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Looking Forwards Whilst Glancing Backwards: Institutional Deployment of Classroom Technologies

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Abstract

Over the last couple of years, the University of Bath has made a significant investment in a range of classroom technologies. Working in partnership with a programme to refurbish a large number of General Teaching Areas (GTAs) across the campus, the e-Learning team have emerged as the key service to provide relevant pedagogical advice on technology enhanced learning.

The introduction of an Electronic Voting System (EVS) during the 2008/2009 academic year was the first stage in the deployment of a range of technologies that now also encompass lecture capture, symposiums, visualisers and digital writing solutions. However, with the phasing out of chalkboards from GTAs, as well as differences in the new technologies available within such spaces, a number of challenges have arisen, which, in turn, have impacted on take up - both positively and negatively.

With a title inspired by Gilly Salmon, this paper will give an overview of how a number of pilot projects have been brought together to deliver a consistent and high quality service with the intention of continuing to enhance the student experience.

It will examine the variation in techniques and processes employed to drive initiatives forward, all of which have ensured that user needs have stayed central to the successes of the specific projects, and underpinned by a range of staff development approaches.

More recently, the e-Learning team have sought to build good working relationships with other institutions, with a view to sharing good practice and identifying synergies. This paper will also examine how these relationships were established, and explore some of the positive outcomes of collaborating with external colleagues.

The aim of this paper is to inform the incoming Head of e-Learning, Kyriaki Anagnostopoulou, on work related to Classroom Technologies at the University of Bath, and also serves, as a mid-year/interim report. An abstract with the same title as this paper has also been submitted for consideration for the 6th Plymouth e-Learning Conference¹.

Keywords: Classroom Technologies, Electronic Voting Systems, Lecture Capture, Effective dissemination, Staff Development.

¹ 6th Plymouth e-Learning Conference, <http://www2.plymouth.ac.uk/e-learning/>

1. Introduction

The notion of Classroom Technologies at the University of Bath has been around for some time. However, it was in mid-2008 when the e-Learning team really began to champion classroom technologies through the introduction of EVS with TurningTechnologies hardware.

The EVS pilot was well received, and with a nominated Project Lead in place, a range of working relationships and a web presence was established. Complementary technologies, such as a text messaging pilot, later became aligned with an overall approach, establishing similar reporting lines and dissemination practices.

However, it was clear from conversations around the university campus, that members of staff were becoming increasingly confused by the multiple routes of dissemination of key information, and the mixed messages that were often given out related to effective use of the technologies. Additionally, confusion arose as to what hardware and software was maintained and supported by the e-Learning team and Audio Visual Unit (AV).

At the beginning of the 2010/11 academic year, the author was appointed as the Project Lead for the Classroom Technologies initiative, which not only encompassed EVS but also Panopto, the lecture capture software, which had recently been moved onto a production server, ready for institutional deployment.

A **Project Plan** was written and approved by the Head of e-Learning, with the **Project Outputs** for this 2010/11 academic year are as follows:

- Establish suitable project infrastructure: LTEO website, Classroom Technologies blog, LT FAQs database
- Departmental / Faculty Externally Funded Projects or TDFs [n=1]
- Staff Development - contribution to the wider e-Learning programme through events, seminars and workshops.
- Research Articles [n=2] - to be located within the e-Learning section on Opus
- How To Guides [n=at least 4] - to be located on the e-Learning How To's blog
- Case Studies [n=4] - to be located on the e-Learning Case Studies blog
- Article reviews [n=4] - to be located on the Classroom Technologies Blog
- e-Learning Podcast episode [n=1]

The **Project Outcomes** were divided into two distinct stages,

“Phase 1 - Project initiation (Sept - Oct 2010), will draw together a number of existing resources - such as the EVS blog, SMS blog, Classroom Technologies blog - into one single resource. Furthermore, meetings will take place between the Project Lead and key stakeholders such as the Audio Visual team, colleagues in academic Departments as well as external suppliers where appropriate.

Phase 2 - Project development (Oct 2010 - July 2011) is intended to establish a community of practice at the University of Bath around the effective use of Classroom Technologies and learning design to enhance the student experience. This community of practice will help inform the future developments of Classroom Technologies at the University of Bath.”

