Integrating Technology Enhanced Assessment Methods for Student Support and Self-Regulation

The ITEAM Project - Institutional Story

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1. Executive Summary

The Integrating Technology Enhanced Assessment Methods (ITEAM) project was a JISC funded project under the 5/11 Assessment and Feedback programme. The project had an institution-wide remit which aimed to explore the use of different technologies to:

- enhance assessment and feedback opportunities for all students
- promote student support and self-regulation

Technologically, our project focussed on the use of:

- Electronic Voting Systems (EVS)
- QuestionMark Perception (QMP)
- Our On-Line Assignment Submission System (and the development of Grading Criteria)
- A newly developed Student Progress Dashboard

We used the University’s Assessment-for-Learning Principles as a pedagogic framework for the project and encouraged the academic Schools involved to deploy the different technologies in ways that were both pedagogically robust and locally relevant.

The four project objectives were:

- To provide enhanced institutional support for out-of-class objective testing mediated through QMP. This activity will mainstream the support for the current local QMP activity by embedding appropriate university-level support mechanisms and protocols for institution-wide QMP deployment.
- To integrate student engagement and performance data into a Student Progress Dashboard to provide timely, holistic reports for each student and their personal tutor about the student’s engagement/performance on all the modules he/she is studying.
- To embed the use of grading criteria in the online submission system and promote their use more widely across the institution.
• To work with Academic Schools on the deployment of approximately 3000 (additional) EVS handsets to enhance in-class engagement, testing and feedback activity for a substantial proportion of our students.

Overall, the project objectives were met with the institutional-wide integration of the chosen technologies and the creation of a culture where technology enhanced assessment underpinned by good pedagogic practice is the norm. Electronic Voting handsets are used in classrooms across the University, providing students with a more engaging learning experience and timely, meaningful feedback. There is also a growing interest in the use of online assessment technologies such as QuestionMark Perception, a method which can result in efficiency savings in use of staff time and physical resources. The university has recognised the huge potential to make use of learner analytics to support student assessment and feedback through our work with the Student Progress Dashboard. In addition, students can now see detailed feedback as a result of the new interface for feedback which has been implemented within the University’s online submission system. Finally, there are appropriate processes in place to support users of these technologies and a pedagogic framework to ensure their use is grounded in good assessment and feedback practice.

The project commenced September 2011 and concluded its two year funded period in August 2013. From September 2013 to August 2014, the final year of activity has focussed on embedding project changes and concluding the evaluation process.

1.1 ITEAM Headline Achievements
We have:
• embedded the AfL principles within institutional processes and supported their assimilation into everyday assessment practice within the institution
• overseen the continuing institutional roll out of EVS including promoting pedagogically sound learning and teaching practice; embedding processes to support procurement and handset management and producing guidance on disability support.
• implemented centralised support for QMP, providing pedagogic guidance and support for integration into assessment strategies
• established alignment between our online submission system and school level grading criteria, ensuring aligned feedback.
• designed and piloted a student progress dashboard and initiated institutional level discussions about learner analytics
• used a scholarly approach to planning, implementation and evaluation of the project aims
• disseminated our work to the sector through conferences, websites, webinars and workshops

2. Assessment and Feedback Context and Key Drivers for Change
This ITEAM project has focused on improving student support and student learning through the provision of an integrated approach to the institutional support for a range of in- and out-of-class technologies to enhance assessment and feedback opportunities. The project is based at the University of Hertfordshire, a large HEI which has a student community of over 27,000 including more than 2,800 students from 85 different countries. The University prides
itself on being student-focussed with an established reputation for using technology to support excellence in learning, teaching and assessment.

The ITEAM project has been conducted by a team working in the Learning and Teaching Institute (LTI) working closely with the University’s Learning Technology Development Unit (LTDU). The LTI (along with our former Blended Learning Unit) and the LTDU have led much of the University’s strategy relating to technology enhanced learning for most of the past decade. Four projects in particular were instrumental in positioning the University to make the ITEAM project bid:

- The HEA funded CABLE project which drew on the HEA/Leadership Foundation’s Change Academy model to enable staff to develop blended learning solutions to the challenges they were facing.
- The JISC funded Effecting Sustainable Change in Assessment Practice and Experience (ESCAPE) project which led to substantial changes in assessment practices in two of our Schools and developed a set of research-informed principles for good practice in assessment for learning.
- The development of a revised online assessment submission system embedded within our MLE.
- The 2010 UH Assessment Project which drew on much of the change management and assessment redesign work (notably CABLE and ESCAPE).

The ITEAM project provided a timely opportunity to build on the institution’s existing expertise and to take forward various pilot activities in the use of technology enhanced assessment. The four areas the project focussed on are: **Electronic Voting Systems**, an online assessment package called **Questionmark Perception** (QMP), our online **assessment submission system** and our newly developed **Student Progress Dashboard**.

There were four drivers in particular which defined the need for the project.

- The critical role assessment and feedback plays in supporting learning, developing students' self-regulation and ultimately enhancing student progression and success.
- Students nationally and locally identifying assessment and feedback as their least satisfactory aspect of their university experience.
- The likelihood of increased student expectations related to their education and academic support following the introduction of higher fees.
- The increased focus on resource efficiency and a need to understand how technology enhanced solutions can be both educationally effective and resource efficient.

3. **Project Approach**

3.1 **Overall Approach**

The overall approach to the project was guided by two main imperatives:

i) Institutional alignment and

ii) Disciplinary and context relevance

3.1.1 **Institutional Alignment**

The engagement of senior management with the project, secured through the Steering Group, has been crucial in ensuring the project maintains alignment with the Institution and its overall direction in regards to technology enhanced assessment. In terms of processes and systems, we have utilised existing systems and processes to achieve the project ambitions wherever possible. Where this has not been possible we have sought to
create new ones which blend with or complement existing ones so that the impact on resources is minimised. An example of this is the addition of an EVS replacement handset purchase section on our online shop. Students had already identified a preference for making payment online for other goods including library fines. With the addition of the EVS handset purchase section, students can pay online for a replacement handset instead of going in person to the Student Centre pay desk. This facility has resulted in a lower impact on student and staff time than was previously the case.

3.1.2 Disciplinary and Context Relevance
Academic staff engagement was seen as being vital to the success of the project and therefore we have allowed our Academic School partners to use the technologies in ways that best respond to their specific challenges. Throughout the project period, we have used the language of positive change (appreciative inquiry) to help Schools identify their strengths and grow them further, as opposed to focusing on perceived deficits. This has meant that Schools have adopted the various technologies at a pace best suited to their individual circumstances.

The flexibility afforded by the technologies further supported the notion of supporting a change process that is locally relevant to Schools. The project team recognised that ownership of change was important for long term sustainability.

3.2 Underpinning Principles
The University’s Assessment-for-Learning (AfL) principles provided a pedagogic framework for the project. There are 6 Principles:
- Engages students with assessment criteria
- Supports personalised learning
- Focuses on student development
- Ensures feedback leads to improvement
- Stimulates dialogue
- Considers staff and student effort

In June 2012, the AfL principles were incorporated into the programme validation documentation to form an important cornerstone of the validation process. Embedding the principles in this way ensures that discussions about assessment happen early on in the curriculum design process and are scrutinised by the validation panel before the programme is signed off. Members of the Learning and Teaching Institute (LTI) are involved in the validation process to give support to programme development teams on all learning and teaching matters including assessment and feedback. Further support is available via centrally run workshops on assessment (run by the project team) which are also available at a programme/module level on request. A workshop resource was produced to facilitate the workshops.

The project team produced written guidance on the use of the AfL principles which was made available via the LTI website. In addition, and at the request of staff, 700 hard copies were distributed to Schools so that key members of staff e.g. programme tutors, could have a desk copy to hand. The principles form the starting point for all our workshops and are covered in our professional academic development programme for new teachers. We also produced AfL mugs which have been used to promote the principles at various events such as our recent Stakeholder Event and various School Away Day events, as well as being given out at workshops.
For further information about the principles and how they were developed, please see the [ESCAPE](#) project page.

### 3.3 Project Management

The project team used work packages to guide the day to day activity of the project. Workload was divided up to ensure efficient use of time and a weekly meeting ensured the project stayed on track to meet the pre-determined objectives. The frequency of meetings was reduced as the project became more established. The team meeting notes and the ITEAM blog were used to enhance intra-team communication. A Wiki and project management software (Microsoft Project) were used initially as communication tools, however, the team felt they did not provide any additional benefits so they were discontinued after a short period.

