

PROMOTING PAPERLESS APPROACHES TO QUALITY ASSURANCE AND ENHANCEMENT PROCEDURES: A UNIVERSITY DEPARTMENTAL CASE STUDY

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Abstract

The paperless office remains an unfulfilled goal for many businesses and organisations. In the Higher Education context the number and diversity of information and IT systems, coupled with a historic expectation of academic freedom and individual practice, has often militated against drives towards paperless quality assurance.

The complex and sometimes fluid management structures in Higher Education (HE) coupled with the unpredictability of budgets and complex planning processes account in part for a typical melange of information systems, often procured piecemeal, and variable practice in their usage at the local level. Often data has to be exported from one system and massaged before being input into another. What might appear to be a simple activity – such as marking a student script – might require access to a student record system, a virtual learning environment, a portal, a University Website, a plagiarism detection facility and so on. Marking of student work has for many years featured aspects of electronic submission, electronic marking and interoperability between systems. However, submission of paper-based artefacts and marking by provision of handwritten comments and feedback is still commonplace. The goal of eliminating paper submissions has often been impeded by concerns over satisfying other quality assurance procedures or by the concerns of individuals and groups about changes to their working practices.

This paper presents a case study showing how judicious implementation and exploitation of systems and careful design of human processes can assist in the elimination of paper artefacts in the management and delivery of study programmes in HE. The project was undertaken through a desire to achieve better communications with all stakeholders in the academic processes and to achieve a richer staff and student experience. The outcome was a number of streamlined procedures, improved student engagement and better management information. Additional benefits in the student experience, in external examination processes and in the archiving of historic data were also obtained.

Keywords: Quality assurance, technology, education, VLE, paperless.

1 INTRODUCTION

The complex and sometimes fluid management structures in HE, coupled with the unpredictability of budgets and general uncertainty in the planning process accounts in part for a typical melange of information systems, often procured piecemeal, and variable practice in their usage even at a very local level. Often data has to be exported from one system and massaged before being input into another. What might appear to be a simple activity – such as marking a student script – might require access to a student record system, a Virtual Learning Environment (VLE), a portal, a University Website, a plagiarism detection facility and so on. Administration of student work has for many years featured aspects of electronic processes, predominantly in online submissions and the communication of marking information between systems. However, submission of paper-based artefacts and marking by provision of handwritten comments and feedback is still commonplace in the sector. This paper presents a case study on how one School within a UK University has used innovative processes, policies and management techniques to create a wholly paperless system of quality assurance, without having to resort to any proprietary or internal systems development, by only utilising the toolsets supported by a third party VLE provider.

Higher Education Institutions have, for many years, increasingly introduced computer-based systems to assist in the management of information and in the delivery of programmes of study. Examples of this can be seen in the management and marking of assessments [1], [2], the development of student e-portfolios [3], and the rapid uptake of Virtual Learning Environments in the current century [4]. The scope and possible benefits of e-learning have often been analysed and some of the early expectations have been shown not to materialise [5] with monolithic VLEs variously being challenged

by combinations of individual Web2.0 interactions but then reasserting a dominance. The number of vendors and suppliers of VLEs has shrunk with corporate acquisitions and takeovers leaving a small number of massive multinational operators [4]. One of the leading suppliers is Blackboard Inc with its Blackboard Learn VLE (commonly referred to as Blackboard). Although problems have been identified in terms of its cost and, for some, its impenetrability, Blackboard is also acknowledged to be effective at facilitating good practice and building good links between staff and students [6].

The University of Lincoln changed its VLE provision to Blackboard in 2006. Two Schools within the University, one being the School of Computer Science (SoCS), were selected as pilots in the implementation of the changeover during 2007, largely as a consequence of the skill sets of academics within the School, but also because of their previous acceptance and extensive use of the existing VLE. By September 2008 the University of Lincoln implemented Blackboard Learn as the *de facto* institutional standard VLE across the whole institution.

Consideration has been given by many to the elimination of paper based artefacts in the assessment process, for example in the on-line submission of student work and on-line marking and provision of feedback [7]. Many institutions have addressed this and/or other aspects of their quality assurance processes, but there has been little work published to date on the implications and effect of the removal of all physical artefacts. Embarking on paperless QA, particularly in the HE sector, can be regarded as perilous for many reasons, not least because the change it invokes often meets with scepticism and sometimes resistance from academics. O'Mahony and Garavan suggest that "the HE context is a particularly challenging one when implementing quality management systems" [8]. They further suggest that apart from the technological challenges HE organisations face with implementations of this kind, QA systems "...evoke a mixed reaction from academics in particular" and are also presented with a range of environmental challenges since "HE organisations have a unique set of external drivers for change: they have particular notions of what constitutes quality; complex politics around quality and the conflict between quality for accountability and quality of teaching." [8]

The implementation presented in the case study started out with the intention of creating an end-to-end quality assurance system that has no requirement to produce or to accept paper-based or other media as artefacts. All inputs into and outputs from QA stages are stored electronically within the system and all interactions are with those electronic artefacts. The unique innovations in this system's development are the removal of all paper-based elements from both the External Examiner QA process and the archiving of audit trail documentation.