Aligned to this, a set of Project Outputs for the 2010/11 academic year were formalised², and a list of aims for the year were established as follows:

- Evaluate the effective use of classroom technologies to enhance learning and teaching at the University of Bath.
- Foster the emergence of a community of practice around the use of classroom technologies
- Capture and disseminate good practice in the use of classroom technologies at the University of Bath
- Feed into discussions around the technologies installed in General Teaching Areas (GTAs).

The key dissemination mechanism for this new initiative was seen to be the Classroom Technologies blog³, building upon previous blog based approaches. Key items of interest to the academic community could in turn be highlighted through either the Learning & Teaching Enhancement Office website or the University of Bath Internal website⁴.

The EVS in particular has been enthusiastically adopted by a number of colleagues who have used it to support Departmental and wider University objectives to increase levels of feedback students receive over the course of their studies, as outlined in the institutional Learning & Teaching Strategy⁵,

“Seek innovative ways to use e-learning in the support of enhancement of assessment and feedback.” (p. 3)

It has also been key to draw from this statement the notion that classroom technologies form a core part of the innovation in e-Learning sought to enhance learning and teaching practices at the University.

2. The Technologies

Electronic Voting System

Since the beginning of the 2008/2009 academic year, the e-Learning team have been supporting a **TurningPoint-based EVS**. The EVS at the University of Bath now totals 400 handsets or *clickers*, which are available in bags of 40 or 80 *clickers*, accompanied by 1 USB RF receiver per bag. A smaller set of 2 bags of 32 *clickers* are held by the PGCE office in the Department of Education, and are for sole use of trainee teachers. The e-Learning team have a bag of 24 *clickers* which are used for training purposes. All *clickers* are of the ResponseCard RF model, which allow for closed answer responses of numbers 0-9 or letters A-J.

This hardware resides physically with AV, who focus on the administrative aspect of the EVS, focusing primarily on bookings, as well as maintaining the handset stock. The EVS bookings rate

² Classroom Technologies Project Outputs 2010/11, <http://drgn.in/eRCUqx>

³ Classroom Technologies Blog, <http://blogs.bath.ac.uk/classroomtechnologies>

⁴ University of Bath Internal Home Page, <http://www.bath.ac.uk/internal>

⁵ University of Bath Learning & Teaching Strategy – 2009/10 – 2011/12, <http://drgn.in/fpv4hr>

remains high, with any number of EVS bags going out at least once within a given day. Currently, the University of Bath does not operate a model, employed by other institutions, whereby students are in possession of a handset on long term loan.

The EVS hardware is underpinned by the **TurningPoint 2008 software** which works within Microsoft PowerPoint, and has been deployed to all PCs in GTAs, in the University Library as well as on PCs labs across the campus which are maintained by the University Computing Services, BUCS. Software installation on staff PCs can be requested through the BUCS website, and for laptops, can be downloaded from the Classroom Technologies blog.

The EVS is a tool for giving effective and immediate feedback to students. Additionally, it is an anonymous and formative feedback mechanism, which can be used to promote deep learning by students within a face to face content.

In addition to this primary/traditional form of EVS use, the e-Learning team are also beginning to pilot additional TurningPoint products to support learning and teaching.

- **TurningPoint AnyWhere** allows for polls outside of Microsoft PowerPoint
- **ResponseCard Anywhere** is a versatile form of the TurningPoint EVS encompasses a receiver equipped with an LCD screen, allowing for polling results can be displayed on a device in your hand. As such, no laptop is required, which makes this ideal for off-campus use. One such handset is currently on long-term loan from TurningTechnologies UK (Reivo Ltd.)
- With **ResponseWare Web**, lecturers can present a question during lectures and have students respond in real-time using a Wi-Fi or data connection. Additionally, ResponseWare can be used seamlessly in mixed environments alongside traditional ResponseCards.

ResponseWare Web can also be used in computer lab sessions for a range of purposes, including formative assessment and evaluation. This solution has already been piloted in the Departments of Computer Science and Economics⁶ at the University of Bath with some success.

The latest application to be released from the TurningPoint stable of software is their **PresenterWare** application. PresenterWare offers remote control of polling functionality within TurningPoint 2008 and TurningPoint AnyWhere from iPhone, iPad and iPod touch devices.

The adoption of non-TurningPoint 2008 EVS presenting software as low at present, but it is hoped that this will increase over time through wider awareness raising, and the use of such software in staff development workshops and University presentations.