### 3.4 Stakeholder Engagement - Individuals and Groups

Fifteen stakeholders were originally identified as having an interest in the project. These were sub-divided under three broad themes: Institutional Stakeholders, Deliverers and Recipients. However, new stakeholders emerged as the project progressed and the boundaries between the three theme areas became blurred. In September 2012, a revised list was produced, without the sub-headed themes, identifying twenty three stakeholder groups and/or individuals in total (see Appendix A). These were individuals or groups essential for shaping the project thus enabling an institutionally sustainable way of working in the future. The stakeholder list was also re-produced as a word cloud using the job titles of the stakeholders and gatekeepers who had been involved in the project to date. It illustrated the diversity of the people and groups engaged with during the project term (Figure 1):

![Figure 1. Stakeholder Job Title Word Cloud](#)

Engagement was maintained through a variety of approaches including user groups, local project support, formal and informal meetings, email, telephone and blog. Given the scope of the project and the diversity and number of people involved, a single meeting for all stakeholders was not considered to be a practical or effective option for engagement. However, on many occasions different parties were bought together by virtue of their common interests and needs (e.g. the QMP user group comprised Educational Technologists, Administrators, IT personnel and academics) and our Stakeholder Event, in June 2013, purposely brought all the stakeholders together so that people could see how their part of the project fitted into the bigger picture. The Event also gave people an opportunity to discuss common issues and start planning for the final year. Most importantly, it gave us an opportunity to acknowledge and thank them for their work.
Since the beginning of the project, the project team has worked with all 10 of the University’s Schools, although the degree of involvement has varied between Schools as each has been encouraged to decide the level of involvement most suited to their needs. The team also remained alert to the emergence of new stakeholders. For example, an institutional re-organisation mid-way through the project resulted in the establishment of new ‘roles’ for the project team to forge relationships with. Personnel in these roles (Associate Deans of Learning and Teaching) proved critically important in maintaining the momentum of the project. Other stakeholders have been identified as new challenges or ideas have emerged. The involvement of the central procurement team, for example, proved important in terms of the institutional-wide efficient management of EVS handsets and the need to work with colleagues in Academic Registry became apparent as we sought to make more use of student performance data during the development of the Dashboard. By the time the Stakeholder Event was held we had identified over 80 individuals that had an interest in or had actively contributed to the project.

As a result of our experience with stakeholders we have developed 5 Stakeholder Engagement tenets which we think provide a useful reference point for planning an effective and efficient strategy for stakeholder engagement; these are:

- **Purpose** - being clear to stakeholders about the purpose of making contact and any anticipated outcome or actions
- **Regularity** - making contact at regular intervals to maintain awareness and interest in project
- **Exchange** – ensuring stakeholder contact allows for two-way dialogue and information sharing
- **Structure** – articulating a plan for how and when to contact stakeholders and structuring individual conversations to maximise usefulness and opportunity
- **Timing** – considering timing of contacts to minimise impact on stakeholders and make most efficient/effective use of contact
- **Openness** – ensuring all communication is open and transparent

### 3.5 Project Direction

The overall project direction remained unchanged although the pace of progress in each of the four technology areas varied in response to local need and the influence of extraneous factors such as the institutional re-organisation, competing demands on staff time and the constraints of the academic timetable.

### 3.6 Project Evaluation

The [ITEAM evaluation plan](#) was developed to ensure the project was comprehensively evaluated for the benefit of the institution and the wider sector. The plan was put together by the project team who reviewed the original project proposal, baseline report and work packages to ensure the measures of success used in the evaluation were consistent with the original intentions.

The primary aim of the evaluation was to evidence progress in relation to the project objectives and to consider the project impact at institutional level. In addition, the evaluation provided an important opportunity to reflect on and learn from the various strands of project activity both individually and collectively. Finally, the evaluation provides an important opportunity to consolidate data, ideas and findings which may be of interest to the wider sector, especially those engaged in similar types of assessment and feedback activity.
4. ITEAM Project Implementation

This section describes how each of the four technology areas of the project was implemented.

4.1 Electronic Voting Systems (EVS)

Electronic voting systems (EVS), also known as response systems or clickers, are a classroom-based technology which can be used to support learning, teaching and assessment in a variety of ways. In use for a number of years now, the technology comprises a handset, receiver and a software interface which uses a PowerPoint™ add in to enable the creation of question slides. Questions are written in the format of choice e.g. multiple choice, Likert scale, True/False statements and delivered as part of a classroom-based session with as many or as few questions as desired. Students issued with handsets can vote their responses in when the polling option is ‘open’. The teacher controls the pace of the session and the display of results.

EVS has been used at the University of Hertfordshire for around 8 years with significant purchases taking place in 2010 (3845 handsets), 2011 (3490 handsets), 2012 (3175) and 2013 (2355). The slightly reduced order for 2013 reflected the opportunity to collect handsets from graduating students and re-issue them to new entrants. We have 120 EVS ready classrooms and our case studies show it is used to support a multitude of teaching strategies including the assessment of knowledge and understanding, exploring values and beliefs, seeking consensus, mediating debates and facilitating peer assessment.

Advantages for students include the anonymity that EVS brings; this is particularly useful for those students who are less confident, articulate or language-proficient than their peers. It ensures the whole class has an opportunity to engage in learning activities as well as promoting two-way interaction between teacher and student. The other important advantage for students is the speed at which feedback can be delivered for questions with right and wrong answers. This tells students exactly what they are doing well and where they need to revise. The immediacy of the feedback also gives teachers valuable information about class performance enabling them to adjust the session content according to the responses given.

The project objective for EVS was to work with academic schools on the deployment of approximately 3000 (additional) EVS handsets to enhance in-class engagement, testing and feedback activity. Nine of our ten academic schools came forward to partner us in this work (with the tenth school joining us for the third and final year of the project).

4.1.1 EVS Champions

We asked the Schools to identify EVS Champions to act as our primary contacts and as facilitators of good practice in their own areas. The EVS Champions were supported by regular update emails and quarterly meetings where we shared updates on progress as well as good practice. We also sought to identify where issues and challenges were impacting and discuss how best to resolve. In one meeting, for example, we shared the work of our colleagues leading the Strand B EEVS project (evaluating the student and staff experience of using EVS) whilst in another we asked the Champions to record each other talking about their experience of using EVS in their areas and their perception of the spread of use in their discipline and any barriers to use. These various activities were designed to maximise the usefulness of the time spent together as well as to ensure the Champions felt supported and empowered to influence practice in their own areas. No School has been under an obligation to use EVS; rather the advantages and benefits have been used to show where EVS might enhance assessment and feedback practice in different areas. The pace of change has varied between the Schools as each has worked in the way best suited to their needs. The final year
evaluation of the spread and uptake of EVS provides further information about this (See Appendix B for full report).

The EVS champions group will continue to be facilitated by a member of the LTI during the next academic year to ensure continuity and support is maintained.

4.1.2 **Staff Training and Support**

The EEVS project findings showed that some students felt that academics needed more training in the use of EVS. This was born out in conversations with the EVS Champions and teaching colleagues. To support academic staff development the project team delivered EVS training workshops which covered assessment and feedback issues and the use of EVS to support good practice plus a series of shorter question and answer drop-in sessions. There have been 145 staff members trained in EVS since 2011 (17.85% of total staff population).

School specific needs were met on an ad-hoc basis and all new users were offered ‘hand-holding’ support to help them gain confidence. Staff development was further supported with various training resources accessed via the LTI website and the Turning Technologies website (manufacturer of the electronic voting systems we use). The team also produced ‘EVS Top Tips for Users’ cards (see Figures 2 and 3.) to support the roll out of the software upgrade in the summer of 2013.

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**Figures 2. and 3. ‘EVS Top Tips for Users’, front and back views.**

The project team worked closely with the University’s Learning Resources Centre Help Desk team, which provides assistance to students and staff for technology related issues. The Help Desk communications lead has produced a single sheet classroom help guide for academic staff using EVS and the team provides a first response service for user queries. The work with Help Desk colleagues is part of the plan to centralise the technical support for EVS by project end.

Finally, we met with the administrators (professional staff) who ‘man’ the front desks in the Schools and asked them about their experience of handling EVS queries from students. Through these meetings we identified a need for them to have training and support in-order to handle student enquiries effectively. As their development needs differed to those of academic staff they were offered a separate training session which enabled them to ask questions and share ideas specific to their role with EVS. The project team met with the group twice and has produced ‘EVS lost and found’ flow charts in response to their request for advice as to how to help students who have lost their handsets.
In future staff development and support will be jointly supported by the LTI and Information Hertfordshire (IH) colleagues with additional external support from the provider company.

4.1.3 Student Support
Conversations with EVS Champions, academic colleagues and administrators highlighted that students often lack knowledge about their handsets e.g. how to use them and what to do if they lose them. As well as supporting staff, the project team felt it was important to give information direct to the students so that they could solve their own problems where possible. This was particularly important for the BSc Joint Honours students, who are registered on two separate programmes (in two different Schools) and for whom the responsibility for EVS handset help is sometimes unclear.

To provide student-facing information, we produced a wallet-sized information card (Figure 4. and 5.) which is given out to students when they are issued with their handset; this contains key information about the handset and what to do if it is lost. We also put together an EVS help page for students on StudyNet, our managed learning environment. The site provides information about the handsets, how to use them and how to replace them if lost; it went live in October 2012 and had had 1205 hits by June 2012. For the Joint Honours students, we met with the programme committee (including three students) to better understand the student experience. As a result, we co-produced an ‘EVS Introductory Letter’ to supplement the student information card. The letter is now given out with a verbal explanation during the students’ induction day so that students get the necessary information as early as possible in their studies.

Figures 4 and 5. EVS Student Information Card, front and back views.

4.1.4 Technical Infrastructure
Much of the project time has been expended on the infrastructure that supports the use of EVS across the University. Working with our colleagues in Information Hertfordshire (IH) we have ensured all teaching rooms have EVS receivers in place and that the software for use is loaded onto every classroom computer ready for academics to use whenever required. This work initially required a one off financial spend from the responsible department (Information Hertfordshire) but infrastructure requirements are now planned into the annual budget round to maximise cost and resource efficiency.

