to sort of, basically take it all out and recycle it.

4.6.3.2 Marking
Given that the bulk of academic staff ‘labour’ is invested in the reading and commenting on student work, anything that makes this process feel easier and less laborious is likely to be warmly welcomed by academic staff. One participant summed the benefits he had experienced in this regard as:

The benefits now are not time, the benefits are ease. The benefits are the fact that [...] I type quicker than I write, [...] the neatness and the tidiness, and the efficiency of the system, the procedural efficiencies

By far, the most commonly reported improvement in convenience came with the reusability of common comments. Many reported that this improved the speed and efficiency of their marking:

you found yourself making the same comments over and over again so it was great just be able to drag something off the palette [...] and it did make it a lot slicker and a lot easier

because I’d made all my comments it was all there all done

I use [...] the palette and the system is very excellent

One reflected on the impact that designing his own QuickMarks had had on his marking practice:

and it’s made me kind of think, you know, what are the sort of, common errors that students make, and are there ways of communicating to students how to avoid them or how to improve problems. So it has made me think about the sort of, types of errors that students make and ways of flagging those up.

This same participant expressed a concern that QuickMarks were both obfuscatory for the students and a ‘little bit too spoon-feedy’.
Several reported that the ability to undertake originality and plagiarism checking in the same environment as marking was also convenient:

I log in and there’s a high similarity report then I might just scan through the similarity first and you know click on the links back to them and […] then you know that’s done before I actually sort of read the content

you can immediately identify not only where (,) they are using something that has been written before but where it’s come from so it makes it so easy to check out

it is a lot quicker […] to identify issues on the paper […] that [are...] unreferenced or referenced incorrectly

This ability to do two things at once (mark student work and check its originality at the same time) is a key affordance of the GradeMark system which is, to our knowledge, not found in any other online marking tool currently on the market.

4.6.4 Clarity

Many participants reported that they felt that using GradeMark improved the clarity of their marking and feedback. This related to several things but by far the most important was ensuring that the comment could be clearly linked to exactly the right section of the student’s work regardless of its length.

I think it’s so much better because […] with the computer system you can put boxes in exactly the right place and write as much as you want in there and there’s no problem about fitting it in

Because those little blue comment boxes, you can cram so many of those onto a page, you can actually write more. And I’m trying to force myself to be a bit more disciplined. So it probably made me a bit more loquacious in my comments to students.

The use of the rubric was cited by several participants as one reason for this improved clarity:

instead of just wading through all the fog and trying to work out what is in there you go to the rubric and it’s – bang – yes, I definitely saw that.

They get to see clearly how their mark is broken down, if you use the rubric as we do now. We use it to actually calculate the mark […] and] we’re fairly rigid with it. […] So it’s much, much more transparent for students to see their strengths and weaknesses against the criteria, see how their mark is being arrived at. […] Effectively it’s doubling the feedback they get really because of all the information.

We found the use of rubrics very useful […] Because a lot of the problems we get are students saying well how have I got this mark? I don’t understand why you’ve given this an X or a Y or a Z. Whereas the rubric makes it a bit easier to explain to students.

One participant indicated that she felt her marking was clearer in GradeMark than it had been using Mark-up in MS Word or paper-based marking:
I’ve used comment boxes, that can look incredibly messy and quite hard, sometimes if there’s several comment boxes to actually link the comment box back to the actual comment that you’re making and if you’re doing that by hand then, again, that can look a little bit alarming to students if there’s quite a lot of stuff. And so this is just my own thought: whether they actually feel that there’s a greater authority and credibility behind these formalised icons.

4.6.5 Consistency
Academic tutors also reported their perception that using the tool made their marking more consistent. This was reported in terms of both inter- and intra-rater consistency:

I think it makes it more consistent among all your learners

it leaves less room for subjectivity in marking

I decided that it offered a really consistent approach to marking

I had fantasised about having a little kind of rubber stamp for these sorts of things [...] when you get to the twentieth essay [...] you’re so fed up of writing stuff about apostrophes and you actually start to resent it.

In terms of intra-rater reliability, one participant reported his perception that the tool improved his consistency because it also improved his mood in comparison to paper marking:

the whole physical experience of [paper-]marking was sort of frustrating, added to the fact that you have to write the same thing over and over again about a possessive apostrophe or whatever it might be. [...] But I also found that I thought I was writing better quality feedback because I wasn’t getting so [...] tetchy [...] I think this is partly to do with my psychological [...] trauma of [...] marking massive piles of essays and scribbling all over them.

Clearly for this tutor, the removal of the ‘trauma’ caused by the frustration of writing repeated comments meant that all students were treated equally regardless of where their essay came in the (virtual) pile.

In terms of inter-rater reliability, another participant reported how important the tool had become in terms of managing a tutor team within the one module:

Yes, standardisation and just parity, especially when you have a module that might be taught by different tutors, seminar groups and work marked by different tutors.

Several participants also considered the potential for the tool to improve consistency not just across a module but also across a course and, therefore, across a student’s experience:

We’ve recommended [...] that there is a greater use of GradeMark because it would give greater consistency across the Consortium I think it’s standardisation.

