

Electronic Management of Assessment (EMA): a landscape review

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Author
Dr Gill Ferrell

**“Electronic Management of Assessment
(EMA): a landscape review”**

Author

Dr Gill Ferrell



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Introduction

The term electronic management of assessment (EMA¹) is increasingly being used to describe the way that technology can be used to support the management of the whole assessment and feedback lifecycle, including the electronic submission of assignments, marking, feedback and the return of marks and feedback to students.

We look in more detail at the components of this life cycle later in this report: suffice it to say here that the effective management of assessment and feedback is central to the learning experience and encompasses a very wide spectrum of activity involving many different stakeholders. From an institutional perspective, ease of access to accurate, up-to-date assessment data is essential for the effective running of a range of business processes from quality assurance and marketing to long-term curriculum planning. From a tutor's perspective, efficient management of assessment data can mean improving student learning without increasing workload e.g. having a timely overview of what has been learned and understood; being able to give feedback/feed forward in timely and effective ways and it can also aid course review and validation processes. Students of course benefit from all of the above, but for them good assessment management also means receiving information at the point of need in a format that suits their needs, having automated reminders to help them

with their time management, being able to submit work in a way that suits them and receiving feedback that helps their longitudinal development.

Technology plays a fundamental role in achieving these goals and increasingly colleges and universities are seeking to integrate institutional information systems to provide a single coherent point of access to assessment and assessment-related data. The aim is to minimise the administrative overhead involved in handling of paper and input of data and to allow students personalised access to information about assignment types and deadlines, assessment records, feedback from previous assignments and their e-portfolios. There is also growing interest in the field of learning analytics, with assessment analytics being a particular focus. Without online systems it is difficult to collect and analyse data at a sufficient level of granularity to provide meaningful intelligence and to gain the longitudinal view necessary to both staff and students.

The idea of a fully integrated suite of systems that support the most effective learning and teaching practice and minimise routine administrative tasks remains however a 'Holy Grail' for most institutions. Many institutions still have discrete systems which are not able to exchange data and many assessment related processes remain almost entirely manual or paper-based whether through staff choice, lack of available technology tools or a combination of the two.

EMA is a topic of considerable interest in the UK post-compulsory education sector (and indeed internationally) at the moment. Evidence of this interest comes from a variety of sources such as: the Heads of e-Learning Forum (HeLF) who have undertaken detailed analysis and reporting of developments over a period of time as well as running a special interest group on the topic and who have prioritised EMA as one of their key areas of interest this year; the Universities and Colleges Information Systems Association (UCISA) who listed it as one of their top strategic issues in 2013; the number of related queries on discussion lists covering a variety of role types and queries direct to Jisc on this topic. The Higher Education Academy (HEA) also noted the important role of technology in its 2012 publication: **A marked improvement: transforming assessment in higher education** (heacademy.ac.uk/sites/default/files/A_Marked_Improvement.pdf). This interest was also evidenced by the number of institutions willing to support this research: our online conversation attracted 90 detailed responses

in a very short time period (which included the Easter vacation) and provided many of the resources referenced in this report and sources of follow-up interviews.

The purpose of this report is to serve as a review of the current landscape in order to inform future initiatives to support the sector undertaken through a process of codesign involving Jisc, HeLF and UCISA.

This report is focused specifically on the use of technology to support assessment and feedback practice but it must be noted that such practice needs to be based on sound educational principles such that pedagogy drives the use of technology rather than the other way round. This research follows an earlier programme of work that looked at defining assessment and feedback principles and making technology choices to support the implementation of particular principles. For more on these topics the reader is referred to the outcomes of the Jisc **Assessment and Feedback Programme** (jisc.ac.uk/assessmentandfeedback) (2011-2014).

[1]

- 1 The term electronic assessment management (EAM) is often used interchangeably with EMA. We concur with the view expressed by the Heads of e-Learning Forum (HeLF) that EAM implies the management of assessments that exist in digital format whereas EMA is a much broader term covering the use of technology to support all assessment related processes and hence we have adopted this term.

Information sources

The introductory paragraphs begin to hint at the nature of the problem and the need for this report. EMA touches on many aspects of institutional practice and is a matter of importance for staff (and hence their representative professional bodies) in many different roles: managerial, learning and teaching, learning support, IT and administration.

Projects and research activity are being undertaken from many of these perspectives but there has to date been little join-up across the different communities and there is no obvious home for information that helps us derive a holistic picture of current practice. This report draws on information from a variety of sources, most notably:

- » a series of EMA (previously known as EAM) **surveys** (helfuk.blogspot.co.uk/p/projects.html) undertaken by HeLF in 2011, 2012 and 2013
- » the Jisc assessment and feedback programme (2011 to 2014 involving over 30 institutions)
- » a range of other Jisc learning and teaching related projects
- » a limited literature review
- » a series of online questions posed in April 2014 - with 90 responses from 70 different institutions (65 HE and 5 delivering HE in FE) covering all four nations of the UK. The graphs in this report have been constructed from those responses. All of the quotes in this report (unless otherwise identified) are also from the same source and the respondents were guaranteed anonymity

- » a Think Tank held in May 2014 - details of institutions represented at the Think Tank are given in Appendix 3 - some of the observations in this report stem from discussions at that event so comments such as '*we heard examples of...*' relate to these discussions where, once again, the participants were guaranteed anonymity

- » a series of interviews with a selection of learning providers

The choice of approaches and information sources was intended to help identify the key issues from a range of perspectives. It was hoped to highlight the problems and the gaps in available information and technologies that would most benefit from being addressed by codesign activities undertaken by the cross functional grouping mentioned above.

To this end the literature review was the most light-touch element of the research and it revealed, not unsurprisingly, that there is no natural forum for the publication of the outcomes of institution-wide undertakings in this area. A review of publications during the last five years in both the journal published by the Association for Learning Technology and the British Journal for Educational Technology revealed a very limited range of articles that fell under the heading of EMA at all: most of the published work was focused on very narrow aspects related to marking and feedback along with some evaluations of

the use of software to assist plagiarism detection². An edition of the British Journal for Educational Technology in 2009 (onlinelibrary.wiley.com/doi/10.1111/bjet.2009.40.issue-2/issuetoc) had a focus on e-assessment (mainly concentrated on online testing). The broadest up-to-date literature review of the use of technology to support assessment and feedback practice appears to be that undertaken by Queen's University Belfast (this is work in progress last updated January 2014: Jones & Kelly 2014 e-assessment and feedback for effective course transformations: **literature review** (jiscdesignstudio.pbworks.com/w/file/80351282/e-AFFECT_literature_review_version3_Jan14.pdf). Hepplestone et al (2011) provide a useful summary of the literature relating to engaging students with feedback: **Using technology to encourage student engagement with feedback: a literature review** (researchinlearningtechnology.net/index.php/rlt/article/view/10347)³

There is a considerable amount of further information published in the form of project reports, websites and blogs despite the fact that little of this work has seen the light of day in peer reviewed journal publications. There is a useful summary of related work on the **assessment management** (jiscdesignstudio.pbworks.com/w/page/52947117/Assessment_management) pages of the Jisc Design Studio.

[1]

- 2 We use the term plagiarism detection here as it is used in many of the reference sources. It should be recognised however that in the field of student plagiarism and academic integrity it is generally agreed that the term text-matching tool should be used to describe the software products, as there is a need to emphasise that software cannot 'detect': academic judgement is involved in determining possible instances of matching text that may have been copied.
- 3 See also Nicol (2008)

General overview of landscape

The use of technology is now a fundamental part of the support for assessment and feedback practice across the sector but there are a few examples of fully integrated approaches to supporting the whole assessment and feedback life-cycle.

E-submission is rapidly becoming the norm in many institutions but the take-up of e-marking and e-feedback is much more variable even within a single institution.

The Heads of e-Learning Forum (HeLF) has conducted surveys of its membership in 2011, 2012 and 2013 asking about the perceptions of HeLF members on EMA in their own institution. The 2013 summary states:

'...there is a trend towards normalising EMA practices largely driven by students but also staff demand, groups or bodies, senior management and national agendas.'

but it goes on to say:

'However, challenges remain in relation to cultural shifts, varied implementation across universities and its implications for consistency, standardisation and flexibility to respond to different needs as well as service disruptions, skill gaps some technical limitations related to data operability and transferability.'

The overall picture is not dissimilar to that identified by the Jisc assessment and feedback programme which found that there were pockets of good and innovative practice in every institution but that scaling up and

embedding this good practice was fraught with difficulty. There are however some examples of very joined up approaches (not least in the FE sector) and some examples of institutions that, having taken a decision that EMA implementation is strategically important to them, have moved very quickly. The technology market is also in a period of change with some of the major commercial suppliers offering new releases during summer 2014 and a number of new providers entering the UK market.

Take up of EMA within institutions

It is clear that we are in a period where institutions are moving beyond experimentation with new approaches and are looking to take a more strategic approach to the application of EMA and this is increasingly being formalised in institutional strategy and policy.

In the 2011 HeLF survey only 21% of respondents were able to agree or strongly agree with the statement: *"I feel very confident my institution has the policies and procedures in place for the effective management of electronic submission of student work"* (N.B. this question was not repeated in later HeLF surveys). We looked more broadly at the area of strategy and policy in our questions posed in April 2014 and 55% of respondents told us that their learning teaching and assessment strategy and policy documentation now made explicit reference to EMA. A number of others told us that their strategic plans had specific goals in relation to EMA - in many cases this consisted of institutions who were already making widespread use of e-submission setting targets for moving to online feedback and marking.

'... there is a significant increase in the use of online assessment submission & feedback. Academic Schools and Faculties are reflecting EMA in their annual plans and budgets.'

Developments in this direction need however to be viewed in the context that assessment strategy and policy is often devolved to faculty or school level so it is not true to say that 55% of HE providers necessarily have institution-wide policies that address these areas.

Some institutions are taking a cautious approach and being pragmatic about what is required as opposed to what is encouraged and recommended e.g.

'We have policy documents that encourage online assessments and Dropbox submission but do not enforce this.'

Other institutions have not yet updated key procedural documents to take account of EMA and this brings its own set of problems e.g. when it comes to defining what anonymity actually means in system terms or which proxy identifiers should be used in the case of anonymous marking.