One of the most important resources to support the University-wide use of EVS has been the EVS database on which all handsets issued to students are registered along with the name of the student. This enables academic staff to save student assessment results (using the EVS software) and give immediate, individual feedback if appropriate.
Other activities to embed the EVS technological infrastructure at institutional level have included posting an EVS receiver channel sign in every classroom to ensure staff and students know what number the system is operating on; performing a cross-campus channel mapping exercise to minimise channel conflict between classrooms (a significant problem in the early days of the project) and, in August 2013, rolling out a software upgrade across the University.

All activities have been carried out by colleagues in Information Hertfordshire with whom we work closely to ensure a good understanding of the issues involved on both sides. The senior manager of the department is on the ITEAM project steering committee and as such has a good understanding of the project objectives and is able to influence the direction and speed of change accordingly.

### 4.1.5 Procurement

In the first year of the project, the project team managed the purchase and distribution of EVS hardware to Schools. In 2012, Schools managed their own purchase with the support of the project team i.e. provision of the pricing framework and ordering information and liaison with the supplier. In 2013, the School’s managed their own purchase again but this time with support from the University’s central procurement team. Bringing the procurement team into the process ensured a cost-efficient approach for the University i.e. the central procurement team was able to collate all the orders and submit as one so that benefit of scale could be achieved and savings passed back to individual Schools.

Table 1 shows examples of the cost benefits of this approach based on the 2013 purchase round and the ‘per 100 units’ and ‘per 1500 units’ threshold prices.

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</tbody>
</table>

Table 1. Example cost benefits based on 2013 prices

In 2014 all EVS procurement will be handled by the schools and their own procurement teams. The latest simplified procurement arrangements enable Schools to purchase directly from our supplier without disadvantage to themselves or the University. More importantly schools can make purchase decisions at a time that is best suited to them and in accordance with their own particular needs. This was a key aim of the embedding process. An ‘EVS lifecycle’, which details the key steps to implementing EVS from purchase to re-claim, provides a reference resource for others considering large-scale roll out of this or similar technologies.

Table 2 shows the numbers of EVS handsets purchased by the University in the last 4 years by academic school (note: 2014 figures are not available at the time of writing).
<table>
<thead>
<tr>
<th>Academic School/Discipline</th>
<th>Pre-2011</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business</td>
<td>0</td>
<td>200</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Computer Science</td>
<td>300</td>
<td>325</td>
<td>220</td>
<td></td>
</tr>
<tr>
<td>Humanities</td>
<td>100</td>
<td>200</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td>240</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Law</td>
<td>900</td>
<td>100</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Life and Medical Sciences</td>
<td>720</td>
<td>600</td>
<td>350</td>
<td></td>
</tr>
<tr>
<td>Health and Social Work</td>
<td>600</td>
<td>1150</td>
<td>655</td>
<td></td>
</tr>
<tr>
<td>Science, Engineering and Technology</td>
<td>560</td>
<td>600</td>
<td>600</td>
<td></td>
</tr>
<tr>
<td>Learning and Teaching Institute</td>
<td>70</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>3845</strong></td>
<td><strong>3490</strong></td>
<td><strong>3175</strong></td>
<td><strong>1955</strong></td>
</tr>
</tbody>
</table>

Table 2. EVS Procurement by School/Discipline pre-2011 to 2013

In the final 6 months of the project a comprehensive evaluation of the spread and uptake of the EVS across the University was undertaken. The findings indicate School-level usage trends over the life of the project and identify barriers and enablers for EVS Adoption (see Appendix B for full report).

### 4.2 QuestionMark Perception (QMP)

QuestionMark Perception is a software package that provides an authoring tool for writing questions and constructing assessments, an online delivery mechanism for delivering tests to groups of participants (out-of-class) and a set of reporting tools for post-assessment analysis. It is one of the few software packages on the UK market available for this kind of use (others include Rogo™ and Examsoft™).

The University has used QMP for around 10 years in total. In earlier years, QMP was managed at School level under a variety of locally developed licence and support arrangements (often these were in the preserve of individual enthusiasts). In 2011, it was decided that centralising the licencing for QMP would provide a better service and one that could be readily available to all staff that wanted to use it, not just the enthusiasts. The ITEAM project objective was to implement centralised support for QMP and provide pedagogic guidance for integration into assessment strategies.

Informal conversations with colleagues early on in the project, suggested there was dissatisfaction with the QMP provision as it was. The project team discussed the concerns with colleagues in Information Hertfordshire who were responsible for the service provision, and together decided that a user group would be a useful way of bringing together the different people involved in providing and using the technology. The QMP User Group has a membership comprising academics, Help Desk representatives, education technologists and IT specialists. It meets every semester and has been instrumental in moving the QMP service forward, primarily because key users and service providers have worked together to resolve challenges in a constructive and collaborative manner.

The User Group initiated a number of actions resulting in:
- Staff development workshops to support the pedagogic use of QMP
An agreed process for requesting QMP participant lists (key to delivering assessment)
The provision of Help Desk support for staff (not previously available)
Student facing QMP assessment information via the module sites on StudyNet
A review of alternative out-of-class assessment software

Despite the advances made by the User Group, the QMP software has presented a number of technical challenges which have significantly hampered progress towards providing a reliable and effective out-of-class assessment tool. Server compatibility issues and an unintuitive user interface have contributed to the difficulties. Conversations with sector colleagues suggested our experience was not unusual. In the final project year we have been exploring the potential to use the ExamSoft software. This aspect of the work is being led by our colleagues in Information Hertfordshire to ensure the work can be carried forward post-project.

In the final project year, 27 students participated in a survey of the student experience of using QMP. The findings highlighted the importance to students of providing support for technical issues and guidance on access. They also confirmed that students liked the quick feedback that QMP provides. The findings will be presented back to the user group to further inform the decision about which software to use for online assessment.

4.3 On-line Assignment Submission System and Grading Criteria

The University has a well-established online submission system which sits within StudyNet and supports the use of grading criteria as part of the assessment and feedback process. The ITEAM project objective was to embed the use of grading criteria in the online submission system and promote their use more widely across the institution. To do this we have worked with our Learning Technologies Development Unit (LTDU) to design an online interface that allows academics to select the appropriate grading criteria for each assessment (a significant change to our existing interface). At the same time we have worked with our Associate Deans of Learning and Teaching in each School to support the development of School level grading criteria ready for upload onto the revised system. The use of grading criteria sets at School and/or programme level ensures alignment between feedback statements and numerical grades and therefore improves the quality and consistency of assessment feedback.

In the final project year, a small qualitative evaluation of the student experience of using grading criteria was carried out. The students interviewed (n=13) expressed a range of positive and negative views about the use of the grading criteria forms. Key issues identified were that the method of feedback should be explained along with help to make best use of it; that annotations on the script are valued highly and that the timing of feedback is important. The participants’ feedback will be used to inform working practices about developing and using feedback forms.

4.4 Student Progress Dashboard (SPD)

The ITEAM project objective was to integrate student engagement and performance data into a Student Progress Dashboard to provide timely, holistic reports for each student and their personal tutor about the student’s engagement/performance on all the modules he/she is studying. The SPD uses assessment grades from assessments submitted online and the numbers of hits within a module site to give an indication of the students’ overall performance. There is a separate staff and student view (see Appendix C for example views). The staff view enables tutors to look at assessment and engagement indicators for whole cohorts or individual students. A traffic light system gives an ‘at a glance’ view of which students might need additional support as well as those who are doing well. The student view shows students
the same indicators in relation to the student’s own performance as well as their performance in relation to their peers. This enables students to see where they may need to seek extra support or guidance.

The project team formed a SPD development group that met to discuss the initial proposal. The group comprised academic representatives, the Students’ Union, the IT developers and the project team. Student focus groups were also held with a total of 25 students contributing from both undergraduate and postgraduate programmes. Comments from the staff and students strongly influenced the development of the SPD, particularly levels of access, the layout and the visual presentation.

The staff view of the SPD was piloted in Semester A of 2012 with 9 programme tutors from 7 Schools. The student view was piloted in Semester B with 23 students from undergraduate and postgraduate programmes. Feedback from staff and students can be found in the ITEAM Evaluation Report.

In May 2013, 5 Schools participated in a three month mini-project whereby they undertook to raise staff awareness and understanding of the SPD in their area in return for a small budget (£600–£1200 depending on school size). They also had a remit to think about the kind of information that would be useful to them as teachers, even if not currently available.

The staff facing view of the SPD is now available to all programme teams on request (although development is ongoing). Feedback from staff and students showed the importance of delaying the release of the student view until a) academics are familiar enough with it to support students who use it and b) the content displayed gives an accurate indication of student performance along with appropriate signposting for support and resources.

The next stage of development will be considered alongside the development of our new managed learning environment which is currently under review.
5. Outputs and Resources

The key outputs and resources that the ITEAM project produced are displayed here in tabular form under the sub-headings of Assessment (Table 3), EVS (Table 4), Grading Criteria (Table 5) and Dashboard (Table 6). Where available, links are provided to the complete documents for reference/download.