From the outset SoCS decided to make the VLE not only a content management system and repository for educational artefacts but also to make it the locus for all activities involving quality assurance. This led to the consideration and development of a paperless system that exploited a number of the on-line facilities of the VLE. The key to enthusiastic uptake and effective implementation has been the treatment of the development as not just another IT system but from the holistic perspective of an information system with due attention given to the human elements in the various processes and procedures needed to fulfil institutional QA requirements. The VLE was thus both the process auditing tool and the academic teaching and learning interface. SoCS has tried to respond to a growing need for monitoring and managing at a higher granularity of detail than ever before by adopting a holistic ethos in what some may consider a total systems approach [9] or even an approximation to Total Quality Management (TQM) [10]. At the outset of this process senior staff members were aware that the adoption of such processes could be risky and that TQM within the HE sector, as Yorke described "has to be reconstructed to optimise the 'fit' with higher education: the model for the manufacture of widgets is inadequate to deal with the complexities of the transactions in higher education institutions" [11]. Therefore what follows may not suit all Schools across all institutions, and what we present here is more a suggested framework rather than a template for future action.

2 THE SOCS APPROACH TO STUDENT SUPPORT MECHANISMS

For the benefit of context it should be pointed out that the University of Lincoln has in excess of 500 staff and 12,000 students. SoCS has over 30 lecturing staff and roughly 450 students studying a range of programmes at undergraduate and postgraduate levels, all mediated through Blackboard.

From the outset the approach to supporting student engagement was based primarily on a number of key premises: Consistency; Clarity; Conformity and Transparency. Thus the *supporting mechanism* (and crucially here we mean more than just *supporting documentation* in the form of lecture notes) for

student study outside of the classroom in SoCS has been based upon the provision of consistently formatted, single points of information for all policy and procedures through mechanisms that offer role targeted documentation sets that are presented uniformly across all modules and programmes in the School. In addition all assessment engagement, other than through formal examinations, is also presented and managed through Blackboard Module sites.

The system was developed to reflect the various academic processes associated with every module of study: designing and publishing educational content; designing assessments; moderating them; issuing them and marking the resulting student submissions; providing feedback; obtaining student evaluation of the module; building an action plan for improvement and closing the feedback loop between successive presentations of the module. The implementation strategy adopts the process-driven approach outlined by Abdous, which focusses more on the educational content management aspects [12], and builds upon it by incorporating the additional elements of assessment, feedback and action planning. The implementation approach works only by using tools provided by standard Blackboard features and facilities in a bid to remove the need for specific software support, and the expense of generating proprietary software solutions.

Over an extended period of time, the School has adopted and employed the theories of Biggs relating to constructive alignment [13]. In particular, processes and their supporting documentation have been created to ensure coherence between programme learning outcomes, module learning outcomes and assessment objective. A key feature of the creation of a completely paperless system was the need to ensure that these pedagogic aspects were preserved.

The following sections provide a brief account of the procedures adopted by SoCS in these areas.

2.1 Student support documentation and policy – Module level

Throughout this project, the aim has been to provide an end-to-end process of teaching and learning support and quality assurance that is entirely paperless. For each stage in the academic function therefore there is a natural transposition between what was once *traditional* and what is now *paperless*. The sections that follow will present an indication of how this was achieved. Each module of study is supported by a Blackboard Module Site that is populated from a basic template that ensures a minimum standard approach to each site which replaces the traditional approach of providing module handbooks. This minimum set template ensures that all of the regulatory aspects of module handbooks in the institution are provided and replicates the content by splitting each site into seven key areas. . These seven site areas, identified in Fig 1, are consistently applied across all module sites in SoCS. Several of these sections contain links to centrally stored policy documents that are in the control of only three members of staff – the Head of School, the School Director of Teaching and Learning and the School Administrator. This was considered essential in order to enforce and maintain consistency across all of the School's modules and programmes.