'... assessment policy exists, and does not mention e-assessment at all (perhaps as a measure to keep things open, since there is no directive that assessment should be 'e'). So, ... there are conflicting or insufficiently specific directives dispersed in separate pieces of strategy, policy, standards, guidance, etc.'



'In response to feedback from the student body, [institution name] recognised the important and rapid move needed to implement the e-Submission of coursework.'

E-submission appears to be considerably more widespread than other aspects of EMA: only 3% of respondents told us their institution was not doing anything in this area and 32% had already mandated e-submission on an organisation wide basis. This compares to 20% who had an organisation wide mandate for e-feedback and 10% for e-marking. Once again institutions who are not currently undertaking any work in this area are very much in a minority: only 4% and 11% were not actively investigating e-feedback and e-marking respectively.

Given the devolved nature of assessment and feedback practice, the localised picture probably gives a better reflection of the overall interest in this area and in this case 40% of institutions have e-submission mandated on a local basis, with 34% mandating e-feedback and 32% mandating e-marking locally.

'e-marking has not been made compulsory but because electronic submission and feedback is mandatory, a significant proportion of staff have adopted it (for convenience).'

E-exams appears to be the most immature area: 26% of respondents told us they weren't currently looking at this area. 39% had undertaken small-scale pilots and 13% large-scale pilots. There is little mandatory use of e-exams and the practice seems best developed in health related subjects in HE⁴. The picture is rather different in FE where many awarding bodies stipulate the use of online exams. There is however widespread small-scale use of online assessment with a wide variety of tools in use.

A number of institutions have indicated that they are in the process of preparing EMA related strategy and policy documents and would welcome the opportunity to review examples from other situations. A few examples that are in the public domain include:

- » the University of Manchester, Faculty of Humanities, which has a comprehensive **Policy for online submission, plagiarism detection, marking and online feedback** (humanities.manchester.ac.uk/tandl/documents/FinalpolicyonlinesubplagiarismdetectionmarkingonlinefeedbackFebruary14_000.pdf)
- » the **University of East London** (uel.ac.uk/ape/staffsupport/e-submissionandturnitin/guidelines/) which has an organisation wide approach to e-submission, e-feedback and e-marking
- » **York St John University** (yorks.ac.uk/technology-enhanced-learning/technology-enhanced-learning/e-submission.aspx) which has implemented e-submission, e-feedback and e-marking for all appropriate text-based assignments
- » **Goldsmiths** (gold.ac.uk/gleu/electronicmanagementofassessment/), University of London has a website giving guidance to staff implementing EMA which is 'extremely widespread and embedded' although not mandatory



See also this e-submission policy:

From September 2012, [institution name] policy requires, as a **minimum** expectation, **all coursework items** meeting the following criteria to be submitted electronically:

- » a single file
- » in Word or pdf format
- » up to 2000 words or equivalent.

Electronic submissions for summative assessment must be anonymised in compliance with [institution name] Marking of Anonymised Coursework Policy

Additional Information

The policy **does not** prevent subject or programme areas applying e-submission to other items outside the criteria e.g. multiple files, formats other than Word or pdf, or items exceeding 2,000 words.

The policy **does not** prescribe:

- » how submitted coursework should be marked
- » how feedback should be provided to students.

Academic staff are encouraged to use electronic methods of feedback and marking, where possible.

[1]

- 4 See for example case studies in this 2008 Jisc, ALT, HEA work 'Exploring tangible benefits of e-learning' jiscinfonet.ac.uk/publications/exploring-tangible-benefits/

Technologies in use

Despite the diversity of UK academic practice, there is a limited range of core technologies supporting EMA on an institution wide basis.

The key systems are generally:

- » student record system: as the home of definitive grading information.
- » VLE: used for feedback and marking.
- » dedicated assessment platforms: with the submission, originality checking, feedback and marking functionality in the Turnitin product suite being widely used.

Looking at the combination of these systems, two main options predominate: and between them SITS/Blackboard Turnitin and SITS/Moodle/Turnitin account for almost half of institutions (the SITS/Blackboard Turnitin combination accounting for around 25% of HEIs being the most common. The rest of the variation is largely accounted for by the different student records systems in use although there are a variety of other VLEs (including Sakai, Canvas and Desire2Learn) and one institution identified that it was using the Ephorus originality checker.

Many institutions do however have more than one tool that can potentially carry out the same functions therefore individual departments and staff often have considerable choice in selecting the most appropriate tools to underpin their day-to-day assessment practice. Only 16% said that

their institutional use of EMA technologies was 'highly standardised'. The largest proportion (54%) had a standard core supplemented by local variation and 28% had considerable localised variation (2% did not know).

'We prefer to use as few systems as possible to reduce complexity but there are no systems that meet all needs. This leads to different parties pushing for the adoption of different systems.'

Despite the relatively limited nature of the core product set, the key integration points between these technologies remain problematic and a source of considerable manual intervention. We asked about levels of integration between the core systems i.e. the extent to which data is held in a one system and passed to other systems that need it rather than manually input to each system: there were more respondents (11%) who said their systems were 'completely separate' than who said their systems were 'highly integrated (7%)'. Interestingly only three universities said their systems were highly integrated (one of these was making relatively limited use of EMA) and the others in this category were all providers of HE in FE.

Aside from the sheer amount of administrative effort required to transfer data between systems, a number of other issues were identified such as problems caused by different systems storing marks in different ways and the risk of error due to rounding in multiple systems and the difficulty of supporting anonymous marking in that anonymity may be possible in one system but lost as soon as data is transferred to another.



'Lack of systems integration means that we do not have an end to end EMA experience. Students and staff have a disjointed experience and require much more guidance than should be needed ...'

'Data is shared between student records system, the VLE and e-submission and e-marking tools, but this is often clunky and not always obvious to manage.'

(Institution with in-house student record system)

'We have many different software systems supporting the various different aspects of assessment and feedback with little to no integration which for an end user is very frustrating as you need to learn and become proficient in many different software when you are not a technical expert. the very loose integration (if it can be called that) makes for lots of manual intervention and duplication of effort which is a barrier to adoption in some cases.'

'No integration in any systems. Excel databases, files and folders, email system and Turnitin. Everything must be done manually between the systems.'

'This is a real pain and a drain on administrative staff time.'

'Different systems store / present data in different ways which makes it hard to integrate systems or even manually transfer the data.'

'Practice varies, but there is still a major manual administrative input.'

'Returning marks from the VLE to the student information system is a distant hope.'

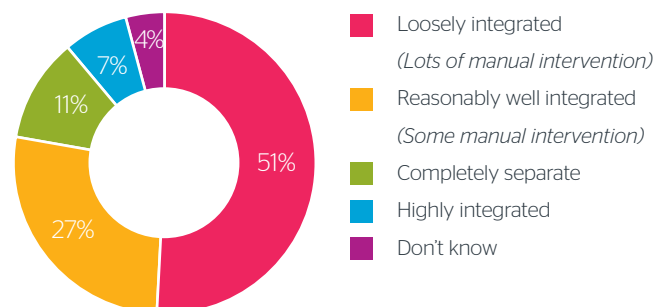
These issues also impact very directly on the learning experience both in terms of being able to support students and in allowing them to manage their own learning effectively.

'The challenge of a disjointed systems makes it challenging to monitor student progress and identify at risk students. Similarly, there is no opportunity for the students to monitor their own progress prior to final assessments.'

'There is a general issue that things come down to the lowest common denominator and all the rest have to fall into line with the least flexible system.'

Whilst there are considerable efficiency savings to be made from the use of technology and automation of manual processes, there is a different set of risks to consider once these systems become widespread and mission-critical. This issue came to the fore during the research for this report when downtime with the Turnitin system caused major issues for UK universities. To a certain extent integration further amplifies these risks: one large institution using a UK Moodle VLE hosting service faced a 'perfect storm' when a global slowdown in the Turnitin service coincided with peak use of their hosted Moodle provision. Human nature provided the final element with students being unsure if assignments had been submitted or not and thus attempting multiple submissions which added to the load problems.

How integrated are the core systems that support EMA?



Processes

A key finding of the 2012 landscape overview that marked the starting point for the Jisc assessment and feedback programme (Ferrell 2012a), was the extent of diversity with regard to how institutional assessment and feedback strategy is translated into more localised policy and procedure. What this means in practice is that large institutions rarely carry out a particular function by means of a single, institution-wide, business process and different faculties, schools, departments or even programmes, each have their own ways of doing things. This level of process variation is an inhibitor to achieving the efficiencies and benefits possible through the application of EMA technology because a series of time-consuming and cumbersome workarounds are likely to be needed to adapt the system to many different ways of carrying out the same activity.

These workarounds can impact both staff and students: as an example one institution that had the capacity to accept e-submission of all assignments based on the written word noted the following variations in practice:

- » one faculty accepted e-submission for postgraduates only but then printed out the assignments for marking
- » some course teams were happy to accept and mark submissions electronically but students were still required to submit a paper copy to meet the requirements of the coursework receipting system
- » one department required students to submit a hard copy for marking and also an electronic copy to be submitted through the plagiarism detection system

We asked about the degree of consistency in the business processes supporting assessment and only 12% of respondents told us they believe their processes to be 'highly standardised' whereas 85% exhibited some form of local variation.

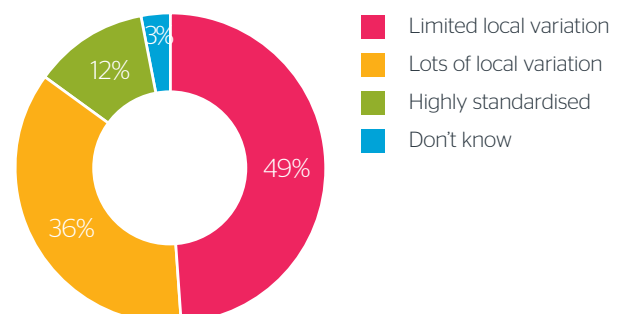
These figures probably present a very optimistic picture of the actual position. Some of the 'highly standardised'

12% are either institutions that are unusual in particular ways or institutions that have recently gone through a significant period of process change. It is also the case that people often do not discover the extent of process variability until they come to implement supporting systems. We have heard from many institutions who ostensibly have quite standardised policies and procedures and who have been surprised by the many interpretations different departments place upon the same set of regulations.

'The extent of variation in business processes across sections and courses only really became apparent as we moved to online processes. As it was hard to make changes at that stage, the implementation was made more complex, and resistance to subsequent change is increased (the IT gets the blame, rather than the process).'

