

THE FUTURE AFFORDANCES

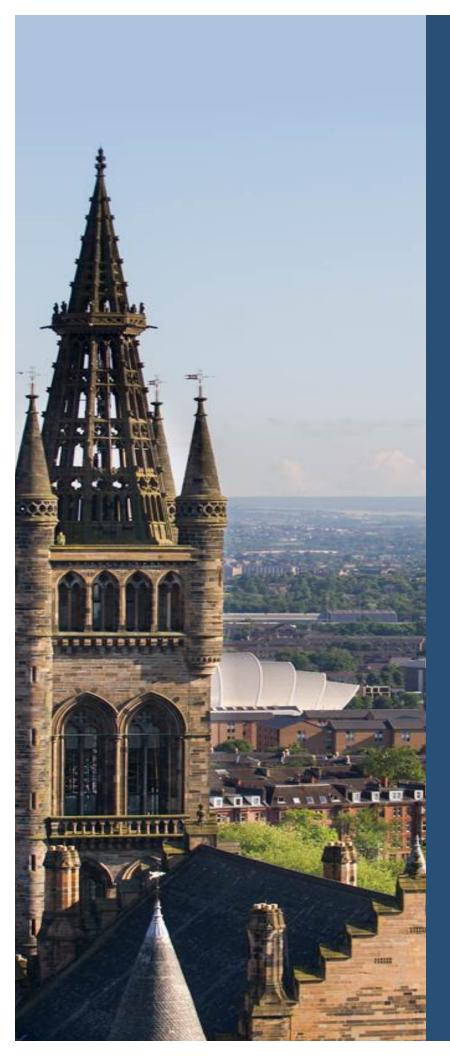
OF DIGITAL LEARNING AND TEACHING WITHIN THE SCHOOL OF EDUCATION



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SectionOne

Background Information

EXECUTIVE SUMMARY

The School of Education has deep roots within the educational traditions of the University of Glasgow and the surrounding environment of Scottish Higher Education. These roots include the heritage of Scottish initial teacher education (ITE), professional update, lifelong learning and research into education, policy and social justice. In keeping with the identity and ambition of a major international and research-led University, the School of Education has maintained and renewed these traditions by developing a wealth of fresh opportunities for those who wish to study with scholars of international reputation across a diverse spectrum of educational thought and practice.

Staff within the School already use a range of digital and online technologies to support learning and teaching, research and administration. Our focus on Technology Enhanced Learning and Teaching (TELT) suggests new pedagogies with a growing focus on emerging technologies and online instruction. This report sets out our current position on TELT and it looks to explore the future affordances of technology within the School.

This is not intended as a strategy document, but rather it provides background information and case study vignettes, for discussion and planning towards a future School digital strategy (see: Paper 4a – Consultation on a strategy for digital learning and teaching). Crucially, we will identify some of the key internal and external drivers, which will allow us to build digital resilience and capability across the School, as well as recommending how we can begin to build confidence and digital culture. We will identify the conditions that will lead to the successful enhancement of digital culture within the School through the establishment of a Digital Futures and Innovation Team.

STRATEGIC CONTEXT

The School of Education aims to be at the forefront of online teaching, learning and assessment by delivering an experience that makes effective use of emerging technologies for both on-campus (located) learning and online education students. Our approach to digital education and our use of innovative and emerging technologies must ensure that our students have a high quality *learning* experience, and that staff have a high quality *teaching* experience.

The University of Glasgow Strategic Plan, *Inspiring People Changing the World*¹ clearly sets out our ambition to become a world-class, world-changing university.

This vision is built upon three key principles:

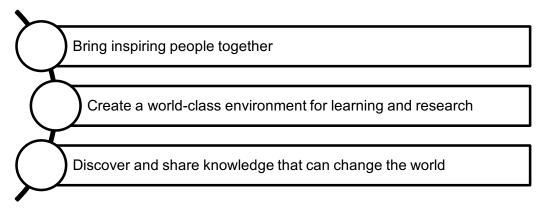


Fig. 1 Extract from the university strategic plan.

In supporting these principles, we will facilitate opportunities to embed digital approaches into all aspects of our continuous improvement (Quality Enhancement and Assurance) agenda. The 'digital concept' permeates all that we do and as such it needs to be afforded the attention that it deserves.