<table>
<thead>
<tr>
<th>Resource</th>
<th>Description</th>
<th>Benefits and Primary Beneficiaries (in italics)</th>
<th>Future</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Assessment for Learning (AFL) Principles and Guidance for Use</strong></td>
<td>Provides framework for promoting pedagogically sound practice in assessment and feedback practice across the institution.</td>
<td>Promotes a common language and understanding of what good practice is; provides stimulus for conversations about practice; encourages reflection on practice. <em>Teaching staff</em></td>
<td>Will be used to facilitate curriculum/assessment design discussions in validation preparation.</td>
</tr>
<tr>
<td><strong>AFL workshop table-top resource (PDFs tba to Design Studio)</strong></td>
<td>A table top resource to support a facilitated workshop on using the AFL principles.</td>
<td>Promotes good understanding of how the AFL principles can be used in practice. <em>Teaching staff</em></td>
<td>Will be offered to programme and module teams to support assessment design discussions</td>
</tr>
<tr>
<td><strong>Assessment Resource Comparator</strong></td>
<td>Illustrates the time impact of different assessment strategies in relation to student numbers.</td>
<td>Informs assessment design discussions.</td>
<td>Made available to staff to support assessment design discussions/validation preparation/workshops</td>
</tr>
</tbody>
</table>

Table 3. Assessment-related Resources

<table>
<thead>
<tr>
<th>Resource</th>
<th>Description</th>
<th>Benefits and Primary Beneficiaries (in italics)</th>
<th>Future</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>EVS lifecycle</strong></td>
<td>Illustrates the main process steps of implementing EVS from an institutional perspective. Flow charts are used to illustrate specific parts of the life cycle e.g. managing loss and return of handsets.</td>
<td>Considers resource efficiency through centralisation of processes e.g. handset registration and centralised procurement. The lifecycle underpins the large scale deployment of EVS handsets. <em>Institution/Business Units</em></td>
<td>Provides a reference tool for introducing similar technologies.</td>
</tr>
<tr>
<td><strong>Staff cards (Top Tips for EVS Users)</strong></td>
<td>Gives written information to students and staff about EVS handsets (students) and using the software in the classroom (staff)</td>
<td>Improves information and communication e.g. consistency of message, signposting to further help <em>Teaching staff</em></td>
<td>Will be available in hard copy for a further year, then in electronic format to ensure continued availability.</td>
</tr>
<tr>
<td><strong>Inclusivity and Disability Guidance</strong></td>
<td>Provides written guidance to promote consistency, quality and equality of student experience.</td>
<td>Raises awareness and promotes understanding of issues. Promotes equality. <em>Students</em></td>
<td>As above.</td>
</tr>
<tr>
<td><strong>EVS Case studies</strong></td>
<td>Identifies good practice in assessment, learning and teaching in different disciplinary context.</td>
<td>Encourages staff to make informed decisions about practice, showcases good practice and stimulates ideas. Students benefit as recipients</td>
<td>As above.</td>
</tr>
</tbody>
</table>
of well-designed curriculum activities and assessment strategies. *Teaching staff*

**EVS case studies mapped to AfL principles**
A table showing how individual EVS case studies map to the AfL principles. Illustrates the different ways in which EVS can support good assessment and feedback practice. *Teaching staff*

**Student cards**
Gives written information to students about EVS handsets. Improves information and communication e.g. consistency of message, signposting to further help *Students*

<table>
<thead>
<tr>
<th>Table 4. EVS-related Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Resource</strong></td>
</tr>
<tr>
<td>Grading criteria exemplar</td>
</tr>
</tbody>
</table>

**Table 5. Grading Criteria Resource**

<table>
<thead>
<tr>
<th>Resource</th>
<th>Description</th>
<th>Benefits and Primary Beneficiaries (in italics)</th>
<th>Future</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dashboard design principles (in draft)</td>
<td>Articulates underpinning design considerations</td>
<td>Benefits student and staff by enabling access to assessment information that supports self-regulation, pro-action and reflection. <em>IT developers</em></td>
<td>Will be amended as the development continues to take shape.</td>
</tr>
</tbody>
</table>

**Table 6. Dashboard-related Resource**
6. Outcomes and Benefits

6.1 Tangible Benefits

The ITEAM project has:

- **Embedded Assessment-for-Learning Principles** as evidenced by formal adoption of principles by University and integration with Academic Quality processes such as programme validation.

- **Enhanced awareness of assessment and feedback issues** as evidenced by EVS case studies, case study mapping to AfL and Good Practice in Teaching principles, requests for bespoke staff development, presentations at internal events and feedback on specific developments such as the Dashboard.

- **Created potential to improve assessment-related efficiency** through the judicious use of in or out-of-class technologies to deliver and feedback on assessment as evidenced by test data from the Assessment Resource Calculator.

- **Improved student access to EVS information** as evidenced by visits to the new EVS website

- **Enhanced staff confidence in EVS use** as evidenced by successes shared in EVS case studies, presentations at internal events and fewer support call-outs

- **Improved resource efficiency** through development of institutional processes to manage purchase, lost and replacement EVS handsets and through the move to a single license arrangement for using QMP

- **Improved access to data which informs assessment and feedback activities** as evidenced by the development of a Student Progress Dashboard.

- **Improved communication between service providers and users** as evidenced by engagement with QMP user group to negotiate improvements in service and user experience

- **Localised ownership of changes** as evidenced by the activities of the Champions’ network for EVS and the Dashboard project-co-ordinators, the cross-institution membership of the QMP user group and the development of grading criteria by Schools.

See the ITEAM Evaluation Report for supporting evidence where applicable.

6.2 Intangible Benefits

The ITEAM project has:

- ** Stimulated conversations about assessment and feedback** as observed in workshop discussions, requests for bespoke assessment-related activities, enquiries to the project team, local presentations and involvement in validation events
✓ Created a culture of willingness to try technology enhanced assessment as evidenced by workshop attendance, requests for bespoke sessions and follow-up support, survey feedback and case studies.

✓ Promoted a culture of inter-school collaboration with regards to sharing good practice and resolution of common issues

6.3 Anticipated Benefits
It is anticipated that there will be:

✓ Embedded Assessment-for-Learning principles providing a pedagogic framework for assessment and feedback practice

✓ Widespread use of EVS to enhance assessment and feedback practice.

✓ Improved access to assessment information for students when the Student Progress Dashboard is rolled out

✓ Improved consistency and quality of feedback to students via the school developed grading criteria.

✓ Improved student and staff experience of using QMP mediated assessments when new processes are fully implemented in 2013-14

6.4 Wider Sector: Contributions and Benefits
The sector has contributed to the ITEAM work in a range of ways. Direct input has been welcomed from those who have participated in our three webinars, who have given feedback at conferences and participated in JISC workshops. The Heads of eLearning Forum (HeLF) has been a very useful network providing direct contributions on our dashboard development and indirect help by way of a survey of QMP users plus providing various follow-up contacts for both technologies. Many institutions have freely shared resources relating to grading criteria, QMP and assessment for which we are grateful. Meeting with colleagues from the four institutions in our cluster has also provided the team with a chance for routine sense checks and stock takes and sharing project progress with teams on the wider A&F programme has led to several useful contacts.

We hope the wider sector has benefitted from the work we have shared through conference, webinar and workshop. To date we have posted over 60 blogs and had nearly 5000 views. We have had invitations to talk to organisations such as HeLF and to host visits for other institutions.

6.5 Unexpected Consequences
The Student Dashboard surfaced challenges of the institution’s new student system because of the way programmes and courses are now represented. The project also highlighted differences between the Schools in how academics use technologies and inconsistencies in administrative and educational technologist provision. A further unexpected outcome was the realisation of how difficult it is to capture the usage of specific technologies in specific schools, something that makes it difficult to gauge progress or plan ahead.
6.6 Impact on Stakeholders
Some stakeholders have been impacted by the project more directly than others. Most significant is IH, which has been involved at all stages. The IH team’s expertise was crucial to providing solutions to the QMP challenges, to putting together the interface for the use of the grading criteria, to providing the technical infrastructure and support for EVS in the classrooms and to developing the dashboard technology.

Schools have also been impacted by the project with EVS champions, Dashboard project coordinators and QMP users all contributing time and commitment to project activities. Most of these have been academic staff but Educational Technologists have also played key roles in a number of areas. Associate Deans of Learning and Teaching from all Schools have also each contributed or participated in at least one aspect of the project, most in more.

The central procurement team took on a much bigger role in 2013 than previously and will continue to ensure cost-efficient procurement practices through contract negotiation and monitoring. Some administrative personnel have taken on new roles as EVS handset issue and management has been passed to them in some Schools in-order to provide more timely and efficient student support.

7. Sustainability
During the final year of the project we focussed on embedding changes for longer term sustainability. Key activities for each technology area were:

**EVS**
- Providing further workshops to support staff development
- Updating guidance and help resources to reflect 2013 software upgrade
- Supporting School Champions via Champions meetings
- Planning 2013-14 purchasing activity with central procurement team and agreeing longer term procurement and tendering process
- Investigating alternative modes of delivery e.g. mobile devices
- Evaluating the uptake of EVS across the university

**QMP**
- Providing further workshops to support staff development
- Refining guidance and help resources for staff
- Working with HelpDesk colleagues to finalise centralised support processes
- Handing over QMP User Group to IH.
- Evaluating the student experience of using QMP

**Grading Criteria**
- Working with colleagues in IH to finalise online interface for the use of grading criteria.
- Supporting schools in preparing their own set of grading criteria
- Evaluating the student experience of using grading criteria

**Dashboard**
- Working with colleagues to identify opportunities for using learner analytics in the University’s new managed learning environment
General

- Promoting Assessment-for-Learning principles
- Continuing to disseminate work internally e.g. Annual Learning and Teaching conference and externally e.g. at conference and via Blog.