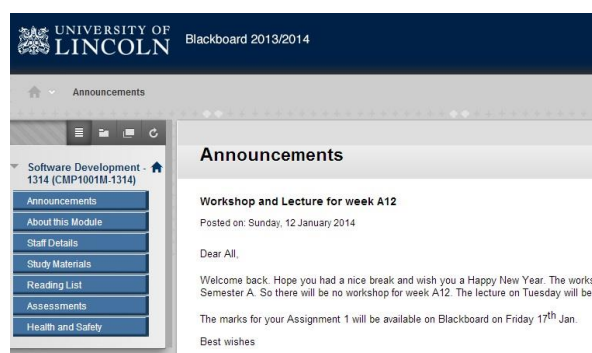


Fig. 1 Module Site structure

The content and structure of each of these areas is presented here.

2.1.1 Announcements

By default, the Announcements area is the point of entry into all Module sites. Broadcast information is placed here on a relatively *ad hoc* basis. All staff are instructed to post a Welcome to this module announcement at the beginning of the module delivery. All announcements should pertain only to the delivery and content of this particular module of study.

2.1.2 About this Module

The About this Module menu item is not editable by academic staff and is pre-populated at the start of the academic year by the School's Director of Teaching and Learning. When selected, this opens a pdf copy of the official Module Specification document which details the formal definition of the module of study, as validated and stored in the University quality systems. Headings include indicative content, assessment strategy, teaching and learning strategy, module learning outcomes and a formal acknowledgement of pre- and co-requisite module linkages.

2.1.3 Staff Details

The Staff Details menu item opens a business card-style listing for all of the members of staff who work on the module. Each business card presented must include contact details, office location, identification of surgery hours (a fixed time slot where academic staff commit to supporting this module from their office), and (crucially) a head-shot photograph.

2.1.4 Study Materials

The Study Materials menu item opens a pre-formatted template page that details the week by week guide to students of what topics will be covered in each lecture – analogous to a handbook schedule, together with details of workshop tasks that are expected to be completed each week, and the provision of lecture notes. This is presented in a tabular form that is directly linked to the calendar week and the University timetabling system. In all cases, every text based document is presented in pdf format.

2.1.5 Reading Lists

The University of Lincoln uses a proprietary reading list programme that links reading lists directly to the Learning Resources system in the Library. In essence this menu item presents a seamless integration between the Blackboard VLE and the Learning Resources system such that students are not presented simply with a list of recommended texts for the module, they are also directed to the current holdings of all of the recommended texts in the Library Stock System, or in cases of e-books and electronic journals, direct links to recommended electronic texts. A further advantage of this approach is that texts, articles and other related materials to help aid the learning process can be added 'on the fly', something that could not be maintained under the traditional mechanism of providing reading lists as an embedded component of the module handbook at the start of each semester.

2.1.6 Assessments

This is perhaps the key menu item for engagement in Quality Assurance by students, staff and External Examiners (see Fig 2.).

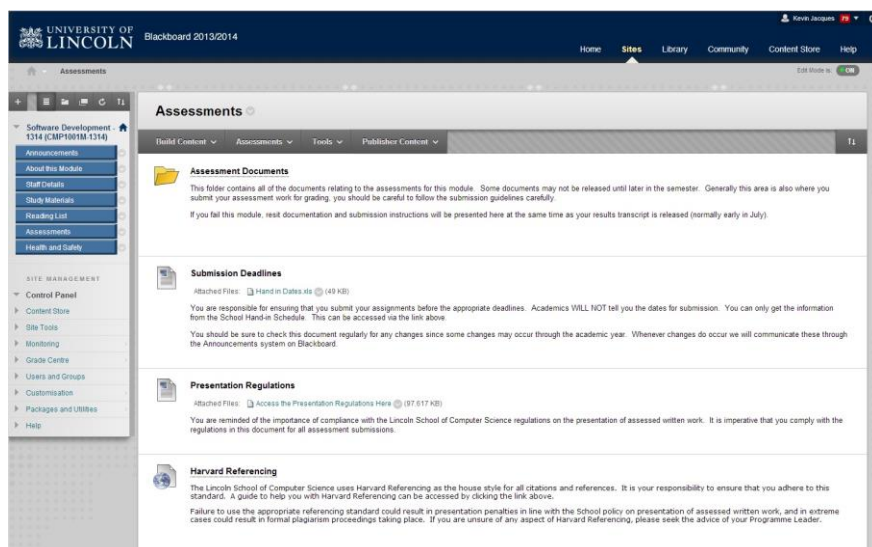


Fig 2. Module Assessments Page

On opening this menu item students are presented with four sub-menu items which are consistent across all modules, and in the case of all but the Assessment Documents folder item are non-editable items which link to a single source policy document which is stored in the Content Store section of Blackboard (referred to in SoCS as the 'Blackboard Back End'). This is permissions protected and only editable by the three key staff members identified above. Again, this aids in the provision of consistent display across modules but also ensures efficiency since one change in the sets held in Blackboard's content store is reflected across all of the modules of study across the School (currently approximately 40 undergraduate modules).