Teaching related to EVS used has already been completed and presented at conferences by fellow colleagues at the University of Bath - Davenport et al., 2009⁷; Cliffe et al., 2010⁸; Bashforth et al, 2010⁹. All include contributions from the author of this paper.

⁶ Using ResponseWare in an Economics Unit, <http://drgn.in/a0AoqT>

⁷ Davenport J.H., Hayes A., Parmar N.R. (2009). The use of an Electronic Voting System to enhance student feedback. *In the proceedings of: 4th Plymouth e-Learning Conference: Boundary Changes: Redefining Learning Spaces.*, <http://opus.bath.ac.uk/12505/>

During the 2009/10 academic year, the author collaborated with colleagues in the Department of Computer Science to successfully secure £3,500 of funding from the HEA Information & Computer Sciences Subject Centre for an evaluative project entitled “Using Electronic Voting Systems with ResponseWare to improve student learning and enhance the learning experience”.

Lecture Capture

[Written by the author, some of the text below first appeared on the ‘Ramblings of a Remote Worker’ blog¹⁰. It has since been adapted for use within this paper. For a fuller description of Panopto at the University of Bath, please do read this referenced material.]

During the 2010/2011 academic year, the Audio Visual and e-Learning teams have been working together to support and enhance practical use of **Panopto** as another means of enhancing the student experience. This arguably is now the most popular classroom technology on campus, having surpassed the EVS in terms of reach and interest.

Lecture capture refers to a set of technologies that allow recordings of presentations to be performed with minimal effort from the users’ perspective, and relay those recordings to a given audience, either live or post event.

Panopto allows the simultaneous capture of audio, video – and any application used on screen, including Microsoft PowerPoint, which is still the most popular lecture delivery method. The software can also capture interactions, with or on, any device plugged into the PC including symposiums, visualisers and Blu-ray players. The content can then be distributed automatically to the web, to mobile devices including iPods as well as a range of other playback devices.

The key factors in piloting Panopto initially was that it was relatively inexpensive to get started, and that it was seen to be scalable longer term. The solution allowed for ‘off the shelf’ components to be used for recording purposes, utilising standard-build lecture room PCs.

Panopto itself allows for lectures to be captured to be captured in two different ways. First, recordings can be scheduled by AV to happen ‘in the background’ during a particular lecture. In its most basic form, Panopto captures the audio source from a desk mounted USB microphone along with interactions on screen, and any devices plugged into the PC. In some of the larger teaching rooms on campus, ceiling mounted cameras can capture the ‘talking head’. Importantly, the recording of the lecture happens automatically and unobtrusively to the presenter.

Alternatively, colleagues are able to download¹¹ the Panopto recording application onto their own (or departmental) PCs and record presentations incorporating input sources such as, off the shelf

⁸ Cliffe E., Davenport J., De Vos M., Parmar N. R., Hayes A. (2010). Using EVS and ResponseWare to Enhance Student Learning and Learning Experience. *Submitted to: 11th Annual Conference of Higher Education Academy Subject Centre for Information and Computer Science, 24-26 August 2010, Durham, UK. Higher Education Academy Centre for ICS.*, <http://opus.bath.ac.uk/18958/>

⁹ Bashforth H., Parmar N.R. (2010). The search for active learning: Lessons from a happy accident. *In: C-SAP e-Learning Forum: sharing materials and practice in the social sciences. HEA Subject Network for Sociology, Anthropology, Politics. University of Birmingham.*, <http://opus.bath.ac.uk/18900/>

¹⁰ Introducing Lecture Capture at the University of Bath, <http://drgn.in/fpPQLO>

¹¹ Where can I download the Panopto Recorder from?, <http://drgn.in/9bC7uA>

microphones or webcams. The user can control what is recorded, can pause or resume recordings and manage how and how it is distributed.

In both of the cases listed above, recordings can either be made available via a URL that can be access restricted in a number of ways. However, it was the integration with Moodle that has proven to be most popular, with recordings of lectures often available from a block within the Moodle courses for units within minutes of the lecture ending.

With a full service rolled out in September 2010, the University of Bath now pay for a supported Panopto service, though with servers hosted in house. Over one hundred lecture theatres have been enabled for scheduling recordings, with the cost per room stated at less than £100.