The final ITEAM Steering Group met in June 2014 and finalised future plans for the various aspects of the project (see Appendix D for minutes).

8. Reflections and Lessons Learned

Specific lessons learned from the adoption of Assessment-for-Learning principles plus those from each technology area have been presented below followed by a brief section on general lessons learned.

8.1 Assessment-for-Learning Principles
Pedagogically robust assessment and feedback practices have to be continually nurtured in-order to retain their place at the heart of learning and teaching. The provision of verbal and written guidance will help this, as will embedding the principles in University quality assurance processes such as validation. So also will the establishment of centralised processes to support both teachers and students (e.g. routing technology enquiries through Help Desk); the provision of accurate, useful and accessible information (e.g. online resources and webpages) and the provision of practical support at the point of need (like supporting first time users of technology in the classroom).

8.2 Electronic Voting Systems (EVS)
Our experience demonstrated that EVS can be used in a variety of ways to support pedagogically robust assessment and feedback practices. Evaluation of the student experience suggests most students feel there is a benefit to using them with the promptness of feedback probably being the most useful feature for both teachers and students. However, the use of this technology in summative assessments a) carries an inherent risk of system failure at individual and cohort level b) can cause unnecessary tension and/or anxiety for all concerned c) can pose significant problems in terms of inclusivity. During the course of the project our advice shifted away from the summative use of the technology toward supporting teachers to use it formatively; we believe this increased uptake of the technology and improved the student experience without losing the benefit of feedback immediacy.

The provision of centralised processes for procurement, handset registration, user support and for ensuring classroom readiness, were all key to embedding the technology at an institutional level.

The use of project Champions was an effective model for disseminating good practice and communicating issues. It also kept the locus of responsibility for the technology within the relevant Academic School. We found the Project Champions’ commitments and interests changed over time and therefore it was beneficial to review and ‘re-energise’ the group to ensure continued benefit to the project.

8.3 QuestionMark Perception (QMP)
The move to providing centralised licensing and support for QMP (which began prior to the ITEAM project) resulted in issues about the use of the technology on a large scale, uncertainty about who was responsible for what (e.g. for training) and some dissatisfaction on the part of users who had been using QMP successfully previously. The changes resulted in more
difficulties than were first anticipated, however, when problems did occur, bringing together the people who could explain the issues and those who had the skills to resolve them, was a useful and time-efficient way of working (QMP User Group).

Service provision problems detracted from discussions about pedagogy, something that also happened in the early stages of the EVS work. We think technologies have to be easy to use and complimentary to existing systems or they will become the focus of attention that would be better spent on good curriculum design and delivery.

8.4 On-Line Assignment Submission System and Grading Criteria
We encountered a tension between the need to meet QAA objectives for alignment of grading criteria and feedback and the need to work within the confines of an existing technology (our online assignment system). Different people involved in this aspect of the project had different views as to the way forward, one of which was to reduce the differentiation of feedback available so that it would fit more readily into the existing online system. The need to put academic rigour in assessment and feedback as the highest ideal and not to accept less because of the limitations of technology meant a compromise on the part of the developers on the way the grading criteria were made available to academic staff. Conversations that took place about this were difficult but it was important to bring difficulties into the open and stay committed to the underpinning pedagogic framework (even when other solutions appeared easier to resort to in the short term).

8.5 Student Progress Dashboard
The project team recognised that in its current form, the SPD was open to misinterpretation, particularly by students, unless certain aspects of it are refined or improved upon. This led to the decision to delay the roll-out of the student view until further work has taken place. In addition, the SPD development has taken place at a time of great interest in the field of learner analytics therefore ideas about how data can be used and how it might impact on student and academic behaviour will continue to emerge and to influence the shape of the SPD well beyond the official project end point. Some technologies need a longer time to develop than is possible in a project term but the project gives focus and direction which makes for an excellent head start.

8.6 General Lessons
We found the generally accepted principles of good project management also applied to the ITEAM project. Our experience re-inforced the importance of:

- ensuring clarity of pedagogical approaches to technology embedding
- obtaining senior management commitment
- consulting the right people on proposed change
- identifying the relevant stakeholders and keeping them engaged
- ensuring access to the right skills to get the job done
- focussing on affordances of technologies
- making use of data to inform changes
List of ITEAM Project stakeholders:

1. ITEAM Steering Committee
2. JISC
3. UH Disability Services
4. Information Hertfordshire (Central IT support)
5. Students
6. Learning and Teaching Institute
7. Academic Quality Assurance
8. Deans of Schools
9. Academic Unions
10. Associate Deans Learning and Teaching
11. Finance team
12. Procurement Team
13. Teachers inc. pastoral Care tutors, programme / year tutors
14. Programme Tutor Joint Hons*
15. School EVS Champions
16. Learning Technologists
17. Local IT Support (School based)
18. Student Centre
19. Technology supplier (RM)
20. Technology Manufacturer (Reivo)
21. Professional Staff
22. UHSU (University of Hertfordshire Student Union)
23. HE/FE Sector
Report on the evaluation of EVS usage and trends at the University of Hertfordshire

February to June 2014

Dr. Marija Cubric and Dr. Amanda Jefferies
EVS Evaluation Report for the ITEAM Project 2013-14

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1. Executive Summary

The Electronic Voting Systems (EVS) evaluation project for the ITEAM project has investigated the current level of engagement in the use of EVS across the institution in 2014. It has built on the work and outputs of the JISC supported Evaluating Electronic Voting Systems (EEVS) project in 2011-12 and the work of the ITEAM project through 2011-2013. It offers an up-to-date examination of the trends in EVS adoption and the breadth and nature of EVS use across the different academic schools.

The project adopted a mixed-methods approach to evaluate usage and engagement. The starting point was a desk study to examine the existing data on numbers of EVS handsets purchased by academic schools in 2011, 2012 and 2013 and registered across the University and to explore the details from the School reports previously submitted to ITEAM. Sources of data included Information Hertfordshire and the ITEAM archive. Quantitative surveys were drawn up and information requests for student numbers were made to Senior Administrative Managers (SAM). A series of interviews were held with School-based academics including EVS Champions and Associate Deans for Learning and Teaching.

Three purchasing trends for EVS handsets by different Schools were found: slow decrease in HUM, LAW and PAM, moderate increase in BS, EDU and HSK and rapid increase in CS, ET and LMS.

In terms of levels of EVS usage in 2013 -14 four different patterns emerged among the schools. These showed: slow increase (CS, LMS and PAM), slow decrease (BS, ET, EDU and HUM), rapid decrease (LAW) and no change (CA and HSK).

The EVS purchasing and usage trends comply with the figures given by Rogers¹ for his technology adoption model. Some schools are characterised by successful ongoing EVS use over several years while other school strategies for EVS, which had showed promise early on, have faltered in their use. There was some evidence that academics in STEMM subjects are more likely to engage willingly with EVS use where larger groups are taught, but this is not yet in evidence across all the STEMM groups at this university. Furthermore good practice exists and flourishes across non-STEMM subjects as well.

The strategies for successful School-based EVS embedding and continued use include the following three hallmarks:

- Top-down management support for purchasing of handsets and including training for academics and administrators, and alignment with the School teaching and learning strategy.
- The existence of a core of innovators and early adopters of technology including the local EVS champions, who are willing to actively engage with their fellow colleagues in sharing the potential of EVS technology.
- An engagement with the pedagogical implications for changing and developing practice that the greater use of formative or summative polling and questioning requires.

---

The immediate future of classroom technologies such as EVS offers two main directions. Firstly, there is the continuation of adopting 'institutionally provided' handheld devices. This is a low-cost method that can be used easily and flexibly. The other options for classroom polling rely on sufficient wifi availability in the teaching rooms and/or mobile phone signal strength/network availability and capacity. It is anticipated that the capacity issue will present fewer barriers for adoption in future, and that the future of the classroom response systems is inevitably linked to the widespread use of mobile technologies by students.

2. Evaluation Aims

The evaluation work has investigated the current level of engagement by academic staff in the use of EVS across the institution. It has built on the work and outputs of the EEVS project in 2011-12 and the work of the iTEAM project 2011-2013 and now offers a review which indicates the breadth and nature of EVS use across the different academic Schools at the University of Hertfordshire at the close of the iTEAM project in summer 2014.

The following objectives for the evaluation were addressed:

a) Provide an understanding of the spread of EVS use and the roll out strategies for EVS across different Schools.

b) Provide examples of excellent practice to champion and identify alongside those local success factors which guided the strategies of schools which use EVS widely and reliably with positive feedback from students.

c) Propose an indication of the future requirements for supporting EVS use with academics in terms of pedagogical engagement and practical technical support.

d) Offer an informed opinion on the future strategic use for classroom technologies whether EVS or mobile technology and the opportunities for their linking in with the “next-generation” strategy for StudyNet.