'Stuff suddenly becomes visible that wasn't before. This shows up gaps and misapprehensions in the process maps. You can often build systems then find that other people are doing something different. It 'lifts the carpet' on things.'

How consistent are the business processes relating to assessment in your organisation?



'Variation in practice across schools makes it difficult to provide a single institutionally supported solution.'

Participants in the research for this report frequently commented on the extent to which new technologies are 'bolted on' to old processes without people really taking the time to stand back and consider what the process is really intended to achieve. In some cases this may be due to lack of time and appropriate skills. During the Jisc assessment and feedback programme a concern was voiced that academic staff are on a 'treadmill' due, in many cases, to poorly designed processes. Their workload is such that they cannot pause to think about doing things differently: they recognise that they do not have the skills to undertake process review and effective redesign without some more specialist facilitation and support yet they know that they cannot improve their pedagogy without better designed processes.

'For the most part these systems have been mimicking old practice and have not significantly explored the implications of storing submission, feedback and marks online.'

'Recording marks/feedback and returning marks/feedback is problematic as there is no standard practice across the school (e.g. there are still depts that record marks in spreadsheets).'

In other cases a significant part of the problem is the persistence of 'institutional myths' (jiscinfonet.ac.uk/infokits/process-improvement/reality-but-not-as-we-know-it/) surrounding policy and process. The tendency to do things the way they have always been done is perpetuated by a belief that this is somehow enshrined in local or institutional policy. When challenged on existing approaches, academics are often surprised to find that many characteristics of the process are matters of historic choice rather than regulatory issues and, indeed, often surprised at how few regulations there actually are or how easy it is to make changes to perceived blocks and

barriers in the regulatory frameworks. Variation in the application of assessment policy across an institution is often down to such myths about what actually constitutes the policy in the first place. This issue cropped up when **Keele University** (ema.jiscinvolve.org/wp/2014/08/06/technology-supporting-assessment-and-feedback-at-keele/) undertook a wide ranging review of its **assessment processes** (jisc.ac.uk/whatwedo/programmes/bcap/keele.aspx). Discussions around the processes helped identify the fact that some assessment regulations were widely misunderstood and prompted a review of aspects of the regulations. The work also allowed the University to come up with three **recommended processes** (jisc.ac.uk/whatwedo/programmes/bcap/keele.aspx) for the assessment of coursework.

Institutions are increasingly seeing that administrative processes impact very strongly upon the student experience and that greater consistency is of considerable benefit to learners. The need to ensure parity for learners across different parts of the institution is thus one of the key drivers of process change.



'Despite attempts to co-ordinate the roll out of the platform, each Faculty adopting the system attempts to re-mould how it should be used - which is a challenge when we are trying to ensure a harmonised and consistent student experience.'

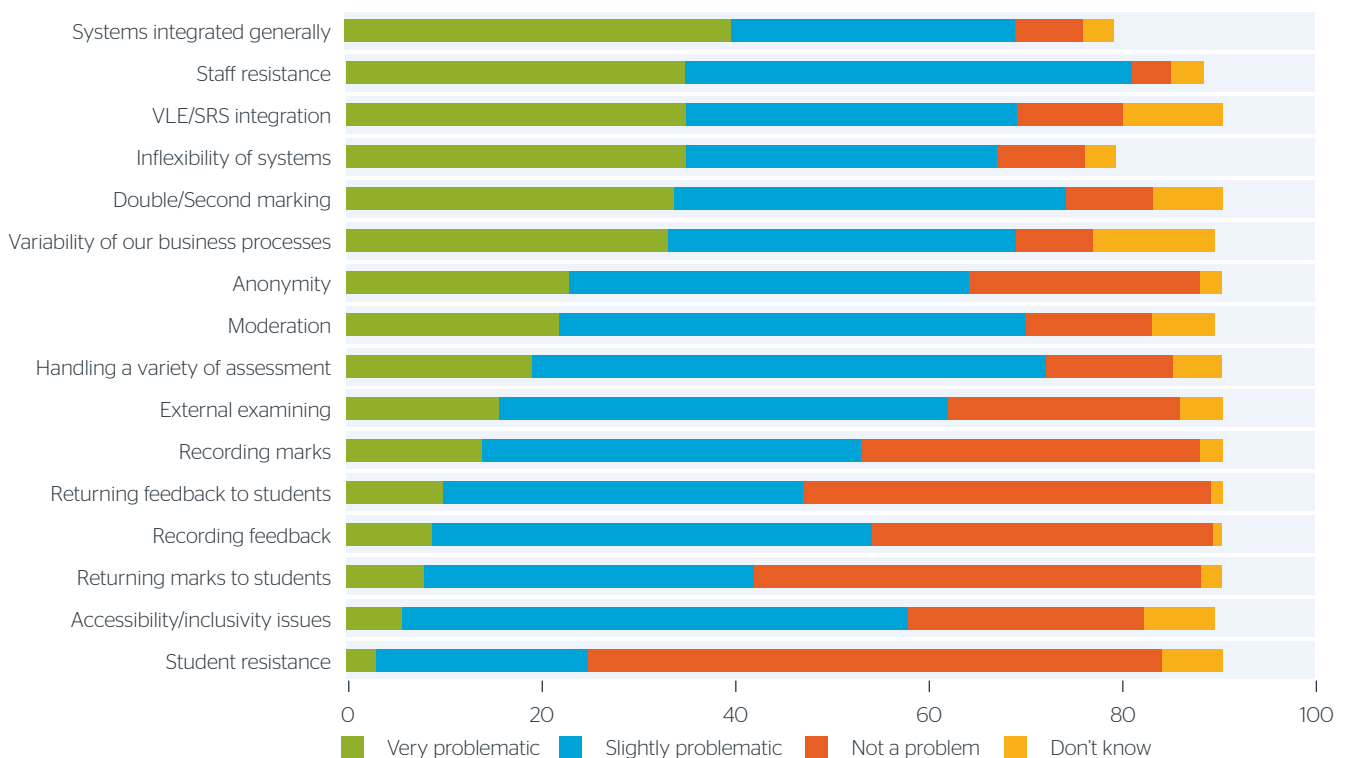
Pain points

We asked about the key pain points in relation to EMA. Below is a summary of responses to the prompts provided.

The prompts were intended mainly to stimulate discussion around this area and more interesting are the detailed comments which are summarised later in this report in the discussion on the elements of the assessment and feedback life-cycle. The chart shows the broad profile of the 90 responses (not all respondents commented on all of the prompts). Grouping together the various points around systems integration and inflexibility of systems, it is clear that this is the biggest problem area for the majority of institutions.

Issues relating to pedagogy and institutional culture and process do however feature very strongly: with over 80% of respondents indicating that staff resistance is problematic to some extent. The process issues discussed in the previous section were identified as a major source of pain: interestingly the response about business processes also had the largest number of 'don't knows' probably reflecting the general level of opacity around this topic.

What are the pain points in EMA?



In the following section that looks at the different elements of the assessment and feedback life-cycle we try to further unpack the extent to which:

- » pedagogy
- » technology
- » process and
- » culture

each play their part in causing these pain points.

'I have ticked "slightly problematic" against most issues - but this is because we've found ways of working with and around systems rather than because systems facilitate these aspects.'

The interplay between all of the factors is complex: it is evident that the existing commercial and open source systems do not effectively support all of the existing processes but there are equally some cases where process improvement could clearly be achieved. Similarly, we heard some quite harsh comments about institutional culture but it is clear that experiences with immature or unreliable technologies can turn neutral (or even slightly positive) early adopters into resisters.

'Staff resistance and attempting to change a long embedded culture are some of the most difficult issues and we have been met with some knee-jerk and excessive reactions.'

'The overwhelming problem area is staff resistance to online marking and feedback.'

'Most problems or issues are largely a result of faculty staff (academic and admin) not engaging with staff development or other support and guidance - tends to be picked up as reported problems instead.'

'A lot of the problems stem from user awareness and education and not about the technology.' ... where workarounds take time this can also create frustration and resistance.'

... where workarounds take time this can also create frustration and resistance.'

Top-down approaches are very often at odds with the culture, certainly in higher education, and many institutions are taking the approach of strongly encouraging all aspects of EMA without the element of compulsion until the practice is strongly embedded. One respondent made the point that attitudes may well differ once optional practice is made mandatory.

'We are at a point where it has worked successfully with certain Schools and where it has been adopted voluntarily. The university now wants to make it compulsory and I expect much more resistance and frustration.'

Culture of course differs across institutions and can cause issues when external stakeholders involved in the assessment process do not adopt the same practices as the home institution.

'We sometimes have problems when keen lecturers want to use technology with their students but the moderators/externals/second markers don't. As a result we sometimes have to create paper copies for the moderators/externals/second markers which defeats one of the reasons for using electronic systems.'

Some respondents used the online conversation to express frustration that EMA was not being used to best effect. Two administrators (from the same institution) felt strongly that opportunities were being missed:

'We have a perfectly capable system that could do all of the above yet we don't use the system to its full potential. E-submission has been used, however I do not believe to its capability, we could be handing in ALL assignments online yet we still have to take in paper copies.'

'We have the facility for automatic electronic feedback and electronic marking but the facility is not used. These processes are still done manually, to the disdain of administrative staff, as a service is being paid for and not utilised.'

EMA offers a different benefit proposition for different types of stakeholder and this is at the heart of variations in perception. The University of Exeter began implementing an EMA system in 2010 and their evaluation report revealed some interesting differences as regards how professional or central service staff viewed the potential benefits as compared to the perceptions of academics. The project team notes:

'Almost all professional staff saw clear benefits, while only half of the academic staff saw any benefit. Academic staff felt that administrators would be the main beneficiaries with students seeing some benefit. Professional staff, however, saw students as the main beneficiaries.'

University of Exeter⁵

Various participants in the research for this report commented about the extent to which the different stakeholders each approach EMA from a silo perspective and the difficulties inherent in reconciling these views:

'EMA implementation is challenging due to the three distinct user groups - academics, students and administrators. All have different attitudes and requirements. For example, senior academics tend to focus on how well the marking toolset matches their preferred marking style without considering the whole process and the needs of the students and administrators. (i.e. they don't really care about how the administrators get the marks out of the marking tool and into the records systems, nor how students hand in). Similarly, administrators focus on the benefits of stopping paper hand-ins without considering the problems some academics have reading three hundred essays on-screen. A top down policy may be the only way to progress EMA beyond local pools of usage.'