The Submission Deadlines item points students to the single source of information on assessment submission dates for every assessment item in SoCS for the current academic year. Staff members are instructed as a matter of policy never to give students any information on assessment submission deadlines, and staff are not permitted to grant extensions (the extensions application process is a similarly paperless process that requires e-mail applications to be delivered to a dedicated Extensions Officer). No staff may change submission deadlines for assessment work, and any changes that have to be made (as a consequence of unforeseen problems with the module) can only be arranged with permission of the Head of School, and can only be implemented by the one of the three key staff members listed previously. This policy, whilst potentially seeming overly-strict, ensures that assessment loading for students across the whole curriculum can be carefully monitored, thus removing the potential for assignment bunching. Communication of any changes to assessment deadlines are carefully communicated through announcements on the Module Blackboard site, although the details of the change of dates are not identified in any announcements – the dates are strictly contained within the submission dates spreadsheet. A significant benefit from this approach is that there is a de-coupling of the assessment document from submission information. Where paper-based assignments are issued with a due date printed on them any changes either to the assessment brief, or the submission dates would create legacy versions in circulation with the potential for creating numerous problems.

The Presentation Regulations item again points to a single source policy document on the means for submission for all written work within SoCS. At the early stage of development of paperless assessment procedures it was decided that the only way to ensure that the work presented by students is viewed exactly how the students would want it to be viewed would be to present all work for marking only in pdf format. This document therefore sets out this requirement and identifies other standards that are used, for example in the submission of executable and source code which is regularly required for assessments in a School of Computer Science.

The Assessment Documents link opens a supplementary assessments page (See Fig. 3) which offers a number of item links which are carefully managed to provide individual content views to holders of different role types in the Module Site Users list. A brief description of each section, together with the site roles to whom that section is visible in braces [], is presented below.

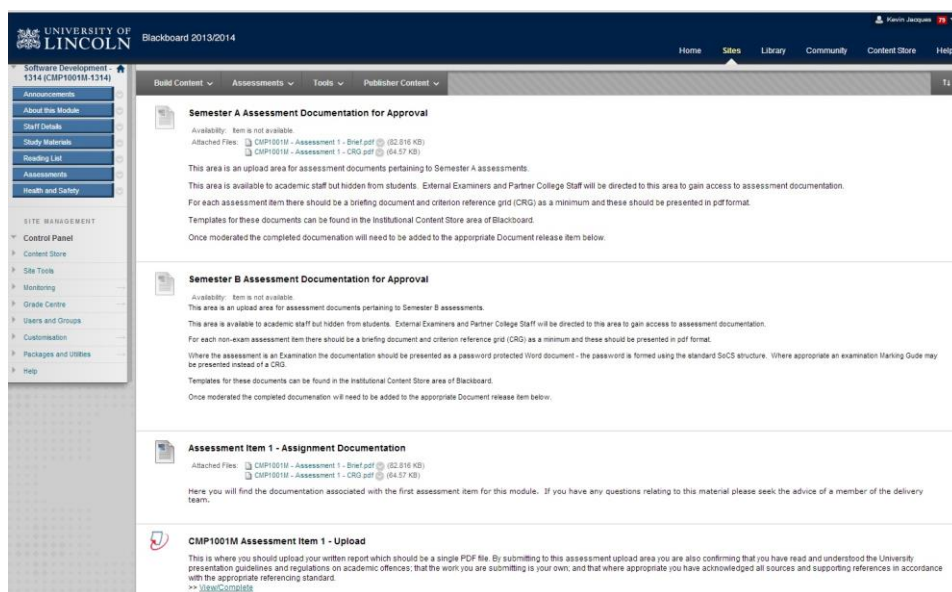


Fig. 3 Module Assessment Documentation page

Assessment Documentation for Approval [*Module Instructors, External Examiner, Partner Institutions*] is where assessment documentation is provided to external partners for consideration and approval before release to students. All assessment documentation needs to be approved by the External Examiner responsible for the module of study. It should be noted that, at the start of each academic year, the External Examiner module responsibilities for all modules across the SoCS curriculum are agreed and External Examiners are only enrolled as users on Module Sites for modules where they have responsibility. Externals therefore know where to go to get sight of all of the assessment documentation for each module for which they are responsible as a consequence of the consistency approach presented by adopting the SoCS VLE structure. Partner Institutions who deliver some modules in sub-degree programmes off-campus also have access to assessment documentation from this area to enable easy access to on-campus assignment tasks.