Some of the headline figures for the 12 month period – 18 January 2010 to 17 January 2011 – are as follows:

- 5364 hours of content have been watched, of which there were 33,133 views.
- 785 sessions (individual recordings) held on system
- 150 Moodle and non-Moodle folders of content created

The most active courses/users, in order of activity, are:

1. Department of Economics
2. School of Management
3. Department of Chemistry

Further data has been analysed a blog post entitled ‘Exploring Lecture Capture Stats’¹², during which the following commentary was presented.

“Whilst we’re some way off having every undergraduate and postgraduate lecture captured, the data presented above does indicate that the implementation of such a service was warranted and much needed. Indeed, whilst research varies on the real pedagogical value of capturing lectures for later playback — not to mention the contrasting data on lecture attendance as a result, between institutions) — it is abundantly clear that students are viewing recorded content and finding it an invaluable revision resource.”

Additional findings will be disseminated via the Classroom Technologies blog over the coming months, including the evaluation of a programme during semester 1 to live broadcast a lecture from one GTA to another, due to the shortage of space in the hosting lecture theatre.

Short Messaging Service (SMS)

An **EduTxt**-based SMS application has been utilised at the University of Bath for a similar length of time as the EVS has been around. Since this time, the project has been led by Geraldine Jones, e-Learning Officer in the Faculty of Humanities & Social Sciences.

¹² Exploring Lecture Capture Stats, <http://drgn.in/hybMIV>

The EduTxt online application allows users to send and receive SMS text messages securely from your desktop to a large group or single mobile phone instantly – potentially within a face to face context. With Moodle integration, **MoodleTxt**, lecturers have been able contact their students using Participant lists within Moodle courses.

Whilst the majority of use of this service at the University of Bath have revolved around Administration and Marketing, Geraldine Jones has published related to area in conjunction with colleagues in the Department of Education in a journal article¹³, which focused on the use of SMS within a first year undergraduate unit.

A participant on the e-Learning unit of the Programme for New Lecturers¹⁴ has recently utilised SMS to facilitate scenario based learning within a Masters level unit. However, it is clear that this activity still remains a niche three years into its deployment, and that learning and teaching related applications of the technology still remain relatively small.

It was the use of EduTxt at the University of Bath that led to the e-Learning team hosting the **Let's talk about txt! 6**¹⁵ conference in conjunction with EduTxt. With a keynote from Steve Wheeler from the University of Plymouth, the event which was attending by both internal and external delegates, focused on innovative uses of SMS in learning and teaching, marketing and student support contexts.

Visualisers

A visualiser is a flexible presentation tool, and is in the authors view, a 21st century take on the standard Overhead Projector (OHP) that has been the mainstay of lecture theatres for a number of years. The hardware can pick-up any kind of material (i.e. books, photos, 3-dimensional objects) quickly and easily, providing a high resolution output signal for video/data projectors, monitors, interactive whiteboards or videoconferencing systems.

Visualisers have been one of the mechanisms employed to convince lecturers to move away from chalkboards, which are being phased out across the campus as part of a wider programme to refurbish GTAs. Whereas material written on chalkboards can often be difficult to see from the back rows of lecture theatre, the output from visualisers can be projected and displayed, with magnification providing a more accessible form of learning. Additionally, and pedagogically speaking, lecturers can continue to address their students whilst facing them, as opposed to having their back turned whilst doing so.

However, criticisms of this approach have been reported, namely,

- Lecturers have had to change their teaching style to take into account the use of visualisers, rather than chalkboards. For example, due to the positioning of visualisers, lecturers often have to hunch over the hardware to write material, which can often be uncomfortable.

¹³ Jones, G., Edwards, G., and Reid, A. (2009) How can mobile SMS communication support and enhance a first year undergraduate learning environment? ALT-J Volume 17, Issue 3, pages 201 – 218., <http://drgn.in/dxiLyX>

¹⁴ PGCAPP unit options and PGCAPP Programme Specification, <http://drgn.in/f1fOeU>

¹⁵ Let's Talk About Txt 6, <http://drgn.in/hbckpS>

- With chalkboards it is possible to have multiples ‘trains of thought’ displayed concurrently with the ability to slides boards up and down the holding rail. With a visualiser, only one resource or artefact can be displayed at a time.