3. Evaluation Approaches

A mixed methods approach using quantitative and qualitative approaches was used to address the objectives.

The project investigators undertook:-

- Investigations into existing data arising from the iTEAM reports to date in order to provide an estimate of growth/shrinkage in the use of EVS across different academic schools since the first year of widespread use of EVS in 2011-12. (Desk study addressing objectives a, and d).

- Quantitative surveys for academic users and non-users of EVS to explore the outcomes of EVS use and predictors of requirements for the future use (online using Bristol Online Surveys (BOS) addressing aims a, b, c, and d).

- Qualitative research via a series of interviews with academics across the different disciplines to corroborate and complement the findings from the survey. (Person to person interviews conducted by the investigators addressing aims a, b, c, and d).
A series of quantitative surveys was devised and set up through BOS with links emailed to participants in order to gather information from the following stakeholder groups:

- Programme Tutors
- School Student representatives

Quantitative data on student numbers and programmes were gathered from the Academic Registry as well as from the Senior Administrators in each School and compiled into a series of tables to compare undergraduate and postgraduate student numbers. Handset purchase data was provided by the iTEAM records since 2010 and then compared to the total student population to determine a current figure for “EVS coverage” in the schools.

Qualitative data was gathered through:

- Reviews of the School EVS Champion reports from 2011 and 2012
- Detailed discussions with the EVS Champions plus a focus group and survey
- Individual discussions with the Associate Deans for Learning and Teaching (ADLT)
- A focussed discussion with participants following a project presentation at the University’s Annual Learning and Teaching Conference in May 2014
- Individual structured interviews with selected EVS Champions.

The aim of the interviews was to procure examples of standard and excellent practice as well as exploring particular reasons for local success or failure factors and the historic increases or decline in the usage of EVS technologies for different schools. Additionally, attention was paid to the development of school technology use strategies that have supported EVS use and to the school roll out and embedding strategies.

4. Findings

4.1 The spread of EVS use and the roll out strategies for EVS across different Schools.

4.1.1 Trends in EVS purchase and EVS “readiness”

The “EVS coverage” in an academic school in an academic year was calculated as a ratio between the total (cumulative) number of EVS handsets purchased and the total number of students registered on the taught programmes in the school in the academic year. This measure is used to estimate the percentage of student population in each of the academic schools that would be able to loan a handset for the duration of the academic year. Table 1 shows EVS coverage in different academic schools (SBUs) across the three most recent academic years. In a few cases where this number is higher than 100% this indicates that there was either a reduction in the total student population or issues with returning and re-using existing handsets.
### Table 1 EVS coverage of students’ population (Students on taught programmes only and not including small SBUs such as APO and LTI (less than 2% of overall population))

<table>
<thead>
<tr>
<th>SBU</th>
<th>2011-12</th>
<th>2012-13</th>
<th>2013-14</th>
</tr>
</thead>
<tbody>
<tr>
<td>BS</td>
<td>15.67%</td>
<td>18.94%</td>
<td>33.92%</td>
</tr>
<tr>
<td>CA</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.00%</td>
</tr>
<tr>
<td>CS</td>
<td>48.06%</td>
<td>53.91%</td>
<td>144.72%</td>
</tr>
<tr>
<td>EDU</td>
<td>26.04%</td>
<td>28.90%</td>
<td>44.80%</td>
</tr>
<tr>
<td>ET</td>
<td>29.79%</td>
<td>32.37%</td>
<td>231.58%</td>
</tr>
<tr>
<td>HSK</td>
<td>12.79%</td>
<td>13.04%</td>
<td>39.80%</td>
</tr>
<tr>
<td>HUM</td>
<td>47.87%</td>
<td>51.53%</td>
<td>47.88%</td>
</tr>
<tr>
<td>LAW</td>
<td>77.59%</td>
<td>93.10%</td>
<td>105.99%</td>
</tr>
<tr>
<td>LMS</td>
<td>40.10%</td>
<td>43.50%</td>
<td>74.75%</td>
</tr>
<tr>
<td>PAM</td>
<td>72.73%</td>
<td>78.05%</td>
<td>72.56%</td>
</tr>
</tbody>
</table>

This number is used to indicate the school’s “readiness” to engage with EVS technology and as can be noticed from the line chart in Figure 1 below there are three different trends that can be identified, excluding the CA where there were EVS purchases:

1. Slow increase followed by slow decrease: HUM, PAM and LAW
2. Slow increase followed by moderate increase (less than 50%) : BS, HSK, and EDU
3. Slow increase followed by rapid increase CS, ET and LMS.
Another useful measure for finding out the trends in EVS demand in different schools is the annual increase in number of purchased EVS handsets compared to the last year, see Table 2 below.

<table>
<thead>
<tr>
<th>SBU</th>
<th>pre 2011</th>
<th>2011-12</th>
<th>2012-13</th>
<th>2013 14</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>N</td>
<td>%</td>
<td>N</td>
</tr>
<tr>
<td>BS</td>
<td>1000</td>
<td>0</td>
<td>0.00%</td>
<td>200</td>
</tr>
<tr>
<td>CA</td>
<td>0</td>
<td>0</td>
<td>0.00%</td>
<td>0</td>
</tr>
<tr>
<td>CS</td>
<td>320</td>
<td>300</td>
<td>93.75%</td>
<td>325</td>
</tr>
<tr>
<td>EDU</td>
<td>260</td>
<td>240</td>
<td>92.31%</td>
<td>0</td>
</tr>
<tr>
<td>ET</td>
<td>0</td>
<td>560</td>
<td>NA</td>
<td>600</td>
</tr>
<tr>
<td>HSK</td>
<td>0</td>
<td>600</td>
<td>NA</td>
<td>1150</td>
</tr>
<tr>
<td>HUM</td>
<td>575</td>
<td>100</td>
<td>17.39%</td>
<td>200</td>
</tr>
<tr>
<td>LAW</td>
<td>450</td>
<td>900</td>
<td>200.00%</td>
<td>100</td>
</tr>
<tr>
<td>LMS</td>
<td>920</td>
<td>720</td>
<td>78.26%</td>
<td>600</td>
</tr>
<tr>
<td>PAM</td>
<td>320</td>
<td>0</td>
<td>0.00%</td>
<td>0</td>
</tr>
</tbody>
</table>

Table 2 Annual increases in EVS purchase (N is a total number of new EVS purchases; % is the proportion of the new EVS compared to the “old” ones.)

With regards to the annual increase in EVS purchase there are two groups both following the same trend in Table 2 of rapid increase followed by a slower decrease:

1. Early commitment (all schools apart from HSK and ET)
2. Late commitment (HSK and ET)

Other useful components of the “readiness” for the EVS adoption are the total number of the EVS-equipped classrooms (N=120, 35.29%) and the total number of the academic staff trained in using EVS (N=145, 17.85%). Unfortunately per-school data related to these variables is not available.

4.1.2 Trends in EVS usage
While the number of EVS handsets purchased, EVS coverage and annual increase in EVS purchase are all useful measures for indicating the EVS “readiness” and the future EVS
demand, these measures are not sufficient in explaining the actual usage of EVS in specific schools, nor the level or the type of EVS adoption.

The following variables are used in estimating the actual usage in 2013-14:

- Module coverage (% of active modules where EVS was used)
- Programme coverage (% of active UG or PG programmes where EVS was used on at least one module)
- Staff coverage (% of FTEs who used EVS in their teaching)
- Student coverage (% of UG students who used EVS in at least one of their teaching sessions).

Table 3 shows the estimated values of the aforementioned variables in different schools, where the value ranges are using the following scale:

- 1-10% - very low
- 11-30% - low
- 31-70% -medium
- 71-90% - high
- 91% and above - very high.

<table>
<thead>
<tr>
<th>SBU</th>
<th>Modules</th>
<th>UG Progs</th>
<th>PG Progs</th>
<th>Staff</th>
<th>UG Students</th>
<th>Trend</th>
</tr>
</thead>
<tbody>
<tr>
<td>BS</td>
<td>very low</td>
<td>very low</td>
<td>none</td>
<td>very low</td>
<td>very low</td>
<td>↓</td>
</tr>
<tr>
<td>CA</td>
<td>none</td>
<td>none</td>
<td>none</td>
<td>none</td>
<td>none</td>
<td>•</td>
</tr>
<tr>
<td>CS</td>
<td>low</td>
<td>very high</td>
<td>low</td>
<td>low</td>
<td>high</td>
<td>↑</td>
</tr>
<tr>
<td>EDU</td>
<td>low</td>
<td>medium</td>
<td>low</td>
<td>very low</td>
<td>low</td>
<td>↑</td>
</tr>
<tr>
<td>ET</td>
<td>low</td>
<td>medium</td>
<td>medium</td>
<td>low</td>
<td>medium</td>
<td>↑</td>
</tr>
<tr>
<td>HSK</td>
<td>very low</td>
<td>medium</td>
<td>medium</td>
<td>low</td>
<td>low</td>
<td>•</td>
</tr>
<tr>
<td>HUM</td>
<td>very low</td>
<td>medium</td>
<td>none</td>
<td>very low</td>
<td>low</td>
<td>↑</td>
</tr>
<tr>
<td>LAW</td>
<td>none</td>
<td>none</td>
<td>none</td>
<td>none</td>
<td>none</td>
<td>↓</td>
</tr>
<tr>
<td>LMS</td>
<td>medium</td>
<td>medium</td>
<td>low</td>
<td>medium</td>
<td>medium</td>
<td>↑</td>
</tr>
<tr>
<td>PAM</td>
<td>low</td>
<td>medium</td>
<td>none</td>
<td>low</td>
<td>medium</td>
<td>↑</td>
</tr>
</tbody>
</table>

Table 3 EVS usage in 2013-14
The values in Table 3 are estimated using the information obtained from Programme Tutor and Student Representative surveys, interviews with the EVS champions, School Associate Deans for Learning and Teaching as well as the information from SAMs and Academic Registry on the total number of programmes, modules, staff and students. Not all of the information was available but regardless of the missing data, the information provided was sufficient for estimating the adoption state.