'Staff sometimes want to do things that aren't possible to do or want to trial things without thinking through the consequences from an administration and management perspective. In reality we probably need to adopt an enterprise wide re-evaluation of what we are using and why but this can be difficult. We may possibly need to do this from both a systems perspective and a student experience perspective.'

'Unfortunately there is no joined-up thinking on how to implement the entire process across the institution.'

'Staff resistance is a key issue, both from Administrative and Academic staff. Students really want it.'

[1]

⁵ OCME Final Report repository.jisc.ac.uk/4939/1/OCMEFinalReportv1.pdf

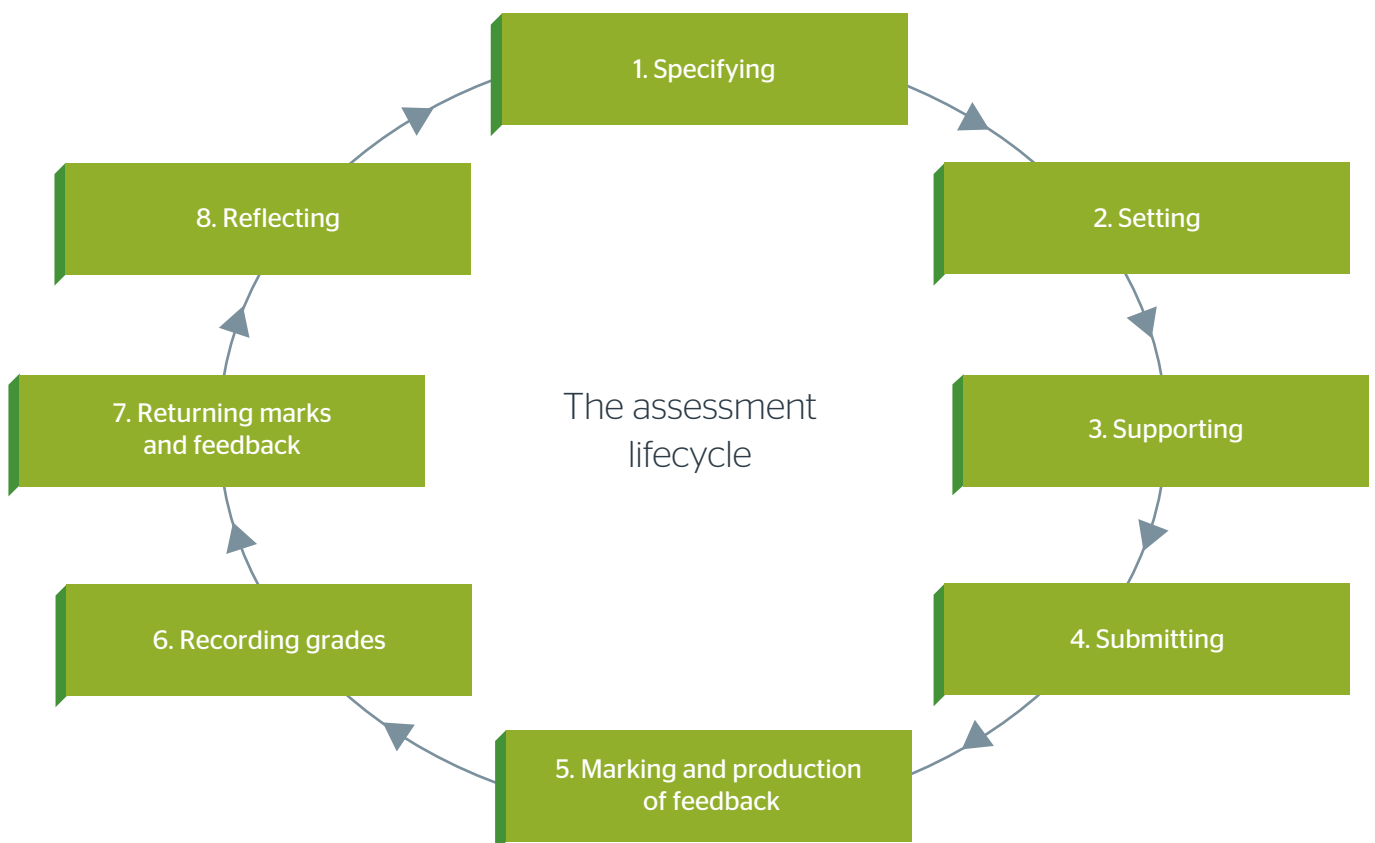
A Life-cycle view

The assessment and feedback lifecycle shown below was developed by Manchester Metropolitan University and has already been adopted/adapted by a range of other HEIs⁶.

The life-cycle is fundamentally an academic model and the way in which it shows a high level view of the academic processes offers a ready means of mapping business processes and potential supporting technologies against this. Use of the model has therefore been central to this research in terms of serving as a framework to gain a holistic picture of institution wide activity.

[1]

⁶ Thanks are also due to the Universities of Edinburgh, Manchester and Portsmouth for helping us refine our thinking on this topic.



There are 8 main stages in the life-cycle: at a more detailed level the processes also include: assessment scheduling; submission of assignments; tracking of submissions; extension requests and approvals; academic integrity; academic misconduct processes; examinations; marks recording; moderation and external examining.

The life-cycle is presented in a cyclical fashion to emphasise the iterative nature of many of these activities (even though many of the participants in this research have highlighted the fact that some of their processes and information systems actually work in quite a linear manner). We have preserved the numbering of the original model for ease of commenting in this text but it needs to be recognised that, when developing any new piece of learning, stage 8 - reflecting on what has gone before, is often the first stage in the process.

The model is intended to be pedagogically neutral (more about asking the right questions and stimulating thought than having a basis in any particular pedagogic stance) and it can be applied to both formative and summative assessment and to any scale of learning e.g. from whole courses/programmes of learning or to short pieces of learning such a short course that takes place over a single day. The model covers all assessment and feedback practice whether or not materials are in digital format and supported by information systems therefore it suits our purpose as a model for EMA as opposed to the narrower EAM (see discussion in the **introduction** to this report).

There is further discussion on the Jisc EMA blog about other adaptations of this model, especially a version by the University of Edinburgh which breaks the processes down into **different stakeholder perspectives** (ema.jiscinvolve.org/wp/2014/06/18/further-thoughts-on-a-generic-assessment-and-feedback-lifecycle-model/#comment-9)

The following analysis looks at each of the stages of the life-cycle in turn and highlights the key EMA issues that have been identified by participants in this research as well as some examples of good practice. There are some examples of end to end EMA support for the whole life-cycle on the Jisc EMA blog - see for example:

- » case study about **Walsall College** (ema.jiscinvolve.org/wp/2014/06/29/end-to-end-ema-at-walsall-college/)
- » case study about **Manchester Metropolitan University** (ema.jiscinvolve.org/wp/2014/08/06/transforming-assessment-feedback-for-institutional-change-traffic-at-mmu/)
- » The University of Exeter began in 2010 to introduce an end-to-end coursework management solution which would be paper-free and supportive of administrative processes, pedagogy and the student experience. The **evaluation report** (as.exeter.ac.uk/media/level1/academicsserviceswebsite/aboutus/biss/iws/documents/OCMEFinalReportv1.pdf) from the **OCME project** ([jiscdesignstudio.pbworks.com/w/page/50671133/OCME Project](http://jiscdesignstudio.pbworks.com/w/page/50671133/OCME%20Project)) represents a thorough and honest analysis of the complexity of such an undertaking and there are many lessons to be learned for other institutions

There is however a general feeling that stages 2-4 are better understood and less problematic than some of the other components, not least because many institutions are managing all of the related information within a single VLE system, and that stages 5-8 are where we begin to open Pandora's box...

1. Specifying

Specifying details of a significant course or programme of study (and consequently specifying the assessment strategy within it) is done infrequently.

For new courses there may be a considerable time lag (of 1-2 years) between course validation and initial delivery. Often this means that the course is delivered by new staff who have little ownership of the original design and changes are inevitable. Once a course has passed validation, significant review might take place as infrequently as once every six years. There are due quality processes to manage changes in the interim but staff often find the processes so arduous that they find ways to implement change 'under the radar' of the formal minor modifications processes. All of these factors, coupled with the amount of information that is still paper-based in many institutions, mean that it can be difficult to generate accurate information that flows right through the life-cycle and is readily reusable for a variety of different purposes and different stakeholders. These issues were investigated in the Jisc **Curriculum Design** ([jiscdesignstudio.pbworks.com/wpage/40489793/Institutional Approaches to Curriculum Design](https://jiscdesignstudio.pbworks.com/wpage/40489793/Institutional+Approaches+to+Curriculum+Design)) programme and the outcomes also fed into the Jisc infoKit on **Managing Course Information** (jiscinfonet.ac.uk/infokits/course-information/) (see particularly the section: **'Why is managing course information difficult?'** (jiscinfonet.ac.uk/infokits/course-information/difficult/)) Clarity around the specification stage is extremely important in ensuring that actual assessment practice does really assess against the desired learning outcomes.

Participants in the Think Tank noted that, in both stages 1 and 2, there is a need to support more creative pedagogic thinking if we are not to keep going round the life-cycle in a very traditional and formulaic way. The Jisc curriculum design programme noted the intuitive and iterative nature of learning design and the fact that many of the most significant design decisions take place in the 'gaps' in the formal process (i.e. the periods between formal review points) and there is a need to find ways of recording and sharing of this thinking. We need to be able to show that investment in better learning design means that students need less support later on (effective assignment briefs, well understood marking rubrics, formative opportunities and peer review can all contribute to better self-directed learning). There is also a need for constructive alignment to ensure that the assessment tasks clearly enable the learning outcomes to be demonstrated.

'Trying to change the culture of moving feedback earlier in the learning cycle is a key challenge.'

The specifying stage of the life-cycle causes a different set of problems in FE due to the complexity of awarding body criteria for assessing against particular learning outcomes and the frequency with which the specifications can change.

'The volatility of assessment schemes for qualifications causes problems for developers of technical solutions for managing assessment tracking and award prediction.'