It given this evidence, it is clear that some work still remains to convince lecturers as to the pedagogical value of such an approach. This might take the form of a practitioner-led case study or similar which might focus on the benefits of using such a technology and good practice, along with a listing of some of the common pitfalls of using the technology.

Sympodiums

A sympodium is an interactive pen display which is connected to the computer at the front of a range of seven of the larger teaching rooms around the university campus. Utilising **SMART Podium ID350**¹⁶ hardware, it allows for annotation of a range of software in digital ink, such as Microsoft PowerPoint slides, websites and multimedia files, including YouTube videos. The hardware works in conjunction with the **SMART Notebook 10**, the same software that is used with the even smaller number of interactive whiteboards on campus.

However, with such a small number of such devices around campus, it has been difficult to engage the academic community in the use of such hardware, and as such it remains a niche. For example, with such devices only available in larger rooms, lecturers have not been keen to commit the time required to learn how to use the technology, if it is not in every room they teach in.

Digital Writing

Over the last couple of years, there has been a growing interest in **Papershow**¹⁷, a digital writing solution that enables to instantly display handwritten notes from paper via PC to projector. It has become popular in those settings where sympodiums are not available in rooms.

Unlike the range of hardware and software described within this paper so far, lectures must buy the technology themselves for long term use, rather than it being supplied by either the e-Learning team or AV. With the relatively low cost of the technology – less than £100 on Amazon.co.uk¹⁸, at the time of writing – Papershow was deemed a technology that would be difficult to support administratively by AV on an ongoing basis.

However, the e-Learning team has some Papershow kits that can be lent out to colleagues and Departments on a short term basis, on the condition that a reflection on their experiences is written for the Classroom Technologies blog. This approach has proved successful to date¹⁹ with participants

¹⁶ SMART Podium ID350 interactive pen display, <http://drgn.in/ep2fz9>

¹⁷ Papershow, <http://www.papershow.com/>

¹⁸ Papershow Starter Kit on Amazon.co.uk, <http://drgn.in/hGus2Z>

¹⁹ “Put Down Your Point and Pass The Pen On”, a reflection on Papershow use by Dr. Alessandro Narduzzo, <http://drgn.in/gOCT19>

on the e-Learning unit of the Programme for New Lecturers²⁰, being those lecturers expressing most interest in the technology.

3. Support Teams and Resources

Three teams within the university have been central to the success of implementation and continued enhancement of use of the range of Classroom Technologies that have been deployed across the university campus.

For the majority of the classroom technologies, AV lead and support the service, dealing with the range of technical issues that have come to the fore during and since Panopto's deployment across the institution. The exception is the TurningPoint 2008 EVS software, where the e-Learning team provide support and training.

For both EVS and Panopto, the AV booking staff coordinate the bookings procedure through the AV website²¹. Sympodiums and visualisers in those GTAs that have them installed do not need to be booked and can be initiated on arrival of staff.

With hosting Panopto in house, as well as supporting software to make EVS, visualisers and sympodiums *work*, it is inevitable that colleagues in Computing Services have been called upon to for server installation and maintenance, as well as scheduling software deployment. Their contribution to enabling Classroom Technologies across campus is invaluable.

4. Dissemination Practices

A number of dissemination routes have been employed to enable maximum coverage of the classroom technologies related work underway at the University of Bath.

- **Classroom Technologies blog**²² -This is the main point of contact for all this related to the technologies listed above. Through, the e-Learning team disseminate a range of practitioner-written Classroom Technologies-related case studies, as well as, identifying synergies between such technologies and encouraging lecturers to take advantage of this. Any posts to this blog are automatically *tweeted* via the Twitterfeed service to the team @eatbath²³ Twitter account.
- **Learning Technologies FAQs**²⁴ provide answers to a variety of questions often asked by users. It is through the continued development (and evaluation) of such a resource, that the focus for this team can encourage lecturers to enhance their pedagogical practice.