I think a lot of students, obviously they compare their experiences with each other, and I think subjects just felt that the experience to students should be homogenised.
4.6.6 Triggering change in marking practice

There is some evidence that the use of GradeMark is triggering academic staff to reflect on their academic marking practice and to make positive and productive changes to it. One reported that this was particularly a result of the act of itemising the assessment criteria in a marking rubric:

I think that does also make us think a lot more about what we’re asking of our students [... and it] makes us think more clearly, what are we saying to the student; ‘This is really what you should be doing.’

Another participant reported that he had changed his approach to correcting student work:

Now instead of going through and putting in apostrophes, now I’d just put a QuickMark on it saying ‘apostrophes misused’ and it explains and if it’s really bad, I’d just add a comment saying ‘You need to go through the whole essay and sort this issue out.’

Others reported that the technology prevented bad or lazy marking habits from being perpetuated:

there were advantages of getting rid of hand-writing and people kind of underlining stuff but not adding any comments, you know, or just having a question mark or squiggly lines in the margins without any further comment.

4.6.7 Personalisation

One of the most consistent comments that emerged from the interviews and focus groups with academic staff was their perception that GradeMark was very flexible in terms of fitting around and supporting their own marking preferences. Many reported that the ability to personalise the comments was one of its most attractive features.

I think we all individualise it. Well I certainly do. There’s some of the GradeMark common set which I used and then I’ve added a whole bunch of my own.

even the generic ones, you can personalise, [...] you can actually add to your own comment which you can then save and store

So you know the time that you spend writing a really good informative comments just the once and then you get to reuse it or link to it, I think is a real advantage.

Several participants expressed a desire or an aspiration to develop a shared set of comments which were tailor-made to their students, their disciplinary requirements and their other mechanisms for supporting students’ learning.

connecting those sorts of QuickMark comments to the advice that we’ve got in the handbook and [...] linking those things up and actually that [...] is much better than just giving them the handbook which they don’t read, then just sort of writing the crabby comments like “why don’t you read the handbook?”

I wondered if it might be possible is if the University could personalise its icons by getting some kind of working party together.
4.6.8 Speed/Efficiency

One of the most pressing questions that most academic staff will have about using this tool for their marking is whether it will save them time. The vast majority of the staff interviewed for this study reported that using GradeMark made their marking faster and/or more efficient. What this meant in practice was that they were able to offer the same amount of feedback than they had previously in less time or that they were taking the same amount of time but were able to offer considerably more feedback in terms of both detail and quantity. All participants who reported this improvement indicated that it took a while to realise this benefit:

- Faster and faster. [...] I’ve actually found it speeded up my marking because I don’t have to keep repeating the same thing. [...] I think at first it did slow me down.

- When I started using it took me a lot longer at first because I was setting up templates [...] because I was getting used to it. [G]enerally speaking [I] find within the first few essays that I mark with it that it probably takes me longer than it would do [...] partly because I think I write more feedback using GradeMark than I would if I was just marking it with a Biro or something. But then I do tend to pick up speed.

- The initial response was this is taking far too much time but you know, you get used to things [...] I’ve certainly speeded up in familiarity and become clear about what works and what doesn’t work. I mean you just do it much more intuitively now.

- You get faster and faster

The time saving didn’t just come from the marking process itself, but also accumulated from other administrative burdens that had been reduced or removed as a result of using the tool:

- I can actually spend more time writing comments than I am spending emailing students back or all those other things. Another thing that they now do in our school is that they’ll take marks directly from GradeMark into the mark entry and that’s another time saver.

- The time you spend benefitting students... it’s much better use of our time than spending time doing admin functions

A very good feature of it [is] the fact, now, that it feeds marks into [the student management system] as well. [...] We had this very laborious system of having to write our marks onto grids, which were then checked by the office staff, who would then print them off and then we had to check them again, and the sort of transposition error risk was so high.

Only two participants reported that it slowed them down and one of these admitted that this was because she continued to print the papers off to read them first. The other participant who reported that it slowed him down indicated that this was because he felt it encourage him to write longer comments than he had previously been able to fit into the margins of paper-based essays: “I was writing about three or four times more words feedback than I would on paper.” It is important to note that this tutor had chosen not to use any of the ready-made QuickMarks because “they’re
appallingly written” and chose not to build up his own set of comments into a personalised QuickMarks set although he didn’t indicate why.
5 Conclusions and recommendations

5.1 Institutions

5.1.1 eSubmission provision:
Institutions should make eSubmission of student coursework available wherever possible. They can expect that this will bring significant benefits to students in terms of increased convenience, confidence and clarity. The submission date should be set late in the evening, preferably at 11.59pm. Students should never be asked to submit a paper copy alongside an electronic copy. If paper copies are required, this is an expense the institution must meet.

5.1.2 Student training:
It is disproportionate to invest excessive time or energy in mandatory training for all students in the eSubmission process prior to their first submission. Some training and support needs to be provided. This should be concentrated in the form of self-paced online resources (eg. Screencasts or how-to sheets that can be printed). Institutions might want to offer optional one-to-one or face-to-face training or ‘buddy’ support by connecting those students who are comfortable and confident with the process with those who are not, as a form of peer training.

5.1.3 eMarking:
Having student assessment marked and returned electronically is preferable to it being undertaken on a paper. Academic staff resistance to marking electronically will be, however, considerable but probably not as significant as many anticipate. While making eMarking mandatory may well be the fastest way to accomplish a comprehensive move towards eMarking, it is likely to generate hostility and resistance amongst academic staff. Allowing academics who are already comfortable with eMarking to do so and rewarding them, and others who move into eMarking, with less academic administration (see 5.1.6 below), while allowing those who prefer to mark on paper to continue doing so until they feel comfortable and ready to move to eMarking, will take more time but will be a smoother and less fractious transition.