¹ Inspiring People, Changing The World http://www.gla.ac.uk/about/strategy/ (last accessed 10.02.16)



Fig. 2. And People, Place, Purpose source: University of Glasgow Strategic Plan 2015 – 2020.

Likewise, such approaches must be viewed as integral to learning and teaching at undergraduate and postgraduate levels. As the School begins to position itself and as it starts to take new direction, we need to decide what proportion of our activity needs to be 'in the cloud', for example, which programmes and courses could go online and which must be delivered face-to-face?

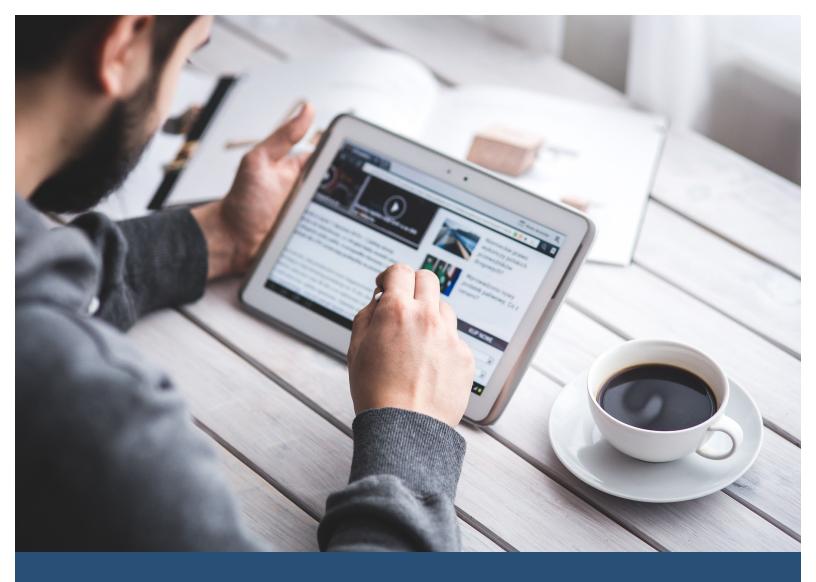
In looking towards the future affordances of technology, it is essential that we also consider the development of our physical campus. In exploring the use of digital technology to support learning, teaching, research and administration, it will be crucial to articulate our virtual work with our physical environment. It is important that we shape this environment to suit our future needs and *not* let the environment dictate barriers and constraints to our ambition.

It is inevitable that new technologies introduced in a new campus building can act as a catalyst for change. It is essential that we begin to encourage a disposition towards technology-mediated aspects of our work, before we make the transition into a new building.

The recent internal report on *Inspiring pedagogic innovation through innovative space design* (Fischbacher-Smith and Spaeth, 2015) described a similar expectation in the University of Iowa, where 3-day long training workshops were provided to staff on the use of specialist teaching spaces, equipped with new technologies. Subsequently, other workshops where then introduced gradually throughout the year. This type of mediated support is also apparent in The University of Manchester's lecture recording theatres, where cloud learning allows located teaching to meet virtually, regardless of time zone or geographical location. (Definitions on located, blended, online and cloud learning can be found on page 29).

There are examples from other institutions, too. The University of Deakin in Australia has realised that once this initial training has been delivered, 'just-in-time' support must be provided to facilitate the pedagogical use of the technology and to ensure that the equipment is in excellent working order. In speaking with people from The University of Glasgow, Monash University and the Australian Catholic University, there is general agreement that there are three main types of support – those who support IT hardware and software, those who support people via leadership and direction and those who support people as learning technologists, that is, people who can bridge the gap between the technological purpose and the mode of instruction (see technological, pedagogical content knowledge on page 19). We need to remember that teaching with technology has very little to do with the actual equipment and more to do with the agency between the teacher and the learner (Younie and Leask, 2013) as built upon the foundations of learning theory (Gardner 2006; Savib-Baden 2007; Wragg 2004). In other words, instruction and the use of the technology is central to learning.

In reality, this would suggest that the process of designing, using and evaluating the technology for located and/or online learning is a continuum of complex, interconnecting relationships between much bigger systems, where there are clear purposes and benefits to using technology (Kington *et al* and Beetham and Sharpe cited in Younie and Leask, 2013:pp128).