²⁰ PGCAPP unit options and PGCAPP Programme Specification, <http://drgn.in/f1fOeU>

²¹ Audio Visual Unit: <http://www.bath.ac.uk/bucs/services/audiovisual/>

²² Classroom Technologies Blog: <http://blogs.bath.ac.uk/classroomtechnologies/>

²³ @eatbath on Twitter: <http://www.twitter.com/eatbath>

²⁴ Learning Technologies FAQs: <http://www.bath.ac.uk/learningandteaching/ltfaq>

- **Presentations** – Numerous presentations, based on much of the material appearing in the Classroom Technologies blog, have been delivered since the beginning of the academic year. For example, the author has delivered presentations on Panopto colleagues in UKOLN, as well as participated in an HEA Subject Centre-based online session on behalf of colleagues in the Department of Chemistry.

These have been followed by a similar presentation, including EVS, ESML Away Day in January 2011. Further afield, the author spoke²⁵ at the M25 Learning Technologies Group meeting at the London School of Economics (LSE) in November 2010 on the steps taken to operationalise and supporting Classroom Technologies at the University of Bath.

5. Staff Development

Classroom Technologies related staff development has focused on a small number of key routes. The Classroom Technologist blog and FAQs contribute to a range of staff development workshops, including the flagship ‘Using Technologies for face to face teaching’ workshop²⁶.

In particular, this workshop allows participants to gain hands-on experience at developing learning activities using the range of technologies described above. Through the discussion and evaluation of a range of University of Bath-based case studies, participants are given the opportunity to discuss some of the issues that need to be considered when implementing these technologies in teaching.

More recently, the author has been liaising with the UK distributors of chosen solutions - EVS (Reivo Ltd.), symposiums (Steljes Ltd.) - to establish sound mutually beneficial working relationships. This has been evident through the successfully run **TurningPoint 2008 Masterclass**²⁷, which is co-delivered with a TurningPoint Account Manager, and free of charge to the University. Whereas, the author is able to contextualise use of EVS across the University campus, the specialised external trainer is able to help visualise for lecturers as to what they might use the EVS for, and how they would use the associated software to get there. Feedback from these sessions has been immensely positive.

Inevitably, a small number of one-to-one training sessions also take place, primarily in the area of the EVS. Often, several colleagues from a single department express an interest within a short space of time, leading to an ad hoc, but tailored, group workshop.

6. External Engagement

In January 2009, the author collaborated with colleagues at other Higher Education Institutions (HEIs) to found the Engaging Students Through In-Class Technology (ESTICT) Special Interest Group (SIG)²⁸. ESTICT is a UK network of education practitioners and learning technologists interested in promoting good practice with classroom technologies that can enhance face-to-face teaching.

²⁵ 7 Steps to Operationalising and Supporting Classroom Technologies, <http://drgn.in/hjsdQX>

²⁶ Using technologies in face-to-face teaching, <http://drgn.in/gcClSx>

²⁷ <http://drgn.in/b3iHjx>

²⁸ ESTICT Online Community, <http://estict.ning.com>

Having secured funding from the Higher Education Academy (HEA), three events have run to date which the author has attended in his role as a steering group member. The most recent event, in November 2010, was hosted at the University of Bath²⁹, which saw over fifty internal and external delegates arrive on campus for arguably the most successful event to date.

Three of the four mid-morning short presentations were delivered by practitioners at the University of Bath, which provided an excellent opportunity to showcase the Classroom Technologies related work that has been happening locally. The event also enabled the e-Learning team to engage more widely with likeminded colleagues from across the HEI sector, with the aim of identifying common areas of interest. This event has already led to one collaboration between colleagues at different institutions.

During the 2008/9 academic year, the author represented the e-Learning team on the JISC-funded EVA4All: Electronic Voting Analysis and Feedback for All project based at the University of Edinburgh, which examine an EVS-neutral solution “that will allow its use in many FE institutions irrespective of the underlying VLE and clicker-loan schemes in place, closing the feedback loop on this increasingly relevant mode of teaching and learning”³⁰. The outcomes of this work has already informed thinking related to bridging the gap the TurningPoint EVS Hardware and Moodle, the institutional Virtual Learning Environment (VLE). [*This is explored more fully in the next section.*]

A collaboration between the author and colleagues at City University London and Durham University led to a paper being successfully submitted to ALT-C 2010³¹, which focused on identifying potential learning gains related to the use of TurningPoint’s ResponseWare Web with learners. This collaboration was a result of the sound working relationship built through the ESTICT community, and it was clear that sharing of resources – such as staff development materials – led to better quality materials being provided to staff both internally and externally.