Assessment Item x – Assignment Documentation [*Module Instructors, Students*] is the formal presentation of assessment documentation for each assessment component that makes up the assessment strategy for the module. Once the assessment documentation has been approved by the External Examiner, this item is made visible and students can then download their assessment documentation.

Module Code Assessment Item x – Upload [*Module Instructors, Students*] is the Blackboard link to the Turnitin plagiarism detection assignment upload area specifically created for each assessment item. Turnitin is the default assessment submission mechanism across the whole of the University of Lincoln.

Again, the key principle in the provision of assessment documentation across all module sites is consistency. All module sites have the same look and feel, the same item structures, and wherever possible a consistent file naming convention to all provided materials.

It should be noted that whilst the SoCS curriculum does have a number of modules that are exclusive to each its five programmes, a number of modules are shared between programmes and as such an additional layer of support is provided at the programme level by the provision of Programme Sites on the VLE – a brief summary of the purpose and use of these sites is presented in the next section.

2.2 Student support documentation and policy – Programme level

Each full-time student in SoCS is engaged in four modules of study at any one time, and therefore is enrolled on four module sites. In addition, each student is enrolled within a site specifically targeted to their programme of study. The control of these sites falls mainly within the purview of the programme leader who holds responsibility for that programme of study. The Programme site is designed to serve two purposes; firstly to engender a programme-specific sense of collegiate camaraderie in the student body; and secondly to provide documentation pertaining to non-module policy documentation and procedural information. The former is created through the provision of a programme announcements section which is regularly updated by the Programme leader and other key staff across the University, for example by the School Employability Officer, the School Placements Officer and from student led bodies such as the Student Union Computer Society. These announcements are tailored specifically to the students on each award and function primarily as an electronic noticeboard of events and opportunities for both extra-curricular and personal development activities.

The non-module policy documentation area of the Programme sites is again managed as a single-point of contact provision of all critical documentation and policies for the whole of SoCS. Policies pertaining to extensions, attendance monitoring, plagiarism, pastoral care, appeals, complaints procedures, behaviour in taught sessions, and full programme documentation are provided here in an electronic form replacing the traditional Programme Handbook.

It should be noted that throughout all of this documentation, the identification of key staff contacts is consistently presented by naming the role, rather than the individual (for example presenting suggestions like “you should seek the advice of your Programme Leader” or “notifications should be addressed to the School Administrator”), and where appropriate the names and contact details of these key staff are presented in a single document *Useful Contacts.pdf* which is updated as and when the holders of key roles change. This of course permits the role holders to change without the need for updating all of the policy documents.

2.3 The VLE as an agent of change

Research carried out on new technology adoption by West *et al* [14], explored the experiences of instructors as they adopted a new Course Management System. They refer to a shared concern of the inability of a paper-based system to satisfy the perceived growing requirements to evidence a wider range of quality assurance procedures across a broader spectrum of HE activity, a concern voiced by senior SoCS staff. Whilst it has to be acknowledged that the initial set up of Module and Programme sites in SoCS was primarily orchestrated in order to present a consistent look and feel to all sites in the School, the hope was that more consistent procedures, and ultimately policy adoption, would be the eventual outcome. In the early stages of this project this was orchestrated by applying a School-wide minimum set of requirements for each site module site in the VLE. Academic staff were (and still are) encouraged to utilise advanced features of the VLE such as blogs, wikis, discussion boards and any forms of collaborative working they see fit. What was fixed through policy were the key documentation sets and the initial seven areas of each site (additional areas can be created and used at the discretion of academic staff). What has become clear, through the use of this approach over a number of iterations, is that the basic structure has largely remained and any academic freedom that is advanced is added as an enhancement to this basic core structure.