The “trend” variable which estimated the difference in the usage compared to the previous academic year (2012-13) was derived from the values of the four variables (where present) and the information provided in the iTEAM report for 2012/13. These values show that there were four trends in the level of EVS usage in 2013-14:

1. Slow increase (CS, LMS and PAM)
2. Slow decrease (BS, ET, EDU,HUM)
3. Rapid decrease (LAW)
4. No change (CA and HSK)

The characteristics of the adoption and the specific reasons for increase/decrease in use in individual schools are summarised in the following table.

<table>
<thead>
<tr>
<th>SBU</th>
<th>Brief Summary points regarding recent trends and current practice in EVS use</th>
</tr>
</thead>
<tbody>
<tr>
<td>BS</td>
<td>Anecdotal evidence from the EVS champion, estimates from the ADLT and information from the students' survey indicates a sharp decrease in the number of users due to a number of factors. These include mixed experience for some module teams, with a perception of less active support and encouragement from some of the champions and a perceived lack of central IH and local support.</td>
</tr>
<tr>
<td>CA</td>
<td>There have been pockets of interest but there is no top down support to drive EVS use. No early adopters have emerged. It is not considered to be suitable for the subject by many staff.</td>
</tr>
<tr>
<td>CS</td>
<td>A slow increase in use by staff and nearly 100% UG student coverage at levels 4 and 5. EVS are used in a combination of formative and summative activities, with more summative use in 2013-14 compared to previous years. Barriers for further adoption are linked to subject matter and some difficulties in summative use.</td>
</tr>
<tr>
<td>EDU</td>
<td>Very slow growth and some decline in the past year in spite of a small group of enthusiasts. EVS are not seen as a useful tool for the subject, plus there are some issues with staff confidence in its use.</td>
</tr>
<tr>
<td>ET</td>
<td>Used by a small % of staff, but included on large core UG modules, so high coverage for students. EVS are used mainly in a formative way with the exception of one member of staff (EVS champion) who uses it summatively. There has been a drop in usage compared to last year due to a decrease in summative use &amp; some issues with technology. New local initiatives are in place to increase EVS use through L&amp;T grants and training of new staff members</td>
</tr>
</tbody>
</table>
| HSK | A reduction in use by L4 and L5 modules, but slightly more L6 and L7 modules now use EVS than in earlier years; slightly more programmes overall use EVS (60%). Use was
discontinued on one programme but introduced on 3 other programmes. Usage was only in a formative way. Issues with staff confidence will be addressed by providing local (programme level) support.

<table>
<thead>
<tr>
<th>Programme</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>HUM</td>
<td>Reduced adoption by staff who were using EVS primarily for summative assessment. Small cohorts, and technical issues were hindering wider adoption.</td>
</tr>
<tr>
<td>LAW</td>
<td>While the School policy initially embraced a widespread take up and purchase of EVS, the ongoing pedagogy was not always appropriate or reflected on and after some negative student experiences EVS use was discontinued for large cohorts in 2013-14.</td>
</tr>
<tr>
<td>LMS*</td>
<td>An increase in HES (new adopters in Sport Studies and N&amp;D); slight decrease in Psychology. Both formative and summative use was evident with a high proportion of HES modules using it in a summative way. Pockets of mature use are evident (Biosciences), as well as new users (Sports Studies and N&amp;D), and a &quot;deep and narrow&quot; embedding pattern in Psychology. *No information available from Pharmacy</td>
</tr>
<tr>
<td>PAM</td>
<td>A slow rise in use by staff and 100% L4 student coverage; &quot;Deep and narrow embedding&quot; means that a small number of core staff are committed to using EVS regularly. Perceived additional effort required and/or change in pedagogy is preventing wider adoption.</td>
</tr>
</tbody>
</table>

Table 4 Summary of school adoption and usage in 2013-14 compared to previous years

Based on the characteristics of individual schools’ adoption and usage summarized in Table 4, the following findings were observed:

1. Slow increase in usage in some STEMM disciplines (CS, PAM and LMS), and a decrease in non-STEMM disciplines (LAW, BS, HUM, and EDU)

2. Mixture of formative and (low-stake) summative use in most of the STEMM subjects, and mainly formative use in non-STEMM subjects

3. The main barriers to wider adoption were:
   - Difficulties experienced in summative use (BS, HUM, ET)
   - Issues developed with staff confidence (LAW, EDU, HSK)
   - Considered unsuitable for the subject (CA, EDU)
   - Greater effort required including changes in pedagogy (PAM, BS)
   - Perceived lack of IH or local support (BS)
   - Small cohorts where academics know their students personally and encourage questions and contributions (e.g. HUM) thus leading to EVS being redundant
   - An initial under-estimation of the time it would take to develop confidence and proficiency and to see a reduction in teaching and assessment load (BS, LAW)
A comparison between Table 1 and Table 3 indicates that the EVS “readiness” in specific schools was not always a good indicator of the actual usage, with the differences observed in the following cases:

- The very high “EVS coverage” in ET (1760 EVS handsets/ 760 students) and the slowdown in staff usage might indicate less or no demand for the new handsets in 2014/15.
- In PAM, slow decrease in EVS coverage but slow increase in actual usage might indicate a need to purchase more handsets.

4.2. Examples of developing good practice

In this section we present examples of good practices, which were not mentioned in the earlier reports.

- Experienced teachers and technology adopters supporting the use of EVS with large core cohorts in early years of undergraduate programmes resulted in an overall positive student experience. Good examples included practice in CS, PAM, ET, LMS.
- Active and committed support and engagement by the local EVS champions, who are themselves the prime users of technology, supports their peers. Good examples included practice in CS, LMS-HES, LMS-Psychology, ET.
- Central support should not be limited to training and the equipping of the classroom, but also and very importantly extend to the sharing of good practice and new ideas across different schools. An example of this was the bi-monthly EVS champions meetings organized by the LTI.
- The scholarly approach to technology adoption by the local Learning and Teaching workshops and the provision of regular user conferences and staff training all supported users and especially the small pockets of local adopters. Good examples included practice in BS, ET, HSK.
- Placing the main focus on the “affordances” of the technology, i.e. exploring EVS for interaction, engagement and conceptual understanding, and less on the “100+ new things to do with EVS” approach, developed thoughtful and repeat engagement in users. Good examples included practice in LMS, CS.
- When the ADLTs led on the pedagogical consistency, local engagement was extended. Good examples included practice in HSK where the ADLT’s approach invited proposals on how the EVS will be used.
- The establishment of a core database of questions per subject that could be re-used or adapted by the new users. This was especially useful for the non-STEMM subjects (e.g. in HUM, LAW) where historically objective tests have been under-used but was developed by users in CS and ET too.
5. Discussion points

In deciding to invest in large-scale technology adoption it has been shown in recent research that certain critical factors point to a successful embedding of technology which is more likely to be sustainable. The findings recorded in the authors’ report from the EEVS project as part of the JISC Assessment and Feedback Strand B programme remain valid and are reinforced by the current work which has explored in more detail the nature of the embedding of EVS technology.

Top-down management support was known to be one of the critical success factors for successfully introducing new technologies to the school; the importance of leadership is now not only evident at the institutional level but seen as essential at the school and departmental level too. It is here that local budgets are decided, staff workload is allocated, staff development is prioritised and pedagogic decisions are made for programmes. The areas of responsibilities with respect to technology adoption between the Schools, the Centre and Information Management should be clearly defined, with the Centre overseeing the implementation across different schools and enabling and promoting the sharing of good practices. The importance of this for supporting technology for learning has already been shown in the 2012 research into the embedding of technology into universities.

‘Availability of TEL support staff remains the leading factor in encouraging the development of TEL, followed by central university and school/departmental senior management support, which have overtaken availability and access to tools in the rankings.”

An additional hallmark of successful embedding of technology identified here has been the existence of a core of innovators and early adopters who are willing to engage with their local colleagues in sharing the potential of the technology. Whether the trend for technology adoption within the classroom develops fast or slowly it is the peer support for colleagues at a local level in developing their pedagogy and scaffolding their use of technology to enhance learning, which has been shown to be crucial to the impact and embedding of EVS. The enthusiasm, commitment and competences of the EVS Champions, the local leaders from each academic school, for using EVS handsets in their own teaching and assessments have proved to be invaluable, where these ‘early adopters’ of the technology have provided essential pedagogic and technical direction to support other local users.