Additionally, the EVS related work described earlier in this paper has been presented at a number of external conferences including the 4th and 5th Plymouth e-Learning Conferences, C-SAP e-Learning Forum, and Higher Education Academy Centre for ICS 10th Programming Workshop.

Whilst much of the Classroom Technologies related work described in this paper is often internally focused, it is important to state at this juncture that it is externally facing. All of the resources created to support staff at the University of Bath – for example, the Classroom Technologies blog and the Learning Technologies FAQs – are available to colleagues outside the institution.

Support resources and techniques that underpin such innovations at the University of Bath, including engagement with the academic community, are being adapted and re-purposed for use. It is this open and transparent approach that this often led to collaborations with colleagues at other HEIs, undoubtedly with mutual benefit.

²⁹ ESTICT event resources, <http://go.bath.ac.uk/estictbath>

³⁰ EVA4All JISC Project, <http://drgn.in/hZIBN4>

³¹ ALT-C 2011 Paper abstract, <http://altc2010.alt.ac.uk/talks/15075>

7. Next Steps

Further to the conversation above, the author has outlined areas for consideration, which are in addition to the Project Outcomes listed above, and the Projects Outputs mindmap which appears on page 14.

As yet, neither the e-Learning team nor AV have reported any concerns related to the inability of staff to secure **TurningPoint-based EVS** hardware when it is required. Inevitably, the weeks leading up to the exam revision period seems to generate the largest number of bookings, but so far, supply is able to meet demand. Longer term, departmental ownership and management of EVS hardware might be considered, but as yet, this has not been raised by academic departments as a consideration.

Some colleagues have expressed an interest in utilising TurningPoint functionality for free text entry. With the current set of ResponseCard RF *clickers* this is not possible. However, the recent release of the ResponseCard NXT model of handset allows for such responses, as does use of the ResponseWare Web solution. It is possible that this is where the next explosion in use of EVS at the University of Bath lies.

Additionally, the author has recently been attempting to get the TurningPoint-Moodle integration functioning (on a test server) as it should and has been liaising with Reivo Ltd. as well as Turning Technologies USA to make strides forward in this. An oft requested feature of EVS users indicates that lectures would like to bridge the gap between the TurningPoint 2008 software and Moodle. This work would build upon the previously mentioned EVA4All JISC project, ensuring that any pilot of such functionality could be grounded on successes of similar functionality elsewhere.

As reported in the 'Exploring Lecture Capture Stats' blog post, which was discussed in part earlier in this paper, the **Panopto** server is performing well and as expected.

“Despite this increased in use, it is pleasing to report that the Panopto server was able to cope with this increase usage load and have been available to students through the revision period, without any problems. With 49,000 minutes of content viewed over a two week period in early January, any performance problems could have posed an issue.”

Additionally, HEIs are yet to establish robust copyright-related policies and consent forms (staff and student) for captured lectures, arrangement of releases as well as ensuring Intellectual Property Rights (IPR) is no longer a grey area that is confused or exploited. That said, some work has been undertaken in this area by the JISC³² and further discussions are ongoing between the e-Learning team, AV and the University Secretariat.