It is likely, however, that some disciplines will remain difficult or impossible to mark effectively using eMarking – particularly using GradeMark. The most significant difficulty arises in the use of GradeMark for mathematical and scientific formulae and music notation. While students may be able to submit work using formulae or music manuscript to systems like Turnitin (by printing or saving work to PDF), it is difficult for academic tutors to effectively comment on their work because the annotation tools do not allow them to do so. Retaining alternative mechanisms for handling these kinds of submissions remains important.

5.1.4 Staff training:
Most academic staff will move to eMarking without feeling the need to undertake training. It is likely that most academic staff will feel comfortable and confident with eMarking using GradeMark relatively quickly because it has proven to be relatively intuitive and easy to use for most academic staff. In any case, the online, self-paced training resources provided by Turnitin are effective and useful for academics of average technical ability. It is, however, likely that a small proportion of staff
will feel the need to do at least some ‘basic’ training. Most academic staff will not make use of the full affordances of the eMarking tool or will encounter difficulties that they will struggle to overcome. Providing advanced training that allows academics to share their experiences and their solutions for overcoming problems (eg. with workarounds) is likely to bring both consistency and improved quality in the use of GradeMark as an eMarking tool.

5.1.5 Assessment turnaround:
Institutions which have set an assessment turnaround policy – an agreed time within which tutors must mark and return student work – should use the EAM system to advertise the return date clearly to students. While the GradeMark system facilitates this, there is no clear and easy way of ascertaining if or when student work is actually returned to students. Institutions may want to adjust their policies to accommodate that or find alternative ways to audit assessment return.

5.1.6 Administrative benefits:
Institutions that are considering moving to an EAM system should begin by concentrating on the administrative processes needed to support it. Getting the administrative conditions right, such that benefits accrue to academic staff who choose to mark electronically, is vital to encouraging academic staff to move to electronic marking. A system that makes it harder for academics to mark electronically, by requiring them to do extra tasks or tasks that could be undertaken automatically or by administrative staff, will struggle to be successful. In practice, this means removing as many administrative ‘chores’ from the workloads of academic staff as possible and either automating them or moving them onto administrative staff workloads. This might include:

- setting up Turnitin inboxes;
- printing assessment (if required);
- mark entry;
- archiving marked student work.

5.1.7 Contingency Policies and Procedures
No assessment management system is going to be 100% fool or failure proof. Paper-based assessment management systems can fall foul of unreliable internal and/or external postage systems, assessments being stolen or mislaid, and even periods of bad weather can make paper-submission difficult. Similarly, EAMs can suffer from system failures (with those internal to the institution, those external to the institution as well as with the connections between them). Institutions are right to expect high service levels from external providers such as iParadigms and they are equally obliged to provide them as part of the fee agreement. However, institutions also need to take responsibility for having robust contingency policies and procedures to support and protect students, staff and the institution in the case of any outages or system failures. These policies should be agreed at senior management level (led by the PVC for Teaching and Learning or equivalent) and should be made in consultation with colleagues in registry, computing/IT services and with the student union. The contingency policies should be transparent, consistent and fair and (most importantly) must be seen to be so by the students. Consideration should be given to when contingency procedures will be activated, who is responsible for activating them, how they will be communicated to staff and students and how, where and by whom it should be recorded for registry’s purposes.
5.2 Tutors

5.2.1 Pedagogical Emphasis

GradeMark as a marking tool is, in the end, just a tool. To realise all of the benefits available to students it is important that tutors recognise the pedagogical imperatives to use it effectively. Some key tips for the effective use of GradeMarks as a marking tool are:

- To concentrate on the use of the tool to provide dialogic feedback (rather than a monologue) to students to facilitate conversation about their work. Some ways to achieve this are:
  - to never use Quickmarks alone to annotate student work but to always include ‘bubble’ comments written specifically for that student. Tutors should redeploy the time they save with the use of Quickmarks by offering students more bespoke comments and support than they were previously able to;
  - to make use of first person pronouns when engaging with the student’s work (‘I found this sentence difficult to interpret’ or ‘the opening paragraph you have offered here is really compelling: I’m feeling motivated to read on’);
  - to invite students to ask the tutor to focus on specific aspects of their work in their feedback;
  - to use colour coding to distinguish strengths from weaknesses in the student work and ensuring that all students’ work that has passed has at least some aspects of their work highlighted in both categories;
  - to avoid building Quickmarks that replicate bad habits that are common in paper marking (such as a tick or a Quickmark that simply says ‘good’ or ‘vague’);
  - to work together with colleagues in their teaching teams to agree a shared approach to using GradeMark that offers consistency to students while still allowing tutors to benefit from the flexibility that the tool offers.

- To explore the potential for assessment analytics to be of use to them (eg. to inform their curriculum design decisions in year and between years) and their students (in the form of learning analytics). In practice this means:
  - Designing the use of quickmarks and/or rubrics in such a way that useful and accurate data is stored;
  - Designing opportunities to act on the information gathered from the data analysis (eg. workshops with students, a flexible curriculum that allows for adjustments as informed by the analysis of the data etc);
  - Working in teams with colleagues across the course to collate and analyse data collectively to gather ipsative, individual, intra- and inter-cohort information that is useful for students, staff, the institution and auditing boddies or (where relevant) PSRBs.