One size does not of course fit all users and it has become evident that some academic subjects are less suitable for EVS use, although not as many as assumed initially it might be unsuitable. Additionally the particular handset technology chosen for use at Hertfordshire, Turningpoint™, was not found to be easily compatible with the large Mac user-group. A key lesson learned over the past three to four years is that the process of adoption requires more time and effort invested initially for the meaningful fitting of the technology to one’s teaching practice, but less so in every subsequent usage period.

In the JISC Assessment and Feedback Strand B EEVS project the focus was primarily on the quantitative and qualitative evidence from the students’ experience. In this 2014 evaluation the concentration has been on understanding the trends of usage and adoption across different

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academic schools. A pattern was discerned here however which showed how students were driving technology adoption. The students who used EVS successfully have been requesting its use for other modules, years or Schools. These requests, emanating through either Programme Committee Meetings (PCMs) or via Student Feedback Questionnaires (SFQs) could in future be captured in a more formal way, and used as another means to justify the investment. This could be facilitated in future by having more feedback from the Student Representatives (SRs) and Programme Tutors (PTs) in general technology adoption scenarios and including this during the planning and introduction of modules and new programme validation.

The main limitation of this study is the lack of availability of specific usage data in some cases, resulting in the estimates from ADLT and EVS champions being used for assessing the state of the EVS adoption is specific schools. This suggests the need for the SBUs to record the use of, not only EVS, but other learning technologies, as only then the scholarly approach to adoption and use of technologies for learning will be enabled.

6. Future requirements for supporting EVS use

The immediate future of classroom technologies such as EVS offers two main directions. Firstly, there is the continuation within the university of handheld devices which are loaned or given to the students, now that the classroom infrastructure is in place and stable. This is a low-cost method that has been shown to be used easily and flexibly. The other options for classroom polling, which are currently being promoted by, for example, publishing companies or which use online application providers such as Poll Everywhere™, rely on sufficient wifi availability in the teaching rooms and/ or mobile phone signal strength/network availability and capacity.

Although current wifi and mobile phone capacity is not yet sufficient for large-scale use involving large numbers (i.e. 100s) of simultaneous respondents, it is anticipated that the capacity issue will present few barriers for adoption in future, and that the future of the classroom response systems is inevitably linked to the widespread student use of mobile technologies. Looking further ahead⁴ it appears likely that the use of voting systems for formative and summative use whether facilitated via EVS or mobile technologies, will be integrated with the ‘learner analytics’ provided by a central LMS.

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Glossary

ADLT  Associate Deans for Learning and Teaching
APO  Academic Partnership Office
BOS  Bristol Online Surveys
BS  Business School
CA  School of Creative Arts
CS  School of Computer Science
EDU  School of Education
EEVS  Evaluating Electronic Voting Systems Project
ET  School of Engineering and Technology
HES  Department of Human and Environmental Sciences
HSK  School of Health and Social Work
HUM  School of Humanities
IH  Information Hertfordshire
LMS  School of Life and Medical Sciences
LTI  Learning and Teaching Institute
N&D  Department of Nutrition and Dietetics
PAM  School of Physics, Astronomy and Mathematics
PCM  Programme Committee Meeting
PG  Postgraduate
PT  Programme Tutor
SAM  Senior Administrative Manager
SBU  Strategic Business Unit
SFQ  Student Feedback Questionnaire
SR  Student Representative
STEMM  Science, Technology, Engineering, Maths and Medical subjects
UG  Undergraduate
Student Progress Dashboard Staff View:

Student Progress Dashboard Student View:
UNIVERSITY OF HERTFORDSHIRE

STEERING GROUP FOR THE JISC ASSESSMENT AND FEEDBACK PROGRAMME – ITEAM PROJECT

Notes of the Steering Group for the JISC Assessment and Feedback Programme – ITeam Project meeting held at 13:00 hours on Monday 9 June 2014 in 2J134, College Lane.

PRESENT: Dr Jon Alltree (Chair) (JA)  Professor Di Martin (DM)
Dr David Ford (DF)  Dr Helen Barefoot (HB)
Ms Julie Vuolo (JV)  Ms Shannen Rock (SR) (alternate for Ms Amy Washington, SU)

APOLOGIES: Ms Lisa Grey (LG)  Professor Peter Bullen (PB)

IN ATTENDANCE: Ms Elena Varela Fuentes (Clerk) (EVF)

<table>
<thead>
<tr>
<th>Minute</th>
<th>Subject</th>
<th>Discussion</th>
<th>Decision</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>11.0</td>
<td>Notes of the Last Meeting</td>
<td></td>
<td>The Notes of the meeting held on 13 December 2013 were approved as an accurate record.</td>
<td></td>
</tr>
<tr>
<td>12.0</td>
<td>Matters Arising from the Notes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19.0</td>
<td>Final Evaluation</td>
<td>Clerk to send the JISC Team Project Institution Story to SEEC</td>
<td>JISC Team Project Institution Story had been submitted to SEEC but had not yet been noted by the Committee.</td>
<td>Jon Alltree to request Ian Campbell, Chairman of SEEC for the JISC Team Project</td>
</tr>
<tr>
<td>22.0</td>
<td>Project Plan</td>
<td>JV/JA to encourage Schools to issue students with spare batteries for the EVS handsets</td>
<td>Completed.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>JA/JV to draw up a paper to take to a future SEEC meeting about moving to complete online submission</td>
<td>A paper had been submitted for consideration at the SEEC meeting of 11 March 2014. SEEC had agreed that issue of all work being submitted on line would be reviewed at a future date</td>
<td></td>
</tr>
<tr>
<td>27.0</td>
<td>Project Plan</td>
<td>JV provided a verbal update on the Project Plan: Electronic Voting Systems: A new three-year contract with the supplier had been agreed and was now in place at a reduced price per handset from last year’s, with supplier on-campus support. Responsibility for ordering handsets had now transferred to Schools with support from the Procurement team as required. It was expected that orders would be lower this year given that Schools were now entering their third year of procurement and would re reclaiming and re-issuing handsets. The issue of using mobile phone apps as an alternative to handsets was briefly discussed. There would be need for further testing of the wifi</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
to ensure the network is able to cope with larger scale usage.

Final Evaluation:

A strand of work was being carried out by Maria Cubric and Amanda Jeffries preparing a report drawing together the feedback from users and trends of use over the past 3 years. This would be a stand-alone report which would be included as an Appendix to the final project report and would include feedback from students and assessment of the technology.

There had been changes in the ways the voting system was being used, in particular it had been noted an increase in use of formative assessments.

Feedback received from students to date had been very positive, with comments that the system was ‘innovative, interesting and fun’; in particular students had appreciated the immediacy of the assessment feedback which they had found very useful.

Online Submissions:

A number of Schools were now engaging with the online submission system and were coming up to the end of the first year of use. There were some
practical issues needing resolution before rolling out use to the wider University, including concerns over increase in staff’s workload and the need for ensuring the grading criteria and marking schemes were correctly uploaded. Workshops scheduled to take place this term and in September 2014 for anonymous marking and on the use of the offline marking client would be helpful in this respect. Students had feedback that it would be beneficial to include students when putting together the marking criteria to ensure it is meaningful to students.

Questionmark Perception (QMP): There were some well documented challenges with the QMP system and the typical requirements were such that it proved very difficult to provide a robust and scalable support; ExamSoft was being explored as an alternative. Evaluation of QMP and ExamSoft was being carried out by the Future OLE project team, a 30-day pilot of ExamSoft during July had been arranged to fully evaluate functionality.

Rogo, the University of Nottingham’s e-assessment management system had also been briefly explored. Initial evaluation of Rogo indicated that this was quite a sophisticated system capable of evaluating the level of your assessment paper, with a built-in facility for
tagging and rating individual question.

It was noted that most online assessment systems would have benefits and drawbacks however running more than one system would not be manageable, further, should a decision be made to replace QMP, transition arrangements would be required. For business continuity reasons, QMP would continue to be used for the time being.

Student feedback was being collated on their experience using QMP which would be collated with the staff feedback and added as an Appendix to the final project report.

| 28.0 | **Project Closure arrangements** | The i-Team Project would draw to a close on 30 June and this would be the final meeting.

The final project report and financial report would be submitted to JISC once completed. JA confirmed that overall expenditure had been over the original estimate however the additional cost which had been on staffing had been covered by the University’s Learning and Teaching Institute.

After discussion, the Group agreed to recommend that the EVS and QMP User Groups should continue to work with the reconstituted LTI unit in order to embed activities in future, share good |

| **Decision:** | The final institutional story and the final project report would be submitted to be noted at SEEC to record closure of the i-Team project, successful completion of its aims and objectives and main outcomes |

| **Action:** | JV to circulate final report to members of the Steering Group |

| JA to submit final project report to SEEC |

| JA to submit final project report and financial report to JISC |
practices across the Institution, with a reporting line to the Online Learning Environment PMG.

Operationally, the student dashboard, online submission system and QMP would reside with the Online Learning Environment PMG, in terms of policy, these would reside with SEEC.

The Chair thanked the Group for their work during the past three years, noting special thanks to members of staff of the LTI and OCIO teams and to academic staff who had supported and engaged with the project, including Mark Russell for his involvement in the early stages.

The Chair expressed his gratitude in particular to Julie Vuolo for her excellent contribution to the project, and congratulated her on her new appointment as Associate Dean Learning and Teaching for the School of Health and Social Work.

| 29.0 | Any other business | There was no other business. |