SectionTwo

Conceptual Framework

OUR THEMATIC PRIORITIES

We have identified four thematic priorities within our conceptual plan:

- 1. Website and social media technologies (including public engagement)
- 2. Staff perceptions of technology and IT Support
- 3. Future affordances of technology
- 4. Digital culture

These were determined by scoping the opportunities and challenges in building capacity, staff confidence in using digital technologies and in establishing an agile stance within the public domain – our outward facing information and how we engage with stakeholders, partners and members of the public through our website and through online social platforms. The opportunities and challenges were derived from consultation with staff within the School. These members of staff either have a key role in using technology to support their work or they have previous experiences from other institutions.

A Short Life Working Group (SLWG) was established to support the digital work stream. Our scope has grown beyond TELT and includes all aspects of technological participation within the School.

A series of internal discussion papers supplement this report (fig 3), each designed to focus on a specific theme or an aspect of that theme. These discussion papers outline our current position and offer recommendations for continuous improvement. This report directly addresses Thematic Priority 3: *The Future Affordances of Technology*, but it also acts as a linking document for all other papers and as a thought piece to inform our emerging digital strategy.

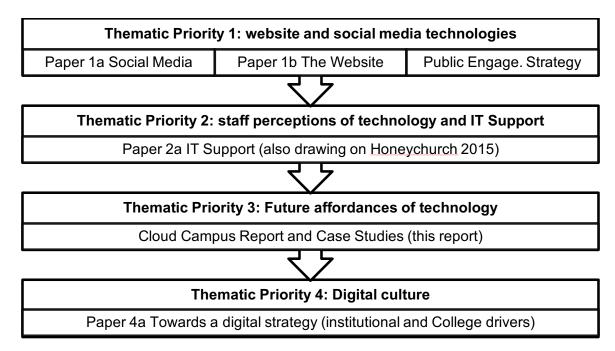


Fig 3. illustrates the conceptual plan framework.

In carrying forward Thematic Priority 3, we have collated a variety of experiential, research and evidence-informed case study vignettes, which demonstrate examples of success from Scotland, the UK and internationally. They explore infrastructure, support and professional update where this looks to be embedded in a culture that not only encourages digital capability, but actually allows it to flourish. In describing these vignettes, we are mindful that the background information gained from our review of the literature will influence and shape our thinking towards aspects of the content presented. We recognise that it will take time to embed a thriving and active digital culture into the School and that it will be for any emerging digital strategy to outline our preferred vision and approach.

There are many institutions offering rich student experiences via online and cloud learning. Those selected here have been identified either for their innovative approaches to TELT or because they have published evidence of success within the scope of this report. Those institutions mentioned include:

University of Manchester, University of Bradford, University of Leeds, Massachusetts Institute of Technology, Deakin University, University of Glasgow, Monash University, Australian Catholic University, Purdue University, Northhamptom University, De Montford University, The University of Edinburgh and Swinburne University of Technology.

This report includes vignettes or examples of excellent practice from each institution. It was intended that the basis of the report would be developed around three parallel strands:

- 1. To look towards other institutions in Scotland.
- 2. To look towards other institutions in the United Kingdom.
- 3. To look towards other institutions internationally (e.g. Australia and USA)

The focus was broad but not exhaustive. It explored:

- 1) How the physical learning environment connects to the virtual learning environment and to form concepts of challenges and opportunities;
- The instructional design which is used to allow the learner to fully interact with the intended nature of the course objectives, including typical experiences and behaviours of the learner when using cloud based or technology-mediated approaches;
- 3. When, where, how and why others develop, maintain and evaluate Massive Open Online Courses (MOOCS):
- 4. Methods of engaging and interacting with peers/students/staff/visitors who are not on the physical campus.
- 5. The use of social media as a construct for teaching and learning and for the purposes of public engagement, marketing and recruitment;
- 6. Approaches to creating in-house media and learning resources.

REPORT CONSTRUCT

In writing this report, we decided to adopt an approach which has theoretical basis formed on a set of case studies and on evidence gained from literature. The report is housed between these two components as illustrated in Figure 4. We will explore both in equal measure, but search for connections between the two. A literature search was undertaken, were sources were reviewed to determine their thematic relevance to the work stream conceptual framework. The literature permeates this report and is not held in isolation within a separate review.