Encouraging the use of a broader range of assessment types is seen as an important means of enhancing learning and teaching practice by many institutions. In this context e-submission, despite its many advantages, was seen by some to be a double edged sword because examples were cited whereby academics were constrained by the limited range of file types that lend themselves to online submission, feedback and marking and in some cases the introduction of e-submission had resulted in regression to a more conservative range of assessment types. Although it was noted that creativity had again increased once the range of acceptable file types was increased within the Turnitin system.

'Academic staff, understandably, don't want their assessments to be driven entirely by what the technology can offer, but want the technology to be able to respond to the assessment requirements.'

Cultural factors also come into play and the likelihood of eliciting disapproval from external examiners has also been cited as a reason for risk aversion in the setting of assignments. Others have made the point that curriculum (including assessment) design is the responsibility of the awarding institution and that external examiners have the right to challenge how the methodology is implemented but not the methodology itself. Risk aversion in relation to assessment practice is a general issue but one that seems to be exacerbated rather than alleviated by EMA.

Keele University undertook a **project** (ema.jiscinvolve.org/wp/2014/08/06/technology-supporting-assessment-and-feedback-at-keele/) to support more innovative assessment practice and the outcomes of 20 different innovation projects are evaluated on the **project STAF** (projectstafkeeleuniversity.jiscinvolve.org/wp/about/) website.

There is a discussion below on ensuring fairness (including elimination of any unconscious bias) in the marking process but there is also a need to take account of the fact that a correlation between differences in marks relating to factors such as gender might relate as much to assessment design as to the actual marking process.



MMU guidance on Specifying.

celt.mmu.ac.uk/assessment/lifecycle/1_specifying.php

2. Setting

Whilst the overall assessment strategy and approach is specified very early in the life-cycle, there is a process of setting assignment details that needs to occur for each instance of delivery.

At this point students are given details, that may take the form of an assignment brief, about precise topics, deadlines, learning outcomes assessed, marking criteria, feedback arrangements etc.

This point in the life-cycle is also where technology can have an important role to play in managing scheduling and deadlines in order to avoid issues of 'assessment bunching' whereby several assessment deadlines fall on the same date resulting in poorer quality submissions as students have less time to spend on each assignment and lower attendance in lectures and seminars whilst students are concentrating on the multiple assessments to be submitted as well as the lack of opportunity for formative feedback. This is of course a curriculum design issue but EMA comes into play in terms of making information available to learners and tutors. Manchester Metropolitan University has introduced **personalised assessment schedules** (ema.jiscinvolve.org/wp/2014/08/06/transforming-assessment-feedback-for-institutional-change-traffic-at-mmu/) for its students and the University of South Wales (formerly Glamorgan) has introduced **assessment diaries** ([jiscdesignstudio.pbworks.com/w/page/50671157/Glamorgan Assessment Diaries Project](http://jiscdesignstudio.pbworks.com/w/page/50671157/Glamorgan%20Assessment%20Diaries%20Project)).

A 'modelling tool' that has proven useful in reviewing assessment practice, and particularly identifying issues with the overall assessment timetable, is the concept of **assessment timelines** ([jiscdesignstudio.pbworks.com/w/page/30631817/ESCAPE - Assessment timelines](http://jiscdesignstudio.pbworks.com/w/page/30631817/ESCAPE%20-%20Assessment%20timelines)) as developed by the **ESCAPE** ([jiscdesignstudio.pbworks.com/w/page/12458419/ESCAPE Project](http://jiscdesignstudio.pbworks.com/w/page/12458419/ESCAPE%20Project)) project at the University of Hertfordshire. This is used to model patterns

of high medium and low stakes assessment across a 12 week semester. It gives a very clear indication of whether there are sufficient formative opportunities and 'scaffolding' of learning.

Pedagogic issues around assessment bunching and over-assessment also highlight the need to take a holistic view of the life-cycle and think about how administrative processes relate to academic practice because peaks in assignment submission also have implications for staff workload (both academic and administrative) and supporting systems. Manchester Metropolitan University undertook some modelling from its coursework submission database and identified significant peaks in assignment submissions (the highest being around 17,000 individual submissions due at the end of March 2012). As a result of its curriculum review MMU has reduced the total number of pieces of coursework it handles annually from c.620,000 to c.400,000 by insisting on a maximum of two pieces of summative assessment per module.



MMU guidance on Setting

celt.mmu.ac.uk/assessment/lifecycle/2_setting.php

3. Supporting

This component of the life-cycle looks specifically at supporting students in the period between setting and submission of assignments (i.e. while they are in the process of completing an assignment) and is thus separate from the more general support that is needed for the business processes and technologies throughout the life-cycle (although it does have a relationship with the broader digital literacies agenda for both staff and students).

There is a need to develop students' assessment literacies to allow them to understand the process of constructive alignment and making academic judgements. Again EMA can have a role to play e.g. in engaging students with the thinking behind online marking rubrics and in providing them with an overview of their learning pathway in order to help them understand how what they learn from one assignment can feed into future assignments and their overall longitudinal development. Although not a technology issue, the point was made that there is a need for a holistic overview to avoid complications such as terminology issues whereby staff use variants of terms such as rubrics/marks sheet/cover sheet etc and sometimes the same words for different things.

At this stage support activities might include things like assignment tutorials, submission of drafts and related provision of feedback. MMU has used the supporting phase on some courses to provide regular formative MCQ quizzes linked to tutorials for feedback purposes. The students take the test in their own time and take printouts of their responses to tutorials (or use their own laptops). This also serves to get the students used to the functionality of the quiz tools that they will be using in their summative MCQ examinations.

Such activities need to be built into the overall assessment strategy design (particularly in the context of formative assessment) but also require consideration in relation to technical aspects of EMA. As an example Turnitin can be setup to allow draft submission and

feedback on work in progress but, on trying to use this facility, MMU realised that this led to problems identifying when the student had actually made a final submission. In this case a solution was identified by setting up different submission boxes to support formative (draft) and summative submissions for a specific assignment.

The above implies a possible series of iterative loops between stages 3 and 5 as drafts are submitted. There is also an iterative link between this stage and stage 7 as students need to be supported in using and interpreting feedback. Students will read the feedback in the light of the overall mark and it needs to be clear that they understand the criteria etc. The feedback on a percentage mark of 56% might be very different for two individuals. A high mark but not so good feedback or a low mark but quite positive feedback might relate to an ipsative view of the student's progress. See also the discussion on anonymity in relation to this topic - how much do we need to know about our learners in order to give appropriate feedback?

Personal tutoring is sometimes a means of ensuring that a student's longitudinal development needs are catered for whilst still preserving features such as anonymity. This does however require systems that allow a personal tutor to see a full view of feedback.



MMU guidance on Supporting

celt.mmu.ac.uk/assessment/lifecycle/3_supporting.php

4. Submitting

This is probably the area of the life-cycle where the benefits of EMA for students are most widely understood and accepted:

- » convenience of not having to travel to hand in assignments
- » avoidance of printing costs for students
- » time savings and avoidance of anxiety about assignments going missing in the postal system
- » automatic proof of receipt
- » improved confidence provided by the privacy, safety and security of e-submission
- » confidence of knowing work is backed up
- » electronic reminders about deadlines and improved clarity about turnaround times for marking
- » submission deadlines not constrained by office hours
- » a sense that this is simply normal practice in a digital age

That is not however to say that institutions have already ironed out all of the issues around this area: technical, process, pedagogic and cultural issues do remain. There are limits on the type of assignment that will ever be amenable to e-submission.

'Art and Design does represent challenges as it can be more difficult to record the marking and assessment of physical art work than it would be an essay.'

There have been recent changes to the Turnitin product to expand the range of file types that can be accepted but the file size (currently restricted to 20 MB) remains an issue. The issues are not restricted to this particular software product as other commercial systems used for this purpose have similar limitations. Group work and peer assessment are other areas that are currently problematic.

'A lack of ability to handle group submissions at this time is also a hindrance to adoption where group learning and assessment is desirable.'

'An emerging requirement for which we have not yet found a solution is peer assessment in many different forms and combinations including anonymous and attributed: one to one; many to one; group to group....'

Whilst e-submission avoids the need for artificial deadlines, e.g. the time when the departmental office closes, greater flexibility has implications for student support such as the need for support outside normal office hours. There are also reported issues with submissions timing out when students have a slow Internet connection and related issues such as starting a submission at 00:59 but completing it at 00:01 when the deadline is 00:00 and the potential impact on late submission penalties if this process is automated.

There is a need to develop contingency plans for system failure and it has been suggested that institutions could look at options such as the development of some sort of 'holding tank' or cache to act as a buffer when Turnitin is experiencing periods of peak activity. This avoids issues where students are concerned their work has not been submitted and they resubmit thus adding to the load problems on institutional servers.

Institutions vary in whether or not they permit students to use the self-checking facility when text matching tools are used to aid judgements about academic integrity. An issue was cited whereby a student was flagged as having significant elements of potentially plagiarised material in their assignment. The source of the problem turned out to be the fact that his university did not permit student self-checking so he had asked a friend at a different university to run his assignment through the system: upon making his submission at his home university, Turnitin flagged the content as unoriginal. N.B. similar issues can be encountered when creating duplicate submissions as a workaround to providing feedback on drafts before students make their final submission.

Receipting also seems to be an issue for students. The Turnitin system offers a number of different types of receipt: on screen that can be printed, email and one that can be downloaded. Many students apparently prefer email but there are issues with the operation of this functionality where the product is integrated with a VLE. Other process issues have also been noted:

Basic process issues (such as lack of confirmable copyright statements / submission declarations) mean that e-submission through this system [Turnitin] is not as robust as it should be.

As regards institutional processes, there are many issues around managing extensions and extenuating circumstances. Some organisations believe they have clear institutional policies but find that interpretation of those policies varies widely between departments. The variability in how this is approached within and between institutions makes it difficult for system suppliers to build in functionality to apply coding for managing extensions

and extenuating circumstances and/or penalties for late submission. The converse is also true that because systems are generally 'closed', even when institutions do have a clear and consistent approach, they are not able to change the product functionality to enable it to be operationalised.



MMU guidance on Submitting

celt.mmu.ac.uk/assessment/lifecycle/4_submitting.php

5. Marking and production of feedback

This is probably the most problematic component of the life-cycle as it is the area where variety of pedagogic practice results in a situation where the fit between institutional processes and the functionality of commercially available systems is least well matched. We heard a very clear message from the sector that existing systems do not adequately meet institutional requirements in these areas. A basic issue is that marks and feedback are different things and need to be handled differently but technology platforms tend to conflate the two.