Given what the students have reported about their experiences with work marked via GradeMark, academic staff can also expect their students to:

- be more likely to engage with and act on their feedback and, consequently, are possibly less likely to repeat the same errors in the future;
have a clearer sense of how their mark was arrived at and where their specific strengths and weaknesses are;
- be clearer on when their work is due to be returned to them (and therefore will not ‘hassle’ their tutors for information about the return of their work).

5.2.2 Administrative benefits
Academic staff who move on to eMarking using GradeMark, can expect to accrue significant benefits. These include:
- reduced time spent marking or with the same time spent marking being put to more effective use (particularly through the use of common comments and the ability to check originality at the same time as undertaking marking);
- marking which is easier to manage and transport, is neater and tidier, is fully backed up, and is easier to distribute for moderation purposes;
- reduced time spent undertaking administrative ‘chores’ related to assessment, including mark entry.

It is important for senior managers to note that these efficiency gains should not be refilled with further administrative chores for academic staff but should be invested in their giving added value to their students, to freeing up more research time for themselves and/or to achieve a better work-life balance.

5.3 Students
The students are, perhaps, those who have the most to gain from their assessment being handled via an electronic tool such as GradeMark. The key benefits for them are:

5.3.1 Convenience
Being able to submit their work electronically reduces the time and money they need to spend printing their work and travelling to campus to submit it. They appreciate having the option of submitting their work out of office hours (their preference is until midnight). Having their work returned to them electronically makes it easier for them to engage with it and return to it at a later date (particularly when they are tackling their next assessment task).

5.3.2 Confidence
The improvements in confidence accrue in two key ways:
- that their work has been submitted securely;
- that it has been submitted to the correct person and cannot fall into the wrong hands.

The use of Turnitin to check student work for plagiarism also increases their confidence that other students are not unfairly benefitting from cheating.

5.3.3 Clarity
The improvements to clarity accrue in:
- the date of submission and return of assessment;
- the feedback on their work, particularly through the use of rubrics, as to where their strengths and weaknesses lie;
- being able to interpret their feedback (i.e. not having to decipher illegible handwriting).

5.3.4 Privacy
Students have reported an overwhelmingly strong preference for having their work returned to them electronically because of the increased privacy and agency it gives them over when, where and how they engage with their feedback. Returning work to students in class is going to rapidly become unacceptable to students. The students involved in this project reported that they already considered it unacceptable to have their work left in a public or semi-public space for them to collect. In a fees regime in the UK where students are paying up to £9000 a year tuition fees, treating their work in this way is, arguably, unprofessional. Apart from the inherently disrespectful way this treats students’ privacy, it also leaves students and institutions vulnerable to having their work collected by unscrupulous people who are interested in selling it on to students via essay purchase sites or essay mills, thereby contributing to the growing problem of academic misconduct. Students’ assessment work deserves high levels of data security.

5.3.5 Analytics
The use of assessment analytics is also useful to improving the clarity of feedback for students. This is because it better allows them to ‘calibrate’ their self-evaluation skills. Assessment analytics is, however, sensitive and should only be offered to students with appropriate and careful support and guidance.

Together these gains are likely to improve the students’ sense of satisfaction with their course and their experiences at their University. As such, both the institutions at which they are studying and the staff who work for them have a great deal to gain from the things that students gain.

5.4 iParadigms

5.4.1 Tools
Academic staff report that they value the flexibility of the tool. Offering more tools that they can use and adapt to suit their own needs is likely to be important to their ongoing preference for it as a marking tool. Something that is likely to be of most use to academic staff is a tool that they can use to communicate privately about student assessment in order to facilitate moderation and double marking. A mechanism for recording decisions in the moderation process (particularly against the rubric) is also likely to make it much easier to use for moderation processes.

Strengthening the capacity for GradeMark to support dialogic feedback is going to increase the value of it as an EAM tool for both students and tutors. Offering both students and tutors more tools to use to facilitate dialogue and therefore conversation between them about student work is worth considering. Giving students a tool that they can use to add a note for their tutor as they submit their work and to respond to feedback offered to them by tutors is likely to be particularly useful in this regard.

Tools that students can use to grade their own work and undertake self-evaluation against the criteria will be likely to improve students’ engagement with their own work, with their feedback and as a means of students improving their self-evaluation skills.
5.4.2 Haptics
Students already feel confident in the security of their submission via Turnitin, but for those who feel less confident than they do when submitting paper-based assessment, offering more reassurance through the process of submission and clearer confirmation that their submission has been successful is likely to be helpful. The use of haptics to offer a stronger sense that submission has been successful might be worth considering, not just for students who instinctively distrust the virtual but also for those students who are more accustomed to haptics in their other technology interfaces (eg on their smartphones and tablet computers).

5.4.3 Printout design
Reconsidering the design of the feedback printout from Grademark is likely to be beneficial to those students who prefer engaging with their feedback on paper. This is particularly the case for the layout of the rubric. It is especially important that students are able to clearly and intuitively discern which elements of the rubric have been chosen in relation to their work and which therefore apply to their performance.