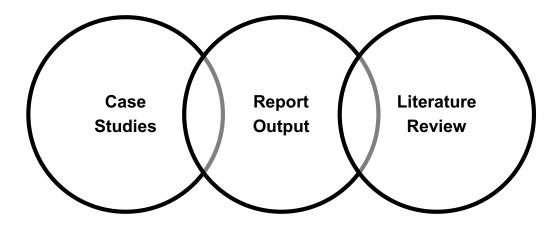
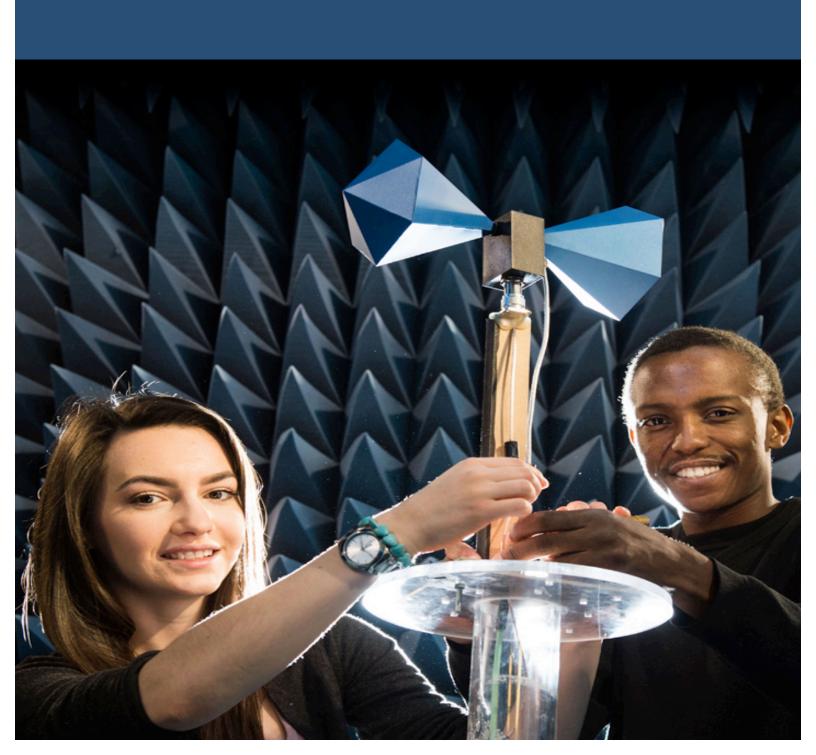


Fig. 4. The components that have informed this report.

During early conversations with people from both academic and professional backgrounds and from multiple institutions, we identified four emerging contexts in relation to our thematic priorities. We now refer to these as the *conditions for nurturing digital culture*. These conditions are not that dissimilar from the thematic priorities that underpin this report's conceptual framework. The ingredients required for effective enhancement of the digital culture needed to embrace TELT *and* the broader use of technology in daily business activity can be defined for further consideration.

SectionThree

Nurturing Digital Culture



CONDITIONS FOR NURTURING DIGITAL CULTURE

Hamilton (2015) has previously written via JISC, that cloud computing has already had an impact on research, teaching and professional administration within the education sector. This is not confined to higher education but has been applied more widely within schools and institutional settings around the world. In the UK, the widespread adoption of cloud based collaboration suites such as *Google Apps for Education* and *Microsoft Office365* are bringing transformational change to how we work. *Office365* has already been deployed in over 100 universities (including the University of Glasgow) and is now a core component in the Scottish Secure Digital Network – GLOW. This VLE platform is used in early years, primary and secondary schools throughout Scotland and is accessed daily by staff, pupils and parents.

The Research Councils UK (RCUK) has noted in the past, that a consistent cross-research council approach to cloud computing would be welcomed, as informed by individuals working in the industry. Hamilton goes on to propose that institutional practices and experiences with cloud technologies are still variable. He suggests that there is a need to come together to share experiences of what works, building capability in institutions and identifying areas where further intervention would be helpful.

There now arises a need to examine our current use of digital technology to support teaching and online modes of learning. Progress must be explicit within the cultural dimensions of the School.

Figure 5 shows the four conditions for nurturing digital culture. These conditions have been drawn via field observation within two universities – The University of Glasgow and Deakin University, Australia. In addition, these conditions are generally implied within the literature. The conditions are equal and no hierarchy is intended, though one could argue that people are the most important component. If one condition is diminished in any way, the distribution of parity either becomes static, problematic or it begins to break down.