During the first run of the VLE under the SoCS structure there was some experimentation with the integrated toolsets within the VLE, primarily to enhance the student learning experience. Some of this experimentation revealed mechanisms to make items within the sites visible only to users with particular user roles within the Blackboard system. It was particularly useful for instance to 'hide' some of the site content from student view whilst development of content was undertaken. What became clear was that the use of this role based visibility could provide means to record evidence of dialogue in supporting quality assurance activity that could be embedded within the module site without the content of such dialogue having to be visible to students. A significant factor that allowed further exploitation of this opportunity was that the construction of the VLE's underpinning architecture is achieved by the creation of sites on an annual basis with a unique site name that has the current academic year embedded within the site name (for example *CMP1001M-1314: Software Development – 1314*). In short, whilst the sites are created to allow for a single iteration of delivery for each module and only to be visible to students who are enrolled on *that* module in *that* academic year, it additionally means that any quality assurance that is recorded in that site is similarly uniquely associated within that same annual delivery run. Module sites on the VLE ultimately fall within the University archiving policy, and this advantageously means that all quality assurance documentation is similarly automatically archived along with the delivery materials and assessment documentation for the site. The final piece of the paperless quality assurance process was achieved when the School formally adopted an all-electronic submissions and feedback policy in the second year of use for the new VLE. By instigating electronic submissions through the VLE system and electronic feedback for all assessments, all documentation pertaining to the setting, moderation, delivery, receipt, feedback, verification, sign-off and archiving of all assignment work in the School (with the exception of examination scripts) was both actioned and stored within the VLE. The next section details a summary of the further enhancements to quality assurance practices that have resulted from this approach.

3 QUALITY ASSURANCE PRACTICES

With the introduction of all-electronic documentation for assessments and submission and marking of all but examination scripts through the VLE assessment systems, all that remained necessary to ensure a completely paperless quality assurance system was to provide an electronic mechanism to formally record the completion of actions, and the sign-off of processes that had previously formed the quality assurance procedures adopted by the University. Prior to this implementation, academic staff were required to provide an annual module report form which required sign-off in nine key quality assurance areas: Actions taken in response to previous recommendations; Assessment documentation approval (internal); Assessment documentation approval (External Examiner); Moderation of student submissions; Reflection on module evaluation (student module feedback); Module assessment statistics; Reflections on cohort performance; External Examiner summary comments on the module; Recommendations for subsequent delivery. The evidence to go with each of these sections was presented in a 'Module QA box' together with a sample set of (printed) assessment work pertaining to each assessment in the module.

By using a relatively simple discussion board within each Module site on the VLE (see Fig 4.) a single thread is created through the use of a standard template to allow for the recording of discussions and the provision of evidence in each of these nine quality assurance stages.

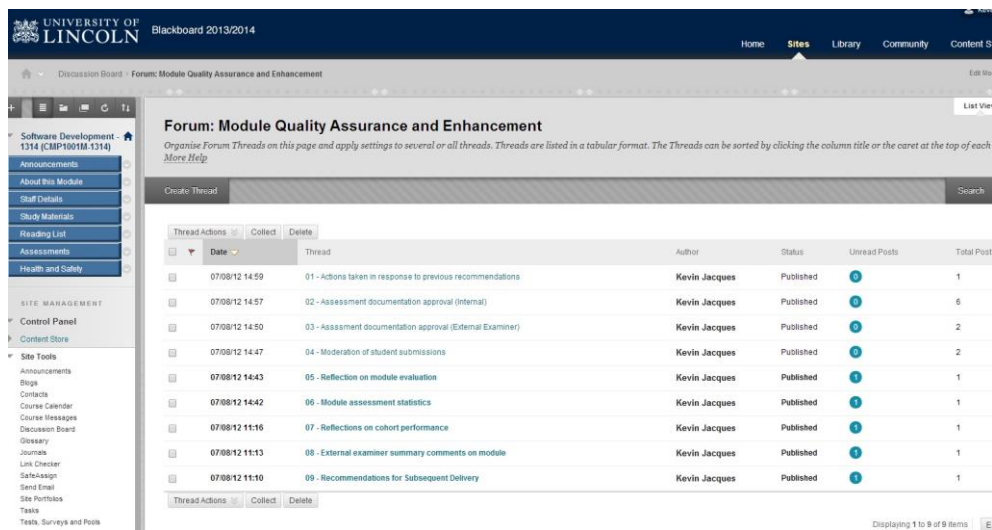


Fig. 4 Module Quality Assurance and Enhancement discussion board

Since all student work is automatically embedded within the site for each module, and the External Examiner is already a site user with permissions akin to that of the academic staff for each module, there is no longer any need to provide the External Examiner with sample assessment submissions to verify, nor to populate Module QA boxes with sample work for archive purposes – all of the submissions are presented for verification because they are already stored within the VLE module assessment area. Our Externals are given free access to every submission and the feedback provided by academics, and there is no longer any need for Module QA boxes, saving massively on space requirements which in the past had filled whole rooms with previous years of Module QA boxes.