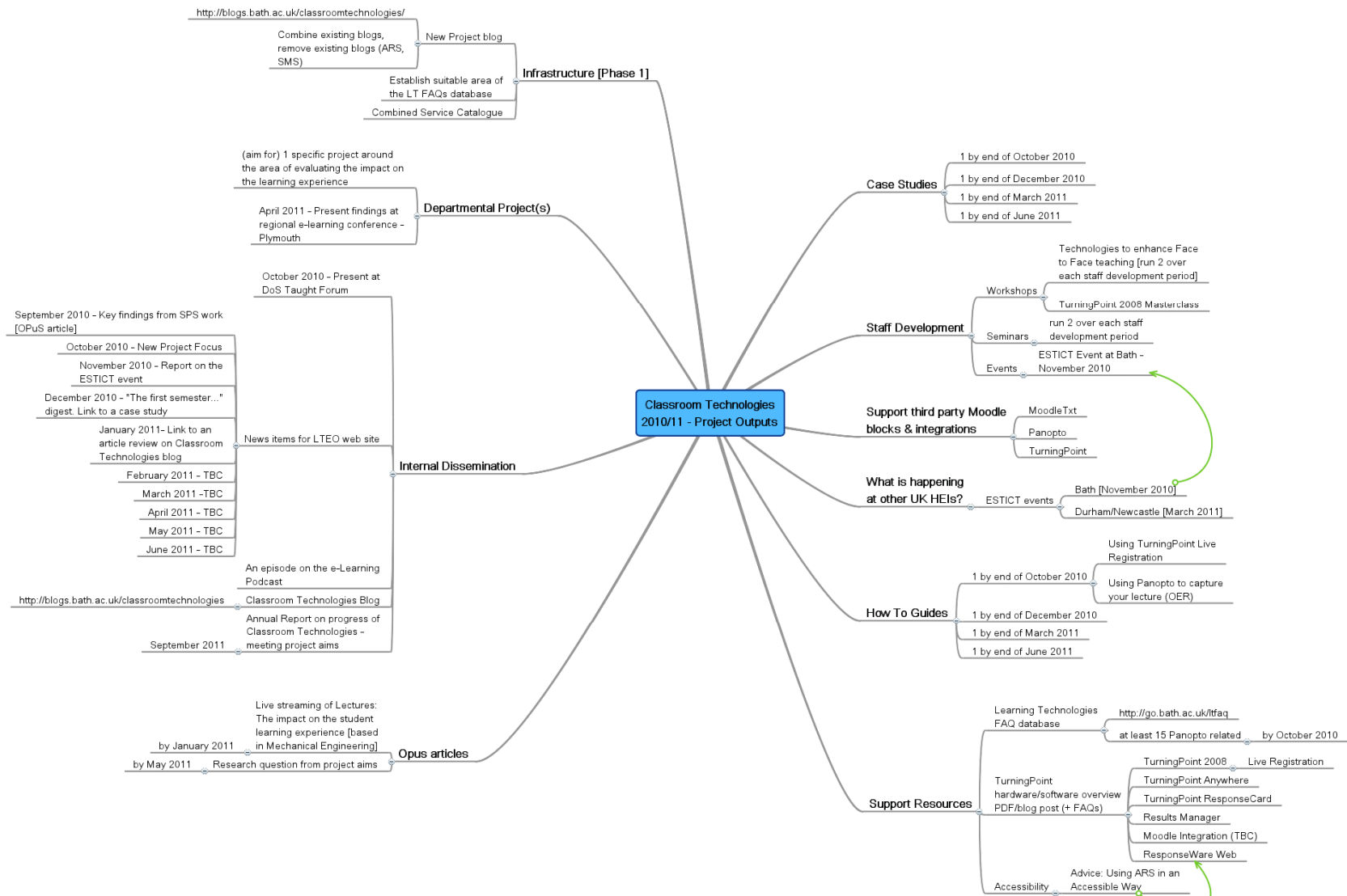
The use of the **EduTxt-based SMS application** is minimal, and a discussion may have to take place at the end of this academic year as to whether this is an area that the e-Learning team continue to support as part of the Classroom Technologies initiative, or whether responsibility passes onto BUCS, who continue to maintain it as a service. Essentially, this would mean that the e-Learning team no longer provide pedagogical support for its use and continued application.

³² Recording Lectures: Legal Considerations, <http://drgn.in/icXROx>

As described earlier, encouraging lecturers to consider using **sympodiums** within their teaching remains an ongoing challenge. The small number of such devices around campus remains the primary prohibitive factor to engagement. The take up of **visualisers** is increasing, and will continue to be monitored. With both of these technologies, it is currently difficult to measure use more than anecdotally, so an end of year survey to all staff might be considered when looking to build a more solid evidence base.

Whilst it is clear from collected usage statistics, using Google Analytics reporting, that both the **Classroom Technologies blog** and the **Learning Technologies FAQs** are both being used with good effect, it is key that resources and support materials continue to be created and maintained. Both of the aforementioned resources are drawn upon in staff development workshops and seminars, and trainers will continue to do so.

However, further exploration of the creating of pedagogically focused (“The Why?”) Learning Objects, utilising the **Xerte Online Toolkits** application for content creation, may well be warranted. A proof of concept is currently being created by the author, and additional work has been planned. In a parallel project, AV are currently creating a suite of screencasts and videos to give useful introductions to the technology currently available in lecture theatres (“The How?”).



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