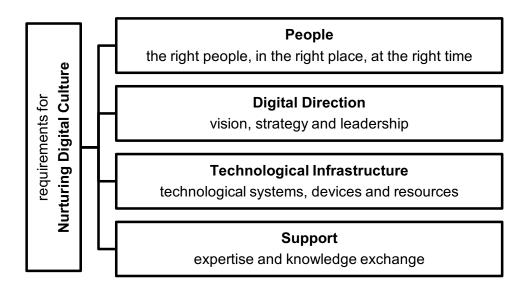


Fig. 5. The requirements for nurturing digital culture.

Much of the literature in this area is focused on our understanding of education technology, defined by Spector (2012) as the process of knowledge exchange, whereby technology is applied in a discipline for the purpose of enhancing or improving learning (2015:10). According to Knowles (1984) adult learners aspire towards autonomous learning. We need to encourage that through online modes of participation, where this also extends to engagement via online social technologies (Dunn, 2013; Siemens and Downes, 2006). Likewise, the procedural framework, or the process of instruction, is often established beforehand and can be routed in theories of learning (Watson, 1924; Piaget, 1963, and Vygotsky, 1978; cited in Dunn et al, 2015). We still have some way to go in understanding the most effective methods of supporting learning within remote or distance locations. We know that we want to develop rich cognitive skills, but we also want to build experience of active decision-making and problem-solving. Each of these contexts is a variable component within a broad continuum of activity. For example, through implementation of any digital strategy, one can start with infrastructure and support, but without people to drive innovation or the leadership direction to articulate strategy objectives, capability will be restricted. At best, it will be inconsistent with fragmented good practices where coordination is lacking. This is clearly not a sustainable model nor is it a model that is desirable.

We can describe our preferred model as an approach which focusses on those conditions:

- Developing our people the right people, the place at the right time; building
 capability and resilience for innovation, with investment in skills development and
 time for knowledge exchange.
- Strategic direction leadership, strategy and liaison of objectives from the centre, where leadership is strong and the people are given freedom to innovate and take managed risks with technology.
- Technological infrastructure the operational technology will realise the strategic direction and it is appropriate and proportionate to the task. The resources are available and ready when they are needed.
- TELT support is provided in advance and/or on demand when the agency between the teacher and the learner requires pedagogical dimensions, through the mechanisms of support where skills, experience and knowledge are not commensurate with the TELT related task.

Steve Wheeler, Professor of Education Technology at Plymouth University, concludes that culture is underpinned by digital literacies and that such skills are characterised through the interpretation and use of media and technology, acquired in turn through technology mediated practices (2015:169). This would suggest that digital culture is nurtured through process and experience and that it cannot be simply enforced into the workplace. Therefore, we must identify and create the opportunities that allow us to engage with technology with real purpose and definition. A recent field visit to three Australian universities (Deakin, Monash and the Australian Catholic University) provided a number of examples which illustrated this concept in reality. All academics and professional staff with whom we have spoken, saw digital responsibility as a core component of their work ethic. It was embedded within the cultural identity of each institution, though noticeably more so within Deakin, which prides itself in online and distance learning opportunities.

DEVELOPING OUR PEOPLE

Cheok and Wong (2015) produced a meta-analysis of the teaching characteristics of people engaged in the use of technology to support learning. They suggest that anxiety, self-efficacy and disposition are linked directly to teaching satisfaction. There are links between satisfaction and confidence in using technology to teach effectively. This in turn would also suggest that satisfaction would lead to increased experimentation and use of technological innovation in the classroom. However, this takes time and people must be given the freedom to evolve their teaching methodologies. A study of teachers across Australia several years ago, highlighted the urgency in creating professional contexts for online learning, including the knowledge exchange and sharing of effective practice between peers (Reimann *et al*, 2009).

Harris (2006) suggests that when developing blended learning courses, it is essential that the teacher engages in frequent dialogue about workload and that they dedicate time in providing preparation and support. Dunn *et al* (2015) would agree, stating that teachers need to be given room to innovate and take managed risk through creative approaches to workload planning. Based on a recent study within the University of Glasgow, the experiences of staff involved in the creation of blended learning courses were recorded; specifically related to the generation of purpose-located digital media within the virtual learning environment. Developmental progress was maintained by individuals who acted as champions in media curation. Goodwyn (2009) also describes the potential for teachers to lead by example and share their approaches with colleagues. Again, this capacity building scenario requires that local champions are given time and space to develop their approaches to TELT. By role modelling, we also pass experiences to our students. A lack of exposure to education technology and the emerging pedagogies within initial teacher education is likely to lead to the future teaching profession feeling unprepared (Blackwall, 2013).