5.4.4 Persistence
Making it easier for students to retain access to their feedback even after a module has been completed (particularly for VLE integrations) is vital from a pedagogical point of view. Ideally this would be in an interactive format. At the very least it needs to be easier for students to download and/or print out their feedback. As it is, the print function is difficult to find and presents too much of a technical challenge (particularly in certain browsers) for too many students. As mentioned above, this downloadable version is not well designed, particularly the way that rubric is reported to students. This is especially the case for audio feedback. For many institutions, the option of using audio feedback will not be available while ever the audio feedback cannot be downloaded by students or archived by institutions. This is because of the requirements which Quality Assurance agencies have for us to archive student work and assessment feedback.

5.4.5 Training resources
Most academic staff report not needing training to get started but all report struggling to get it to do everything that they want it to, even though work arounds are available. Providing training at a higher level of use, particularly to suggest ways to support common processes like double marking, moderation and dealing with assessment tasks that are not obviously able to be managed by the tool are likely to be of benefit to academic staff. Providing forums that experienced users of GradeMark can use to share the way they have customised it to meet their needs is likely to be a useful strategy.

5.4.6 Data availability, ownership and interoperability
To facilitate learning analytics, it is going to be important that academic teaching staff and institutional systems are easily able to share Quickmark sets and rubrics and that the data generated is reliable, easily exported and interoperable, such that it can be imported directly into institutional analytics engines. Providing advice and guidance to academics about designing their assessment strategies and their curriculum design to make the best use of learning analytics may also enable more people to get better value from the tool.
5.4.7 Disciplinary requirements
Finding ways to better support the management of student work in disciplines such as mathematics and music is vital before there can be full institutional adoption of GradeMark as a marking platform. Currently academic staff are unable to annotate using mathematical formulae or music notation and that effectively precludes them from using the tool for effective feedback.

5.4.8 Conclusions for iParadigms
Turnitin is a powerful tool that is widely liked by those who use it. The vast majority of students feel that it satisfies their needs for convenience and confidence when it comes to eSubmission. This grows quickly as students become more familiar with it. When Grademark is used to mark their work they find that the feedback is clearer, easier to engage with and easier to use than feedback provided in paper-format. Academic staff are generally happy to use it to do marking, particularly when they get the hang of it. They find it a pleasant place to do their work and find that it removes some important annoyances from their working lives.

While the reliability of Turnitin is clearly important, it’s also institutions’ responsibility to ensure that they have clear, transparent and fair contingency policies in place to cope with outages (see 5.1.7 above).

Maintaining the look and feel of the tool such that it keeps pace with other technology interfaces is important. Academic staff spend many hours at a time and days on end using this as a working environment in which to do their marking; ensuring that it is a pleasant, reliable and efficient place to do that work is very important.
6 Future Research:

The future road map of GradeMark indicates that there will be some exciting and potentially very powerful new tools available to students, tutors and institutions. One proposal is to be better able to accurately measure the amount of time spent marking student work. When it becomes possible to do this, it should be taken into account in future evaluations of this tool and of EAM in general. It would be particularly interesting to compare this data across different markers, different disciplines and to consider it in comparison to different student results. It would be particularly interesting to see how much quicker it is to mark higher-quality student work than work of lesser quality for instance.

The tool already facilitates audio feedback of up to three minutes in length. At the time of the evaluation undertaken in this project, no tutors we worked with had made use of this facility and consequently no students had experienced it. This should be the focus of any future evaluation of this tool. The road map also includes the development of an iPad app for Turnitin and GradeMark that will allow offline marking. Early beta-testing of this app by members of this project have shown that this app is well designed and easy to use. It is likely to be extremely popular with academic tutors, not just those who are already familiar with GradeMark. This may trigger a boom in the use of GradeMark and it is likely that institutions may need to make resource decisions about providing sets of iPads for staff to use for marking purposes, or consider providing academic staff with iPads for teaching and learning purposes. It is likely that academics who own their own iPad will want to use their own devices in any case. This raises a new set of data-security issues and institutions may want to review their IT/BYOD policies to take this into account. It is, for instance, vital that any academic staff member using an iPad to undertake student marking should have a passcode lock on their device just as they should for any PC or laptop on which they undertake marking.

The possibility that a wider variety of document types and sizes may be able to be submitted to Turnitin for marking purposes is a welcome recent addition to the road map, as is the ability to be able to offer grades and feedback on work that is not able to be submitted to the tool (eg. performances, presentations, physical objects such as art works, scrap books, etc).
7 References


8 Appendix

8.1 Poster
8.2 Dissemination

8.2.1 Dissemination list

The following is a list of dissemination events that have taken place within the duration of the project:

7 Sep 2011: keynote paper delivered to the University of East London teaching and learning conference: external CE

Sep 2011: three papers delivered to the University of Huddersfield teaching and learning conference: internal PB, CE, SF, CR

14 Oct 2011: hosted visit from Dr Adele Flood from the Learning and Teaching Unit at the University of New South Wales: external LB, CE, SF, CR

Nov 2011: training based on research from the project delivered to the Institute of Financial Studies in London: external CE

18 Nov 2011: keynote paper delivered to the University of Huddersfield Business School away day: internal CE

5 Dec 2011: training based on research from the project delivered to the Royal College of Music, London: external CE

9 Dec 2011: keynote paper delivered to the Blackboard Users Group, London: external CE

14 Dec 2011: training delivered to the schools of Human and Health Sciences and Music, Humanities and Media, University of Huddersfield: internal CE