4 EVALUATION

A benchmarking approach was adopted to evaluate the success of the system. Achtemeier and Simpson expand upon a number of different approaches to benchmarking including *metric benchmarking* where performance at one institution is compared to others [15]. In this case three HE institutions were chosen as comparators, two that were of similar profile and one that was in an aspirational target set. In each case comparison was made with Computer Science Departments or Schools engagement with QA processes. External Examiners who have a good working knowledge of the SoCS systems were asked to provide comparative comments which evaluated practice between their own institutions and the paperless QA procedures adopted in SoCS. Semi-structured interviews were carried out with External Examiners to identify differences and similarities between respective institutions, and focus groups were held with members of three key groupings within SoCS – academic staff, students and administrative staff to ascertain the effectiveness of the SoCS paperless approach.

In summary it is clear that SoCS is the only one of the four institutions evaluated in this study that apply a wholly paperless approach to the provision of teaching and learning interface and process auditing. Indeed none of those interviewed were aware of any institutions in their broader academic engagement that have an all-encompassing paperless approach to these educational and quality assurances processes.

Whilst everyone identified the obvious benefits of the approaches adopted in reducing the carbon footprint of what are otherwise highly paper-intensive processes, there were aspects of the approach that were seen as challenging. Also, where efficiencies were identified, there were some perceptions of occasional procedural overheads that may mitigate the advantages. Three key themes were identified from the evaluation and these are presented below.

4.1 Impact on the learning process

Students in SoCS acknowledge that Blackboard is the central interface to obtain teaching, learning, scheduling and management information for their study. Most identified the VLE, and not e-mail as their “primary electronic link to tutors”. Almost unanimously, students acknowledged the ease of access to lecture materials, reading lists, assessment material and the ease of submission processes and cited these as the main advantages to adopting paperless systems. Students at a more advanced stage in their programme identified the “significant advantages in having feedback from previous submissions available at any point in their study” and cited feedback that was easy to revisit in a single location as a “significant factor in improving subsequent performance”. Interestingly, students also commented on the use of Blackboard of fellow students taking other programmes where paper based systems were largely in operation and where “most teaching and learning was not conducted through the VLE” which had brought into focus for them “exactly how good we have it here”. They also identified that they were the beneficiary of monetary savings since other students were “required to print copious amounts of paper at not insignificant cost”. When pressed to offer disadvantages to the system, the only comment made was that the Blackboard interface “is rather clunky and not very intuitive”.

4.2 Impact on the teaching process

Teaching staff in SoCS are aware of the importance of clear procedures and consistency of provision of learning materials and, almost universally, staff agree that the paperless approach to teaching and learning is the way we should be engaging with students. There is wholehearted support for online assessment processes and a general acknowledgement that the paperless procedures adopted in assessment provision, submission and marking are both practical and necessary if the School is to be seen as innovative and up to date in its use of technology. Where there is concern is in two areas where procedural overheads impact upon the perceived advantages. First, the recording of evidence of due process in the Quality Assurance Discussion Boards for each module is seen as “hugely cumbersome and unfriendly”. Secondly, like the student comments, the Blackboard user interface is viewed as “problematic” and “completely unintuitive” by teaching staff. Two academics commented that some functions of the VLE are used relatively infrequently and, as such, processes had to be “re-learned for each iteration”. External Examiners also highlighted that annual engagement with some paperless processes required “re-familiarisation each time the job is done”. When questioned about the potential difficulties in marking and moderation of student scripts through electronic means, no SoCS staff had any issue with this, but one External Examiner did identify that “sitting down in a comfy chair with a bunch of paper scripts and records is a different experience to sitting in front of a screen – Paper can be more comfortable”.

4.3 Impact on the administrative process

Administrative staff in SoCS welcomed the paperless approaches adopted and commented extremely favourably on the electronic submissions procedures which “freed up huge amounts of time” when compared to the traditional approaches that are adopted in other Schools. Having a single point of information for all key administrative policies in the School was identified as “tricky to get used to in the early stages”, but “really important now”. One administrative issue that was raised by one External Examiner was that it seemed that whilst the systems in operation “save time for administrators” but do this “at the expense of adding workload for academic staff”. One External evaluated the effectiveness of paperless and non-paperless approaches to the QA function by highlighting that typically errors in administrative processes largely fall into two groups – procedural and content-based, and that the paperless approaches adopted “reduced the chance of procedural errors because [you] must adhere to the procedures and because workflow requirements are more defined” but that content errors could be more commonplace, for example in misinterpretations of External written comments. All Externals commented that the SoCS approach offered robust records of action and audit trails that worked better than paper based systems, but all countered this benefit with comments pertaining to the awkwardness of some of the interfaces that need to be engaged with and the lack of functional clarity that Blackboard offers.