We need to create an arena in which people can develop sufficient knowledge to be able to identify, design, implement and evaluate the use of technology to support their work. Mishra and Koehler (2006) describe these levels of knowledge and illustrate the concept as a Technological, Pedagogical and Content Framework. This has been used widely around the world as a tested model of knowledge acquisition for teachers. Equally important are the interactions between these bodies of knowledge and the professional development cycle e.g. workload must allow for update and experimentation with technologies which are *new* to the individual.

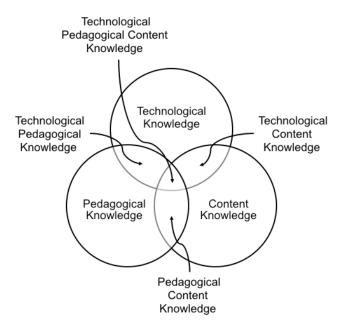


Fig 6. TPCF as illustrated by Mishra and Koehler (2006)

The Scottish Government, through consultation, is developing a national strategy for digital learning and teaching within school years' education. Teachers are recognised as "the facilitators of effective learning and sustained improvement" (2015:10). There are solid connections to Teaching Scotland's Future² and one suggested priority for action, is the dialogue between Government and ITE providers, seeking to embed digital learning and teaching into ITE programmes, in articulation with the General Teaching Council for Scotland (GTCS) professional standards for registration and professional update. Interestingly, the characteristics outlined in the consultation: leadership, access, curriculum and assessment and teacher confidence are not dissimilar to those described within this report.

² Teaching Scotland's Future http://www.gov.scot/resource/doc/337626/0110852.pdf (last accessed 10.02.16)

STRATEGIC DIRECTION

The empowerment of people as digital leaders is crucial to drive innovation and change and this is a founding principle described within our requirements for nurturing digital culture. Leadership must be commensurate with the focus of any emerging digital strategy and the desired culture needs to be set within the broader vision of the School. People are the agents of change but the School leadership team must seek to provide the climate in which the people can operate effectively. Leaders need to direct the use of digital technology, both as a means of supporting TELT but also as a key tool in supporting our objectives. The strategic direction needs to be captured between academic activity and professional activity. This means that 'digital' must move beyond learning and teaching.

Students studying initial teacher education need to be equipped to use digital technologies and understand their benefits and applications both for their own practice but also for their learners. If teachers feel confident in using technology, then they are more likely to adopt new approaches to teaching. Dunn (2012) describes scenarios of *learning* with technology and *teaching* with technology, where the line between the two relies on the power of influence between the teacher and the learner. This means that we need to operate in multiple spheres of opportunity, where digital concepts permeate:

- The graduate attributes with a focus on digital literacy, knowledge and skills;
- Excellent teaching and knowledge transfer via located, distance and cloud learning;
- Business activities e.g. accessing university systems, which allow us to do our job;
- Public engagement and information sharing, communication and marketing.

The relationship between each of these concepts cannot be ignored. They are all extracts of the emerging digital culture within the School e.g. they inform the original thematic priorities as outlined in the conceptual framework.

Spector (2012) suggests that culture across the international higher education landscape is varied. Culture can also vary between institutional constituents e.g. schools and colleges. This is interesting when we consider our four conditions. For example, within any one university, the central leadership, technological infrastructure and modes of support are usually the same, or at least are very similar in nature. The internal drivers differ when we look towards the people. For that reason, there arises a need to create an environment which allows for *transformational* strategic leadership, where the people themselves are empowered and have ownership over the vision and direction of the strategy. This approach can be an enabler or a barrier for success. When attempting to try something new, it is essential that time is spent to determine the destination and the journey that people will be expected to make along the way.

There are often unexpected results of implementing cultural change. For example, by introducing electronic forms of feedback, audio and visual recordings, this may also lead to changes in course design and teaching. It is therefore important to consider the whole picture and not simply the single, original intent.

Julie Laxton, a member of academic staff at the University of Leeds, suggests that understanding the benefits of mobile learning and 'selling a story' of positive impact upon practice is vital. Making the link between the technology and the pedagogy is central to success.

Julie Usher, a learning technologist at the University of Northampton concludes that cross team working can be a challenge and that change is often driven from asking the right questions. She describes a scenario where lack of data can raise questions on the ability to measure the student experience. This must act as a golden thread through everything that we do. She goes on to describe the principles of communication and the fine line between internal digital communication and external marketing and public engagement.