Models of marking

Systems seem too often to be predicated on an assumption that 1 student = 1 assignment = 1 mark. This model may usually be adequate for formative assessment but does not meet UK requirements for summative assessment processes. Systems would ideally offer a range of different workflows based on different roles e.g. first marker, second marker, moderator, external examiner etc. There is a discussion on **models of marking** (ema.jiscinvolve.org/wp/2014/06/23/how-many-models-of-marking-are-there/) on the Jisc EMA blog.

'We have local practices that vary but work to a common aim and meet our regulations. ...when working with schools and programmes most of these variations can be met using the tools we have at hand but require workarounds that take time and act as a barrier to staff adopting elements of EMA.'

At present there are considerable risks (realised all too often in practice) of second markers and external examiners overwriting or deleting comments made by an earlier marker. There are also difficulties in recording decisions taken during the moderation process (more on this in the section on recording grades below). It appears that some of these workflow issues are handled better within existing e-portfolio systems and there is a need to look at which aspects of functionality the suppliers of

assessment management systems could look to adapt and apply.

To use the example of Turnitin/Grademark - it is possible for two people to mark the same assignment (assuming the model is for open, sequential or parallel marking) but the system does not distinguish between the two sets of comments and marks so the onus is generally on the second marker to identify their comments. The earlier comments are of course visible to the second marker so 'blind' second marking is not supported (workarounds such as duplicate submissions or marking sheets stored externally are needed in this model). The situation is further complicated where a group of markers takes on first and second marker roles and divides a cohort between them.

'The main difficulty is in matching existing assessment processes and University policies with what is possible within the software. This is especially true of the mandatory use of anonymity which creates multiple difficulties in administration. Finding workarounds for moderation and external staff again creates manual work that takes away from the benefits.'

'Neither Turnitin or our internal system have a means to record online the marks of two markers - nor is there an opportunity for a moderator to record any decisions.'

'The biggest issues here are around how moderation or second marking happens and how the marks and changes are recorded: our workarounds range from simple things using different colours to more complex solutions using hidden fields in the gradecentre or different hidden columns. If systems like Turnitin allowed different marking layers for second markers this would be a great help.'

Anonymous marking

Anonymous marking was the subject of much discussion during the research for this report and it is clear that a requirement for anonymity poses various difficulties in relation to the main commercial systems that support EMA e.g.

- » being easily able to identify which students have not submitted where there is full anonymity
- » students being required to use an ID yet still writing their names on papers
- » identifying students with special needs or mitigating circumstances
- » anonymity potentially being lost once data is returned to the VLE
- » marking and moderation that needs to take place after the return of feedback to students (when anonymity has to be disabled in many systems).

This is fundamentally a pedagogic issue with both technical and process implications. In response to our online questions almost a quarter of respondents (23%) said this area was 'very problematic' whilst a similar number (24%) said it was 'not a problem'. The basic reason why it is a huge issue for some institutions and not for others is down to pedagogic practice and hence policy. Some institutions (often in response to student demand) have very strict requirements for anonymous marking to ensure fairness whilst others (generally again citing student pressure) believe anonymity has no place in the type of learning and teaching they deliver. There is more discussion on the topic of **anonymity** (ema.jiscinvolve.org/wp/2014/06/23/naming-no-names-the-anonymity-debate/) and educational principles on the EMA blog.

'Anonymity is another contentious area as staff have mixed views on it though it is institutional policy.'

The QAA (2012) notes that the nature of assessment in many disciplines (e.g. performing arts) makes anonymity impractical and also states:

'In particular there is a tension between the perceived benefits of anonymity and its negative impact on the giving of personalised feedback. Evidence suggests that feedback is more likely to be heeded by the student where the feedback is tailored to the individual student based on the marker's knowledge of that student's progress.'

The distinction, even within institutions who have a requirement for anonymity, is not, however, clear cut as there are various perspectives on what constitutes anonymity and at what point, if any, in the process anonymity is lifted so that markers can associate work with individual students.

'Returning marks and feedback to students necessitates lifting anonymity - this is a problem because it forces staff to choose between giving timely feedback and preserving anonymity.'

In EMA terms, anonymity is handled in various ways, most of which seem to be problematic. Students can be required to input an ID but this does not stop them including their names on submissions. Administrators are sometimes used as the 'glue' so that they can match up names and numbers. In some cases anonymity is possible in assessment management systems but lost once data is returned to the VLE and there are often particular workarounds (such as cover sheets) needed to ensure that special needs and mitigating circumstances are taken into consideration where anonymity is a requirement.

To take the example of the Turnitin system: the system maintains a simplistic form of anonymity up to the point, known as the 'Post Date' when feedback is released to students at which point the student name is appended to

the submission file name. This can cause difficulties in managing extensions to the agreed submission date as feedback is released to all students at the same time unless separate submission processes are created for these students. It also means that any form of anonymous second marking, moderation or external examining that takes place after the post date requires the intervention of an intermediary who has to download and re-anonymise the work then pass it on. Additionally the anonymity can be switched off at any point prior to the Post Date by any academic teaching that group of students and cannot subsequently be re-enabled.

'The departments who have moved over entirely to EMA are experiencing problems with managing internal moderation and feedback to students whilst maintaining student anonymity (which is required by our regulations). In order to maintain anonymity, they are having to go through complicated workarounds.'

It should also be noted that EMA, with these workarounds, really only serves as a means of potentially helping to avoid unconscious bias in marking. Given that settings in the VLE systems are trust based, deliberate malpractice (however unlikely this may be) is usually technically possible (although system logs would provide evidence in the case of an investigation). However, as one participant in the research noted:

'Such opportunities for malpractice abound in many areas of academia as a consequence of the high degree of workplace autonomy academia requires. To design an entire e-assessment approach round an assumption of deliberate malpractice on the part of academic markers would be extreme and bring many and negative side effects.'

Individual marking practice

Once we reach the topic of the individual marking practices of academics, the issues are equally complicated but also

deeply personal, relating as they do to an individual's established practice and preferences. There are some general issues around the ability of systems to deal with mathematical and scientific or musical notation but, aside from this, many of the issues relate to personal preferences as to whether or not tutors like to mark on screen. For those who are prepared to undertake e-marking there is also a distinction between online or off-line marking.

'Academic staff have to make the biggest adjustment for probably the smallest gain with the transfer to e-marking. Lots of wins for the admin staff and students but academics have to sit at a screen for long periods.'

'Staff resistance to online marking is much less than it was a few years ago though there are still pockets of dissent.'

Reported benefits of e-marking for academic staff include:

- » the convenience of not having to collect and carry large quantities of paper
- » the convenience of electronic filing
- » the security of having work backed up on an online system
- » the ability to moderate marks without having to physically exchange paper
- » the increased speed and efficiency of being able to reuse common comments
- » improved morale through not having to write out repeated comments
- » the convenience of being able to undertake originality checking in the same environment as marking
- » improved clarity of marking and feedback (especially the ability to include lengthy comments at the appropriate point in the text)
- » improved consistency of marking
- » ability to add audio comments and annotations as well as typed comments

The issues relating to improved clarity (particularly not having to decipher handwriting) and consistency as well as the security and convenience of the medium are also the main benefits to students.

In a post on the EMA blog we look at recent research into experiences of **online marking** (ema.jiscinvolve.org/wp/2014/06/30/online-marking-is-the-tide-turning/) and in particular at the work of the University of Huddersfield **EBEAM project** ([jiscdesignstudio.pbworks.com/w/page/50671451/EBEAM Project](http://jiscdesignstudio.pbworks.com/w/page/50671451/EBEAM%20Project)) which undertook a detailed analysis of staff attitudes to the topic and effective approaches to encouraging different types of staff to adopt new working practices. The discourse of resistance to online marking appears to be highly personalised e.g. some older members of staff may cite eye-strain as an issue with online marking whereas others of the same age group would cite the affordances of technology to adapt to their personal needs and make reading easier.

The University of Huddersfield concluded that a strongly directive approach to e-marking is likely to be counter-productive and that academics should be allowed to continue working in the way in which they feel most comfortable whilst the institution continues to emphasise the benefits of e-marking and reward those adopting the practice through a reduction in administrative duties:

'... 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 e-marking makes the most sense to as many of them as possible.' (Huddersfield)

The Jisc EMA blog has a discussion on **'The right tools for the job'** (ema.jiscinvolve.org/wp/2014/07/01/the-right-tools-for-the-job/) that looks at the affordances of different marking tools. In the context of the quote below, 'online marking' refers to marking whilst continuously

connected to the Internet, whereas 'electronic marking' includes both this element as well as marking on computer whilst not physically connected to the Internet.

'... staff (and the University) confuse electronic marking with online marking and thus electronic marking tends to mean online marking which tends to mean GradeMark. There is thus a tendency to only (or to a large extent) support GradeMark as people perceive it to be the tool that the University want them to use. So, excessive focus on the tool as opposed to the process of providing electronic feedback. We should offer flexibility to staff in how they want to provide feedback. If there is a desire to support electronic marking (and not just feedback), then a (any) University should offer support for various forms of marking and various tools and not just concentrate on a single tool (or allow staff to think that is the only tool).'

The ability to support off-line marking is a big issue for many institutions not least because downloading submissions compromises anonymity in many systems which automatically add the student name when files are downloaded. The Turnitin product now supports off-line marking on an iPad only but there are reported issues with information being overwritten when changing between devices or during the moderation process, although this is an issue across all marking platforms.

'Off-line marking of submitted work is a big demand that cannot be met by our present processes if we maintain our anonymous marking policy.'



MMU guidance on Marking and production of feedback celt.mmu.ac.uk/assessment/lifecycle/5_marking.php

6. Recording grades

Given the complexity of marking processes, it is unsurprising that there are considerable variations in the process by which a definitive grade is stored against a piece of work.

Institutional regulations will determine who records the grade, how this is verified and in which system it is stored. However, in many cases, the student record system is the definitive source of grading information and a lack of interoperability between this system and other components of the institutional EMA toolset can be the source of many problems.

Transcription errors are nothing new (common problems are that 7s and 1s get mixed up) but they are unlikely to be eliminated whilst marking is still frequently done outside the core system (for reasons discussed above) and/or a lack of system integration requires manual intervention to transfer marks from one system to another.