21 Dec 2011: meeting with Colleagues from University of Melbourne and ALDIS: external international CE

18 Jan 2012: meeting with colleagues at University of New South Wales: external international CE

24 Jan 2012: two presentations delivered at the University of Macquarie, New South Wales: external international CE

31 Jan 2012: presentation delivered and filmed interview recorded at the University of New South Wales: external international CE

tv.unsw.edu.au/5C87DC20-6D7E-11E1-AE890050568336DC

7 Feb 2012: presentation delivered at the University of Wollongong, New South Wales: external international CE

8 Feb 2012: presentation delivered at the University of New South Wales (repeat because of demand): external international CE

9 Feb 2012: presentation delivered at the Writing Hub at the University of Sydney, New South Wales: external international CE

13 Feb 2012: meetings at the University of New England, New South Wales: external international CE

16 Feb 2012: visiting scholar at the University of Southern Queensland, two presentations delivered and an interview recorded: external international CE

6 Mar 2012: two papers delivered including a keynote at the JISC Regional Studies Centre Yorkshire and Humber Conference: external CE, CR

13 Mar 2012: training based on research from the project delivered to the Royal College of Music, London: external CE
14 Mar 2012: presentation delivered at the JISC Regional Support Centre West Midlands Conference: external CE
20 Mar 2012: guest lecture delivered at Edge Hill University: external CE
18 April 2012: project report visit to iParadigms Europe. A presentation on the work of the project was delivered to members of the iParadigms Europe team which was filmed and made available to the iParadigms team in the US. Discussions were held with various members of the team on more specific issues relating to the project (such as integrations, strategic planning etc).CE
25 April 2012: paper delivered at the eLearning Forum Asia Conference in Beijing, China. Detailed discussions on the work of the project were conducted with Dr Eva Wong and colleagues from Hong Kong Baptist University and with Chris Caren, CEO of iParadigms. external CE
4 May 2012: skype call with Tabitha Edwards at iParadigms regarding the design of Learning Analytics dashboards. CE
9 May 2012: participation in a thematic review on student retention involving a discussion relating to the use of assessment analytics and learning analytics based on the work of the project. Internal CE
17 May 2012: report to Project Director Professor Tim Thornton, PVC Teaching and Learning. Internal CE and CR.
30 May 2012: guest seminar University of Glamorgan. External CE.
8 June 2012: attended in the Online Submission day organised by the HEA and HeLF at the University of Manchester. External CE.
14 June 2012: attended at the ASKe Plagiarism event, Oxford Brookes. External CE.
18 June 2012: presentation at the Human and Health Sciences staff away day. Internal CE.
29 June 2012: attended Audio Feedback Day, University of Leicester. External CE.
5 July 2012: presented on the work of the project at the Arena 51 workshop organised by the Deputy Vice Chancellor. Internal CE.
16 July 2012: participated in the iParadigms focus group, Gateshead and attended the Turnitin user group in the afternoon. External CE.
17 July 2012: delivered paper at the 5th International Plagiarism Conference, Gateshead. External CE.
23 July 2012: meeting with members of the Library Impact Data Project, JISC. Internal CE.
24 July 2012: meeting with colleagues from SHU about collaborating on an HEA workshop on feedback and feedforward. External CE.
31 August 2012: presentation at the eAssessment Scotland Conference, Dundee. External CE.
12 September 2012: panel presentation at ALT-C conference, Manchester. External CE.
18 October 2012: poster presentation JISC Experts Group, Birmingham. External CE.
20 November 2012: presentation at SOLAR Flare at the Open University. External CE.
24 January 2013: invited guest seminar Manchester Metropolitan University. External CE.
12 February 2013: presentation to iParadigms, Newcastle. External CE.
14 February 2013: invited guest seminar Newcastle University. External CE.
28 February 2013: staff development session, Marjon University College, Plymouth. External CE.
12 March 2013: visit to iParadigms Europe to report on the project. External CE.
20 May 2013: Presentation at African Academic Integrity Seminar, Cape Town University, South Africa, international External CE.
23 May 2013: Presentation to Vice Chancellors from Nigerian Universities, Johannesburg, South Africa. International External CE.

24 May 2013: Presentation at African Academic Integrity Seminar, University of Johannesburg, South Africa, International External CE.

28 May 2013: Presentation at Turnitin User Group, Hong Kong City University, Hong Kong. External International CE and CR.

29 May 2013: Conference presentation at eLearning Forum Asia Conference, Hong Kong Baptist University: “Evaluating the impact of assessment analytics: motivation, emotion and semicolons” International CE

20 May 2013: Conference presentation eLearning Forum Asia Conference, Hong Kong Baptist University: “Evaluating the impact of assessment analytics: monitoring and reporting on performance.” External international CE and CR.

Future dissemination events:

HEA Conference, University of Warwick, External CE and CR.

29 September, 2013: Turnitin User Group, Vrije Universiteit, Amsterdam, the Netherlands. External International CE.

4 December, 2013: Invited lecture, Oxford Brookes University, External CE.

8.2.2 Publications

Ellis, C. “Streamlining plagiarism detection: The role of electronic assessment management”
International Journal for Educational Integrity Vol. 8 No. 2 December, 2012 pp. 46-56 ISSN 1833-2595

Abstract

This paper considers the problem of managing the workload implications of plagiarism detection as part of the larger issue of assessment management and within a holistic approach to educational integrity. It looks specifically at the potential for Electronic Assessment Management (EAM) to provide some of the solutions to this problem. It draws on the work of Mantz Yorke whose research into assessment management calls for the establishment of appropriate structures and mechanisms which support systems that achieve the dual imperatives of efficiency and effectiveness. This paper considers the workload issues related to plagiarism detection under these dual imperatives, looking first at the issue of effectiveness and then turning to consider the issue of efficiency. Finally, it argues for why and how these issues should be taken into account in the procurement of digital plagiarism detection software and how the use of these tools should fit within a rigorous and consistent holistic approach to educational integrity.