"There were two main drivers for mobile developments at the University. One was pedagogic and came from the Learning Technology team, who recognised the potential of mobile technology to provide opportunities for more flexible, situated and personalised learning. The other driver came from our Marketing team, who saw mobile development as a way to raise the profile of the institution, and make information more readily available to prospective students, parents and visitors."

Julie Usher, University of Northampton

Kyle Bowen, an academic from Purdue University in the United States, discusses the rationale of introducing new technologies into the classroom, where the intent must include real purpose. He suggests that we can determine this by asking ourselves five questions:

- 1. Does the mobile learning initiative alter the meaning of 'contact time' for staff or students in a significant way?
- 2. Is this an example of substitution e.g. is this transformational for students?
- 3. Has the mobile learning initiative achieved high level buy-in?
- 4. Who benefits from this mobile learning initiative? Who (or what) is marginalised?
- 5. What are the positive, demonstrable, benefits of going with mobile learning in your institution?

Likewise, Vavoula and Sharples (2008), citing Colley *et al* (2003), list four groups of attributes to consider:

- Learning process
- Location and setting
- Learning purposes
- Learning content

They conclude that consideration given to these four elements may be more productive in recognising purpose, than simply seeking to acknowledge what is formal and what is not. Cultural expectations, including the norms and barriers, vary from person to person and it is essential that focus groups and consultation capture feedback from a cross-section of the whole community. The people empower digital strategy and the leaders provide the people with a sense of direction.

INFRASTRUCTURE

The University of Bradford has a heavy focus on widening participation and to an extent, it has a larger proportion of mature students than most institutions. Mobile learning has been a priority for a number of years. According to John Fairhill (Mobile Technology Advisor), one of their key success points was the drive and leadership of senior managers within the university. He suggests that despite all best intentions, challenges will arise, and when they do, having someone with the influence to remove obstacles was essential in making progress. Bradford has explored a range of initiatives, many aimed towards supporting students via mobile services. For the purposes of this case study, we are going to look specifically at the lessons learned, rather than the actual projects themselves. The team have identified four lessons:

- The importance of coordination staff workloads, remit, and resources all present an initial barrier. The team concluded that central direction and strong leadership were instrumental in shaping their digital identity as a university. Changes would need to be made and this required careful planning and coordination.
- Re-iteration is key once a decision has been made, it is important to re-visit it
 and evaluate the impact that any changes or new work was having on staff
 workload and on the student experience. Teams and individuals need to be given
 freedom to make mistakes and to learn from them.

- Culture change can be challenging the people are important. Often, those who
 are the most enthusiastic about using technology are not always the best placed
 to evaluate the pedagogy, or to measure the impact on outcomes. There needs
 to be equilibrium. In driving cultural change, the best teams are those equipped
 with a range of experiences and skills but were individuals share a common
 ambition.
- The technological infrastructure needs to support the way that we wish to work, for teaching and also for research and collaboration.

Deakin University uses video conferencing technology to bring people together, despite challenges in geographical location. Used in meeting spaces or small group classrooms, the technology allows the use of virtual meeting points to share voice and visual communication as well as documents and browser based services. Figure 7 shows discussion between two campuses located across Melbourne at Burwood and Warrnambool. This particular conversation between three academics explored the use of online course design and instruction. Individuals use Skype for one-to-one calls, however the facility allows for larger audiences or multiple persons to engage simultaneously.

This virtual meeting technology can also be expanded to the lecture theatre or the seminar classroom (Figure 8). By using a camera system, distance learning students can 'dial in' to an active location session and participate in the discussion. When a student from another location presses a button to talk. The camera tracks them so that others can see who is talking.



Fig.7 Deakin University Video Conferencing Facilities



Fig. 8 Deakin University Camera Tracking Technology for blended learning

SUPPORT

The CloudMobile is a portable unit used by Deakin University, which accommodates state of the art media recording equipment (Fig. 9). The van moves between the various campuses and provides staff and students with an opportunity to record 'talking heads', to produce short films or to design and create other media as desired. The process is supported by dedicated staff who are able to teach others how to produce the media themselves. The van is equipped with a green screen for backdrops and a reader for those who wish to recite pre-written narrative. The emphasis is placed on teaching the academic the skills to do this themselves, rather than actually doing it for them.