The problems of manual intervention are often exacerbated by the fact that academics simply do not trust in the ability to edit central systems as needed and prefer to keep marks elsewhere 'under their control' until all adjustments have been made and marks have been verified (see comments in **part 7** on accidental release of marks for reasons why these concerns are valid). In many cases the moderation process is carried out on shared drives and by exchanging emails back and forth but we heard of one instance where academic staff had opted (against University policy) to use the student record system for the moderation process as this was perceived

to be the only suitable shared area available to them: changes to make the student record system more open to students for other reasons thus had the unforeseen effect of enabling students to see the moderation process in real time. N.B. A product new to the UK market, the Canvas VLE, has a very open pedagogic approach such that student names are visible to markers by default and students can see grades and comments as soon as they are entered (users often forget to turn off these options in order to comply with local policy).

The ways in which systems record and store marks can also cause issues for many institutions whose grading schemes do not match the way the software is configured. The QAA (2012) states:

*'There is a strong body of opinion that the use of numbers to judge the achievement of learning outcomes is inappropriate.'*⁷

[1]

⁷ In particular see: Rust, C (2011) and Yorke, M (2009).

yet systems are still set up to expect percentage scores.

'However, as our policy dictates that letter grading should be used instead of percentage marking (e.g. B2 instead of 65%), this causes extra administrative workload as Turnitin currently does not support letter grades which means that grades need to be added on a spreadsheet manually.'

'One issue was the fact that marks had to be % rather than pass/fail/refer and this has been problematic.'

There are also concerns about the rounding of numeric marks and the possibility that double rounding of marks in different systems can give an inaccurate result.

There are various information and records management issues to be addressed when implementing EMA. One of these concerns the need for a comprehensive audit trail throughout the marking and moderation process. In most cases it is insufficient to know simply that a mark has been adjusted as a result of moderation: there needs to be an audit trail of the actual marks before and after moderation and this seems to be a weakness in current EMA systems.

'The platform really needs to be able to show more clearly what has 'happened' to a submission during the assessment cycle.'

A number of participants in this research also commented that archiving and retention policy is an issue that they need to see addressed in relation to EMA. Previous Jisc work on **managing student assessment records** ([jisc.ac.uk/whatwedo/programmes/supportingirm/northumbria1a.aspx](https://www.jisc.ac.uk/whatwedo/programmes/supportingirm/northumbria1a.aspx)) by Northumbria University back in 2003 largely predates significant EMA developments. Institutions are finding that as they are managing more submissions and feedback electronically, the assignments are only available in digital format and there is currently no automatic way to archive the material so it has to be manually downloaded.

Questions about data ownership were also raised at the Think Tank. Many institutions seem to be unclear about the detail of their licence agreement with Turnitin in particular. The view is that students own the transcripts but Turnitin owns the originality reports and there was considerable uncertainty as to how much archive data could be recovered if, for example, an institution wanted to move to a different originality checking product.



MMU guidance on Recording grades

celt.mmu.ac.uk/assessment/lifecycle/6_recording.php

7. Returning marks and feedback

A key issue for students is clarity about deadline for return of marks and feedback.

A number of institutions have told us students don't really mind whether the deadline is 20 days or 30 days so long as there is clarity (bearing in mind that, in the case of feedback, it will only be useful if it is received in time to impact on subsequent assignments).

Having identified that marks and feedback are very different things, it appears that there is limited system support for releasing the two separately. Moodle apparently offers this facility but Turnitin does not. One example of a workaround cited is that academic staff do not put marks in Grademark - they post the feedback there then email the marks the following day. Sheffield Hallam University has gone further and trialled 'adaptive release' whereby students are required not only to open but also to engage with their feedback prior to receiving their final mark. Resources from their project are highlighted on the Jisc **EMA blog** (ema.jiscinvolve.org/wp/2014/06/26/using-technology-to-close-the-feedback-loop/).

The complications of managing workarounds to deal with the fact that systems do not adequately support the common UK marking processes have led to situations involving the accidental early release of marks to students.

We heard examples from institutions where there were staff concerns about students not collecting or accessing feedback and investigations showed that this was, in part, due to lack of clarity about the fact that the feedback was available and ready for collection/viewing. In the case of returned scripts being left in 'pigeonholes' there are also concerns about privacy of this information. The point was made that there is no consistency about how this is handled in different tools e.g. Moodle alerts students to the fact that feedback is there but Turnitin doesn't (even if

it is integrated within Moodle). Other examples cited indicated that moves to online feedback greatly increased the amount of students who actually looked at their feedback (97% was cited in one instance).

The point was made that the value and importance of verbal feedback should not be lost in a model that seeks to maximise EMA. An example was however given where academic practice was only to give verbal feedback to students (and only upon request) and a move to returning written feedback that students could take away and reflect upon was seen as an important step forward.



MMU guidance on Returning marks and feedback

celt.mmu.ac.uk/assessment/lifecycle/7_returning.php

8. Reflecting

This is one of the most important components of the life-cycle in that it is where the real student learning takes place and yet it is one of the areas least well supported by the existing commercial systems.

Strategies need to be in place to ensure students read and engage with their feedback (rather than just their marks). One of the big problems however is that feedback against individual assignments is stored at a modular level and it is difficult for students and tutors alike to gain the kind of overview needed to support longitudinal development. This is a particular problem for personal tutors who need to understand how students are performing across a range of units, but may not teach on any of those units and thus do not have access to any of the marks or feedback.

'Once feedback is given, it's locked away in fragments in its respective Moodle and Turnitin boxes and beyond the purview of the Personal Tuition system we run here.'

'We have developed processes to make sure our feedback is recorded in line with our records retention policies and are stored locally backed up and away from servers we haven't control over. However we are interested in exploring ways feedback can be recorded and accessed in one place for students, allowing for reflection and engagement with feedback across modules.'

'The feature of separating feedback from the release of marks/grades is also not built into current systems. What would be appropriate is that the release of feedback prompts the student to write a short reflection upon receipt of this the mark is released. The reflection is read not by an academic but by some support staff. This info should be entered into a separate repository for QA monitoring purposes.'

A post on the Jisc EMA blog about **'Using technology to close the feedback loop'** (ema.jiscinvolve.org/wp/2014/06/26/using-technology-to-close-the-feedback-loop/) considers this topic and looks at some good examples including:

- » The University of Westminster Making Assessment Count (MAC) project which aimed to transform the student experience of assessment by engaging them in the process of reflection on feedback for learning and development. The outcomes are summarised in the **project report** (jisc.ac.uk/media/documents/programmes/curriculumdelivery/mac_final_reportV5.pdf) and a **MAC toolkit** ([jiscdesignstudio.pbworks.com/w/page/23495173/Making Assessment Count Project](https://jiscdesignstudio.pbworks.com/w/page/23495173/Making%20Assessment%20Count%20Project)) is available to other institutions

- » The University of Dundee **interACT** ([jiscdesignstudio.pbworks.com/w/page/50671082/InterACT Project](https://jiscdesignstudio.pbworks.com/w/page/50671082/InterACT%20Project)) project which placed great emphasis on creating the conditions for dialogue around feedback
- » Sheffield Hallam University '**Technology, Feedback, Action!**' ([evidencenet.pbworks.com/w/page/19383525/Technology%2C Feedback%2C Action%21%3A Impact of Learning Technology on Students%27 Engagement with Feedback](https://evidencenet.pbworks.com/w/page/19383525/Technology%2C%20Feedback%2C%20Action%21%3A%20Impact%20of%20Learning%20Technology%20on%20Students%27%20Engagement%20with%20Feedback)) project

Metropolitan University (ema.jiscinvolve.org/wp/2014/08/06/transforming-assessment-feedback-for-institutional-change-traffic-at-mmu/) and the University of Huddersfield.



MMU guidance on Reflecting

celt.mmu.ac.uk/assessment/lifecycle/8_reflecting.php

There are lots of other examples of good practice although a commonly heard issue is that many of the best examples have been developed with fairly small numbers of students and can prove difficult to scale up to much larger numbers. An issue with the Westminster project was the stand-alone nature of the e-Reflect tool used to support the MAC approach and a subsequent project was developed to make **e-Reflect LTI compliant** (jisc.ac.uk/whatwedo/programmes/elearning/embeddingbenefits2012/erefect.aspx).

'The biggest pain point is getting an assessment system that works and is scalable. Small products work fine with small groups but not scalable, enterprise products that are scalable encounter problems with design and usage.'

Learning and assessment analytics can have an important role to play in this part of the process. Learning analytics is itself a relatively new field and assessment analytics is currently an underdeveloped part of this. There is some interesting work being undertaken by **Manchester**

Working with suppliers

The current picture is one of a relatively limited market in commercial products and reported issues (as described in previous sections) relating both to functionality and reliability.

There are however hopeful signs in that many staff are relatively satisfied with the products and there is a recognition that new releases and product roadmaps are bringing considerable improvements and a recognition of the issues by software vendors. There is also recognition that the sector may not be doing as much as it could to send clear messages to suppliers about generic requirements and their relative priorities. There is some discussion of this issue in a Jisc EMA blog post: **'Mind the Gap'** (ema.jiscinvolve.org/wp/2014/07/01/mind-the-gap-2/)

We are currently in a period of change with new releases of two of the most commonly used products, Blackboard and Turnitin, due in the summer 2014 period and some new entrants emerging in the UK market and the recommendations for the next stages of this work include analysis of these developments.

Recommendations and next steps

The main focus of this report is to provide information in order to help Jisc and its codesign partners formulate a plan of action to support the sector. N.B. A list of some of the specific issues and whether their origins are pedagogic, cultural, process or technical is given in **Appendix 1**.

Sector wide progress does of course necessitate action on the part of institutions and suppliers as well, so we have made some suggestions as to things that each of these stakeholders needs to consider.

The life-cycle model has provided a useful framework for cross functional discussions and for the presentation of this report. We have received widespread validation of its applicability across different institutions (including HE in FE providers) and it therefore seems worth exploring the possibility that such a generic model could add further value in various ways such as:

- » a means of helping individual stakeholders take a holistic view of assessment and feedback activities
- » a prompt to support academic decision making during curriculum development
- » a starting point for process review and improvement
- » a starting point for a technology roadmap to maximise integration
- » a means of clarifying requirements to system suppliers

There is no such thing as a 'one-size-fits-all' approach (usually even within a single institution) and a strength of the model is that it recognises this and serves as a framework to stimulate discussion and further collaboration and communication around this model is central to all of the recommendations that follow.