5 CONCLUSIONS

The implementation approach to concentrate within the existing VLE was pragmatic. Bradford et al [6] identified some of the dangers of individual learning systems or vendors becoming dominant and clearly the system as reported in the case study might feature efficiency at the expense of portability.

The success of the system, as indicated from the benchmarking evaluation carried out, gives reassurance and some pointers for future enhancements. However, the focus of this evaluation has been on the technologies employed. As Crossouard points out “assessment technologies cannot be seen from a purely technical perspective but instead requires a deeper appreciation of assessment as a social practice” [16]. Similarly Heinrich et al are at pains to ensure that we should always be grounding e-tools in educational theory [2]. The work carried out in this case study has been sympathetic to the School’s desire to embody the principles of constructive alignment throughout the learning process and to ensure that the quality of students’ learning is enhanced as a result. In doing so it is hoped that the School followed Crossouard’s desire that we “[resist] the current slide of our educational systems into a shallow instrumentalism” [16]. In principle the School remains committed to the approach, and is convinced that the functional difficulties in operation of some aspects of this approach are worth persevering with in order to reap the benefits identified. Whilst work may need to be done to improve interfaces and the user friendliness of the supporting technologies, the general principles and policies adopted in this TQM approach can be considered sound and conducive to maintaining a better balance between quality for accountability and quality of the learning experience.

REFERENCES

- [1] Heinrich, E., Milne, J. and Moore, M. (2009) An investigation into E-tool use for formative assignment assessment - status and recommendations. *Journal of Educational Technology & Society*, 12(4) 176-192. Einstein, A. (1916). General Theory of Relativity. *Annalen der Physik* 49(7), pp. 769-822.
- [2] Heinrich, E., Milne, J., Ramsay, A. and Morrison, D. (2009) Recommendations for the use of e-tools for improvements around assignment marking quality. *Assessment & Evaluation in Higher Education*, 34(4) 469-479.
- [3] Beresford, W., Cobham, D. (2011) Undergraduate students: interactive, online experiences and ePortfolio development. *IEEE International Conference on Information and Education Technology*
- [4] Browne, T., Jenkins, M. and Walker, R. (2006) *A longitudinal perspective regarding the use of VLEs by higher education institutions in the United Kingdom*. Routledge. 08, 177-192.
- [5] Brown, S. (2010) From VLEs to learning webs: The implications of web 2.0 for learning and teaching. *Interactive Learning Environments*, 18(1) 1-10.
- [6] Bradford, P., Porciello, M., Balkon, N. and Backus, D. (2007) The blackboard learning system: The be all and end all in educational instruction? *Journal of Educational Technology Systems*, 35(3) 301.
- [7] Lalla, M. and Ferrari, D. (2011) Web-based versus paper-based data collection for the evaluation of teaching activity: Empirical evidence from a case study. *Assessment & Evaluation in Higher Education*, 36(3) 347-365.
- [8] O'Mahony, K. and Garavan, T.N. (2012) Implementing a quality management framework in a higher education organisation: A case study. *Quality Assurance in Education*, 20(2) 184-200.
- [9] Curtis, G., Cobham, D. (2008) *Business Information Systems: Analysis, Design and Practice*, Prentice Hall
- [10] Chaffey, D., Wood, S. (2010) *Business Information Management: Improving Performance Using Information Systems*
- [11] Yorke, M. (1998) The management of assessment in higher education. *Assessment & Evaluation in Higher Education*, 23(2) 101.
- [12] Abdous, M. (2009) E-learning quality assurance: A process-oriented lifecycle model. *Quality Assurance in Education*, 17(3) 281-295.

- [13] Biggs, J. (2003) *Teaching for Quality Learning at University*. Open University Press. Buckingham. 2nd Edition.
- [14] West, R., Waddoups, G. and Graham, C. (2007) Understanding the experiences of instructors as they adopt a course management system. *Educational Technology Research & Development*, 55(1) 1-26.
- [15] Achtemeier, S. and Simpson, R. (2005) Practical considerations when using benchmarking for accountability in higher education. *Innovative Higher Education*, 30(2) 117-128.
- [16] Crossouard, B. (2010) Reforms to higher education assessment reporting: Opportunities and challenges. *Teaching in Higher Education*, 15(3) 247-258.