A version of this paper was also published as part of the proceedings of the 5th International Plagiarism Conference held at Sage Gateshead in July 2012. A full version of this publication can be

**Summary**

This paper argues that the role that assessment could play within a learning analytics strategy is both significant and, as yet, underdeveloped and underexplored. It proposes that assessment analytics has the potential to make a valuable contribution to the field of learning and academic analytics by both broadening its scope and increasing its usefulness. In doing so it considers issues of operationalization and then moves on to define what we might understand as assessment analytics. It then speculates as to why assessment analytics is underexplored and then evaluates some of the tools available for assessment data mining.

**8.2.3 Media**

Findings from the EBEAM project were reported in the following article:

‘Put down your Pen’ *University Business*, Saturday 1 June 2013, pp 62-4.
main Cs of e-submission,” Dr. Ellis says. “These are Convenience, Confidence and Clarity. Convenience is, for students, the most important of these. There are all sorts of ways in which electronic submission is easier and more convenient. It saves a trip in to University, or the cost of postage, or the cost of a train fare, or the cost of having to give up a shift at work if they also have a job in addition to studying. The second ‘C’ refers to Confidence: knowing for sure that a particular piece of work has been received by the correct tutor. The third ‘C’ is Clarity; not just about the due date of work, but also how – and when – a particular piece of work is returned.”

One of the most widely used e-submission systems is Turnitin, which allows for marking and feedback comments to be easily added to digital submissions, by way of a simple ‘point and click’ interface. This, in turn, promotes transparency when it comes to the marking process: allowing students to log on to the system to view the notes that have been made regarding their work.

Figure 18 Clippings from University Business article

8.3 Surveys and focus groups

8.3.1 Specialist Conference Student Questionnaire

1. Thinking back to your first use of Turnitin to submit work for Specialist Conference, which of the following best represents your response to the submission process at that time?
   o I was able to do it without instructions because I was already familiar with the tool
   o Though unfamiliar to me, it was intuitive so that I was able to do it without instructions
   o It was not intuitive but I was able to figure it out using the instructions given on UniLearn
   o It was not intuitive but I was able to figure it out with help from others
   o I was not able to submit my work on time because the submission process was too complex

2. Thinking about your current views on Turnitin, which of the following best represents your response to the submission process?
   o I find it very difficult to submit work
   o I find it quite difficult to submit work
   o I find it quite easy to submit work
   o I find it very easy to submit work

3. Thinking about the layout (not the content) of your feedback, which of the following best represents your thoughts?
   o The feedback is laid out in a way that makes it easy to interpret
   o The feedback is laid out in a way that makes it fairly difficult to interpret
   o The feedback is laid out in a way that makes it very difficult to interpret

4. Could you rely on the feedback always being available on the date on which it was due?
   o I’m certain that it was always available on the due date
   o As far as I’m aware, it was always available on the due date
   o Occasionally my feedback was delayed
The feedback was not normally available on the due date

5. Thinking about your current views on Turnitin, which of the following best represents your confidence in the submission process?
   - I am very confident that my work, once submitted, will be delivered to my tutor
   - I am fairly confident that my work, once submitted, will be delivered to my tutor
   - I am worried that my work, once submitted, might not be delivered to my tutor

6. Were assessment decisions clearly conveyed to you through Turnitin?
   - It was very clear to me which outcomes I had met and which I had not
   - It was fairly clear to me which outcomes I had met and which I had not
   - It was not clear to me which outcomes I had met and which I had not

7. Which of the following best represents your thoughts on the opportunity to pick up your feedback privately (not in class with other learners)?
   - I was glad I could pick up my feedback in private
   - It makes no difference to me
   - I’d rather get my feedback in a group situation

8. Which of the following best represents the effect of feedback on the quality of your final paper?
   - I think that the feedback has had a clear, positive effect on the quality of my final paper
   - I think that the feedback has had a clear, negative impact on the quality of my final paper
   - I think that the feedback has had little impact on the quality of my final paper

9. Please use this space to explain your answer to question 8.

10. Which of the following do you prefer?
    - Handing work in as a hard copy
    - Handing work in via email
    - Handing work in electronically using a system such as Turnitin

11. Please use this space to explain your answer to question 10.
12. As a teacher, what do you see as the potential benefits and/or drawbacks of this system of providing feedback to learners?

8.3.2 Specialist Conference Focus Group Questions

Experience in the past of submitting work and getting feedback on it.

Initial response: When you first found out about the fact that you would be required to submit your work online, how did it make you feel?

Practicalities

When you came to actually submit it – what was it like? How confident did you feel that it was safe and secure in comparison to other systems you’ve used and experienced?

Were you aware when your feedback was due to be returned? How important was it to you to know exactly when it was going to be released? How eager were you to access the feedback and result?

What was the experience of retrieving your feedback like?