Jisc and codesign partners

The value of bringing together the full range of different stakeholders with an interest in EMA has been noted very strongly by participants in this research⁸. One recommendation is therefore to:

- » consider the best means of maintaining the current momentum by providing a cross functional forum for the sharing of practice and exchange of ideas in a way that complements the work of the existing professional bodies
- » use this community to prioritise and evaluate challenges and solution-finding activities

The life-cycle has been discussed by a significant number of institutions and is felt to be a model that has general applicability across both HE and FE and to be a robust starting point for further exploration of/finding solutions to the issues and for sharing of good practice and resources. The recommendation is to:

- » use the life-cycle as the basis for a support resource based on the existing infoKit model

Our research has identified a need for process review and improvement in relation to assessment and feedback practice. These 'business' processes are often designed by academics who recognise that they would benefit from support in the use of process improvement techniques in order to help them get off the 'treadmill' they are on due

to the fact that effective pedagogic practice is inhibited by poor processes. The recommendation is to:

- » provide training and support in the use of techniques that have a proven track record in enhancing practice in the education sector: this might include general process modelling and review approaches, specific techniques (such as LEAN) and service design approaches

The main pain points in the life-cycle are common across many institutions but require solutions that are effective across the range of software systems. The commercial software market is also in a period of change. Past experience has shown that solutions developed in single institutions are often difficult to transfer to other contexts. The recommendation is to:

- » use approaches such as the Jisc 'elevator pitch' to determine what types of solution finding activities are worth taking forward
- » use approaches such as **CAMEL** (jiscinfonet.ac.uk/camel/) to bring together a range of institutions looking at the same problem in the expectation that they can use a combination of process improvement and data standards to develop transferable solutions
- » collaborate with system suppliers to undertake a review of the main software solutions against the generic life-cycle and process maps

We have not explicitly singled out e-exams in the life-cycle discussions but a number of participants in this research have told us that they expect increasing demand for this in the future (not least because students are increasingly unused to handwriting any substantive material). The recommendation is therefore to:

- » highlight e-exams as a key topic in the further stages of this work

Suppliers

The further development of the life-cycle model should offer suppliers the opportunity to engage with the sector with a far greater degree of clarity about requirements and priorities. The process model moves beyond the perspective of individual user groups to allow individual suppliers a more holistic perspective on where their product sits in the overall life cycle and indeed in the current market. Suppliers are therefore encouraged to engage with this cross functional community and to explore the mutual potential benefits from the greater application of open standards in relation to assessment and feedback management.

Institutions

Institutions have an opportunity to engage in discussion and sharing of practice around an area of immediate importance to them and responses to this work so far suggest that this is greatly welcomed. It is clear that there are some issues of culture and process acting as barriers to achieving all of the possible benefits from EMA and there is considerable value to be had in sharing the experiences of those who are addressing these issues. It is also clear that there is a desire to speak with a single voice to the supplier community and that the next stage of this work provides the appropriate forum to do so. It is to be expected that time spent participating in this community will reap dividends in terms of saving time and resources through the transmission of good practice, collaboration to find solutions to common problems and a forum to investigate options for sharing of resources and services.

[1]

8 HeLF has previously set up an EMA SIG but lack of resourcing proved to be a major issue.

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Appendix 1: Summary of lifecycle issues

	Description	Type
Specifying	Need for greater creativity	Pedagogy
	Time lag between course design and delivery	Process
	Lack of curriculum management systems	Technical
	Rapid change in awarding body specifications (affecting FE)	Process
Setting	Risk aversion	Pedagogy/Culture
	Limited range of assessment types that lend themselves to e-submission	Technical
	Curriculum design issues potentially leading to bias in outcomes	Pedagogy
	Scheduling issues	Pedagogy/Process
Supporting	Need to develop more effective student assessment literacies	Culture
	Need to offer greater formative opportunities	Pedagogy
	Systems not geared to handling draft submissions	Technical
Submitting	Limited range of assessment types that lend themselves to e-submission	Pedagogy/ Technical
	Systems not geared to group submissions	Technical
	Reliability of submission systems	Technical
	Issues with providing receipts in the form students prefer	Technical
	Managing extensions and extenuating circumstances	Technical/Process
	Managing late submissions	Technical/Process

	Description	Type
Marking and production of feedback	Ability to manage marks and feedback separately	Technical
	Ability to handle variety of typical UK marking and moderation workflows	Technical
	Ability to handle variety of anonymity requirements	Technical
	Differences of opinion on value of anonymous marking	Pedagogy
	Ability of systems to deal with mathematical, scientific, musical etc notation	Technical
	Systems not geared to peer assessment	Technical
	Academic resistance to online marking	Culture/Pedagogy
	Ability of systems to handle off-line marking	Technical
	Lack of online marking options for mobile devices	Technical
Recording grades	Lack of interoperability between marking systems and student records systems	Technical
	Ability of systems to support variety of moderation process	Technical
	Ability of systems to support variety of grading schemes	Technical
	Rounding errors	Technical
	Audit trail	Technical
	Archiving and retention	Technical/Process
	Data ownership: student/institution/software supplier	Process/Culture
Returning marks and feedback	Managing feedback deadlines	Process/Culture
	Ability to manage marks and feedback separately	Technical
	Notifying students when feedback is ready	Technical
Reflecting	Ability to gain longitudinal overview of student achievement	Technical
	Student engagement with feedback	Pedagogy/Process

Appendix 2: Accessible and inclusive EMA

EMA offers enormous benefits for students, staff and situations alike but we need to ensure that issues of accessibility and inclusivity are adequately addressed.

Although accessibility and inclusion did not feature amongst the most significant pain points in response to our online questions (52% thought that accessibility and inclusion issues were slightly problematic; 24% thought this was not a problem; 6% thought it was very problematic; 7% did not know) we thought it worth highlighting the issues and some examples of good practice as a reminder of the need for continuous improvement in this area.

There are some excellent good practice approaches in terms of inclusive curriculum design e.g.:

- » the examples outlined in this special edition of Manchester Metropolitan University's learning and teaching journal on **Equality and Diversity in Learning and Teaching** (celt.mmu.ac.uk/ltia/Vol9Iss1/index.php) (Vol 9 Issue 1, Autumn 2012)
- » **What's it Worth? Developing Equivalency Guidelines for the Assessment of Multi-Format Coursework.** (jisctechdis.ac.uk/assets/Documents/HEAT/ROE302.pdf) Roehampton University 2009: a project in the Jisc TEchDis **HEAT** (jisctechdis.ac.uk/techdis/technologymatters/heat) scheme
- » see also Wray, M. 2003. **How to assess disabled students without breaking the law** (celt.mmu.ac.uk/ltia/issue4/wray.shtml)

It is clear that having information in digital format offers many possibilities for learners to manipulate it to meet their own particular needs but there are a raft of issues around digital literacies and access to technologies that give cause for concern to those thinking about EMA. Issues include:

- » student Internet access to permit online submission
- » staff access to mark online - many staff do this kind of work outside their normal hours and may not have access to the traditional systems
- » not all disabled learners declare their disability and systems lacking obvious accessibility features (or guidance on them) will disadvantage these learners
- » external examiners often lack awareness of accessibility barriers or workarounds
- » students with disabilities are rarely identified as distinct stakeholders in assessment projects
- » feedback needs to be available in a range of formats or compatible with assistive technologies like Text to Speech

- » some staff fail to take account of learner needs or are resistant to adapting their practices
- » assessment and feedback tools need to integrate with assistive technologies where appropriate
- » automated marking needs to be very closely observed to ensure that learners are not disadvantaged for a reason relating to their disability

The Jisc TechDis service offers a range of resources to support accessible assessment practice particularly where there is an EMA component.

- » Jisc TechDis **accessible assessment** ([jisctechdis.ac.uk/techdis/resources/assessment](https://www.jisctechdis.ac.uk/techdis/resources/assessment)) pages

Examples of guidance to assist particular types of users include:

- » assessment practice for users who need support with **autistic spectrum** ([jisctechdis.ac.uk/techdis/userneeds/assessmentautism](https://www.jisctechdis.ac.uk/techdis/userneeds/assessmentautism)) disorder
- » assessment practice for users who have difficulty with **memory and concentration** ([jisctechdis.ac.uk/techdis/userneeds/assessmentmemory](https://www.jisctechdis.ac.uk/techdis/userneeds/assessmentmemory))
- » assessment practice for users who need support with **mental health** ([jisctechdis.ac.uk/techdis/userneeds/mentalhealth](https://www.jisctechdis.ac.uk/techdis/userneeds/mentalhealth)) difficulties
- » assessment practice for users with **mobility and coordination** ([jisctechdis.ac.uk/techdis/userneeds/assessmentmobility](https://www.jisctechdis.ac.uk/techdis/userneeds/assessmentmobility)) difficulties

Appendix 3: List of institutions participating in Think Tank

- » Abertay University
- » Anglia Ruskin University
- » Cardiff Metropolitan University
- » Cardiff University
- » Edge Hill University
- » Goldsmiths, University of London
- » Harper Adams University
- » Keele University
- » Liverpool John Moores University
- » Manchester Metropolitan University
- » Northumbria University
- » Oxford Brookes University
- » Plymouth College of Art
- » Queen's University Belfast
- » Sheffield Hallam University
- » The Open University
- » The University of Edinburgh
- » University College London
- » University of Birmingham
- » University of Bradford
- » University of Bristol
- » University of Central Lancashire
- » University of Hertfordshire
- » University of Hull
- » University of Manchester
- » University of Northampton
- » University of Nottingham
- » University of Portsmouth
- » University of Sheffield
- » University of Southampton
- » University of York
- » Warwick University

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- » 90 people who contributed to our online questionnaire and conversation
- » 40 attendees at the Think Tank event
- » 5 individuals/groups who allowed us to interview them
- » The numerous people who made contributions via our blog and who provided further information and resources from their own work
- » The staff of Manchester Metropolitan University whose work on developing an assessment and feedback life-cycle has underpinned this research
- » The advisory group for this project which included representatives from the Heads of e-Learning Forum (HeLF), the Higher Education Academy and UCISA

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Jisc

One Castlepark
Tower Hill
Bristol, BS2 0JA
0203 697 5800

info@jisc.ac.uk