Efficacy: Were you able to understand the feedback easily? Was the experience any different to how you normally get your feedback? How much of this was to do with the tool and how much of this was to do with your marker?

Was the experience of getting your feedback any different to how you usually feel about getting your feedback? Did getting it this way motivate you to act on it in a way that was different to the way you usually receive your feedback?

At each stage, did getting your feedback help you feel more confident that you knew what you had to do to be target with your final piece of work?

Do you think that the feedback on your outline and then your draft had a distinct impact on your final submission? What was the nature of that impact? Eg use of subject specific literature, coherence and flow, outcomes.
Reflection

Can you see a place for this type of approach to assessment management in your own practice? Do you think there are particular benefits or drawbacks in general? How about any you might anticipate that are specific to your subject specialism? Thinking ahead to your professionalism assignment – how important the use of ICT is as a component to your own professionalism?

8.3.3 ICCT focus group questions

Reflective writing: what was your initial reaction to being required to produce a reflective learning journal? What impact did the workshops/formative feedback have on that feeling?

Group presentation: What was it like to come up with the assessment criteria for the presentations? How did it feel to use them to evaluated other people’s presentations? How did it feel to have them used to evaluate your presentation? What impact did seeing the evaluations come up instantly on the screen have an them both as presenters and as evaluators? What about the verbal feedback from Cath?

Essay: How useful was the presubmission feedback screencast? Did they watch it? If so – when? How many times? Do they think it had an impact on their final mark? If so – what?

They’ve been submitting their work electronically for some time now but

When you first found out about the fact that you would be required to submit your work online, how did it make you feel?

When you came to actually submit the first piece of work – what was it like? How confident did you feel that it was safe and secure in comparison to other systems you’ve used and experienced?

Were you aware when your feedback was due to be returned? How important was it to you to know exactly when it was going to be released? How eager were you to access the feedback and result?

What was the experience of retrieving your feedback like?

Were you able to understand the feedback easily? Was the experience any different to how you normally get your feedback? How much of this was to do with the tool and how much of this was to do with your marker?

Was the experience of getting your feedback any different to how you usually feel about getting your feedback? Did getting it this way motivate you to act on it in a way that was different to the way you usually receive your feedback?

Post submission workshop where you saw the graphs of everyone’s results on the screen. Did this have an impact on them? If so – what was it? Has this had an impact on other work they have submitted since?

Portfolio: Pre submission feedback again - How useful was the presubmission feedback screencast? Did they watch it? If so – when? How many times? Do they think it had an impact on their final piece of work? If so – what?
Visual learning workshops. What impact did these have on how you approached the task? Do you think it has effected the quality of your final piece of work? If so – how?

8.3.4 Assessment Analytics worksheet

Before

Where do you think you sit in terms of the overall cohort in terms of your final result?

<table>
<thead>
<tr>
<th>Bottom</th>
<th>Half way</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>10</td>
</tr>
</tbody>
</table>

How likely are you to use this feedback in your next assignment?

☐ Very unlikely ☐ Unlikely ☐ Neither likely or unlikely ☐ Likely ☐ Very likely

How important do you think the following areas are for you to work on?

Application of theory:

☐ Very unimportant ☐ Unimportant ☐ Neither important nor unimportant ☐ Important ☐ Very important

Use of secondary resources

☐ Very unimportant ☐ Unimportant ☐ Neither important nor unimportant ☐ Important ☐ Very important

Structure/introduction

☐ Very unimportant ☐ Unimportant ☐ Neither important nor unimportant ☐ Important ☐ Very important

Expression/punctuation
Very unimportant ☐ Unimportant ☐ Neither important nor unimportant ☐ Important ☐ Very important

After

Having seen the data – where do you know you sit?

<table>
<thead>
<tr>
<th>Bottom</th>
<th>Half way</th>
<th>Top</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>10</td>
<td>15</td>
</tr>
</tbody>
</table>

How likely are you to use this feedback in your next assignment?

Very unlikely ☐ Unlikely ☐ Neither likely or unlikely ☐ Likely ☐ Very likely

How important do you think the following areas are for you to work on?

Application of theory:

Very unimportant ☐ Unimportant ☐ Neither important nor unimportant ☐ Important ☐ Very important

Use of secondary resources

Very unimportant ☐ Unimportant ☐ Neither important nor unimportant ☐ Important ☐ Very important

Structure/introduction

Very unimportant ☐ Unimportant ☐ Neither important nor unimportant ☐ Important ☐ Very important

Expression/punctuation
☐ Very unimportant ☐ Unimportant ☐ Neither important nor unimportant ☐ Important ☐ Very important

Any surprises?

8.4 Glossary

CLS – Computing and Library Services
EAM – Electronic Assessment Management
EMA – Electronic Management of Assessment (synonym for EAM)
FEI – Further Education Institution
HEI – Higher Education Institution
PINS – Planning and Information Services
PSRB – Professional and Statutory Bodies
TALI – Teaching and Learning Institute
VLE – Virtual Learning Environment

8.5 Links to EAM tools
Grammarly: http://www.grammarly.com/
Lightworks: http://lightworkmarking.org/
Mahara: https://mahara.org/
PebblePad: http://www.pebblepad.co.uk/
ReMarks PDF: http://www.remarkspdf.com/
Review: http://www.review-edu.com/
SafeAssign: http://safeassign.com/
Viper: http://www.scanmyessay.com/