This has proved very successful. There is no need for prerequisite experience or skills in digital media, as the TeachAssist staff will support people through the process. Typically, teaching staff will record short introductions to their courses. This is now becoming the norm. Students are also invited to present themselves as 'me in a minute' to their peers or to prospective employers when writing a digital CV.



Fig. 9 Deakin University CloudMobile Portable Media Recording/Editing Studio

TeachAssist is the name given to a team of learning technologists at Deakin University. They are located centrally on campus. Their role is to support teaching staff by demonstrating the latest tools and emerging technologies at a time and place that suits. The team builds capacity and seeks to rethink the curriculum through the use of educational technologies.

TeachAssist has been designed to provide easy access to the support needed to create inspiring and engaging resources and digital content. For example, the team will help staff in using technology such as the iPad to film an interview with a content expert. They will demonstrate how to make the most of online tools and emerging technologies to enhance existing courses. Through their drop-in hub – called the LifeSaver approach, the TeachAssist team also provides an on demand service to all members of staff across campus (Fig. 10)

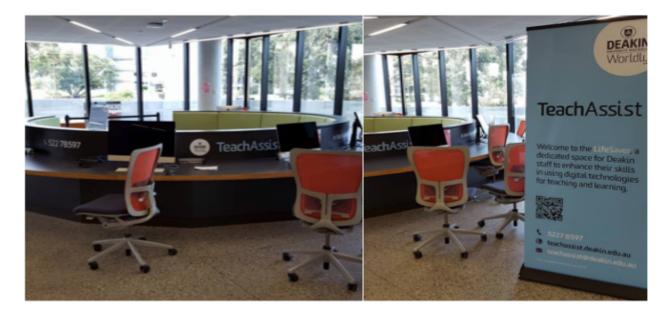


Fig. 10 Deakin University TeachAssist LifeSaver / staff training area

The eSolutions team serves Deakin's learning, teaching and research experiences with intelligent, future-driven solutions that anticipate and respond to arising needs. The team supports individuals, departments and faculties to collaborate more closely every day, across the full range of educational contexts through the use of engaging technologies. The eSolutions team regularly checks the equipment and functionality of technology within the teaching spaces and they are on hand to provide immediate assistance should something go wrong.

Typically, the team will respond to enquiries on:

- Usernames and passwords
- Internet and network services
- · Emails and calendars
- · Videoconferencing, phones and audiovisual
- Desktop software
- Computers and printers
- Digital file storage

eSolutions is committed to providing the digital capabilities and state-of-the-art technology to ensure that Deakin University and its partners have the support, services and skillsets needed to lead the development of online learning within Higher Education. Each learning space on campus has a QR code which can be scanned by staff and students. This illustrates when the room was last checked / serviced by the team.

APPROACHES TO ONLINE LEARNING

Blended learning has been described in many variants. Typically, it refers to a strategic and systematic approach to combining modes of learning in various time zones, integrating the best aspects of face-to-face and online interactions through technology (Saliba *et al*, 2013).

There are many variants of blended learning, however for the purposes of this report, we will begin by stating our own terms of reference:

- Located learning student/s in the core physical space e.g. on campus.
- Cloud learning student/s attending via a virtual meeting point (VPM).
- Online learning student/s who access content online, at any stage.
- Blended learning the divergent hub of online activity where there is a mixture of activities e.g. located learning and online learning.

Fig. 11 illustrates the connection between the three emerging modes of blended learning.

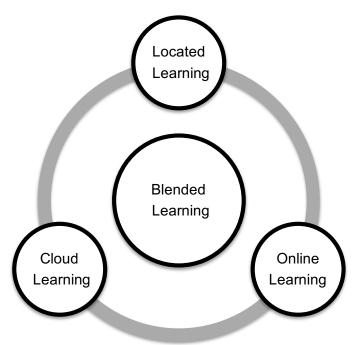


Fig. 11. Our preferred model of blended learning described in more detail.

This particular model has emerged internally within the School, though similar constructs have been found elsewhere. Keppell describes traditional face-to-face taught sessions as on-campus learning, blended face-to-face and online as virtual learning and distance modes of study as anywhere learning (2015: 295). Dunn et al (2015) described the likely architecture that sits behind online modes of instructional design, mirrored in practice via the epistemological framework that underpins connectivism as a learning theory (Siemens, 2005). The traditional theories described earlier; Behavoursim (Watson, 1924); Cognitivism (Piaget, 1963); and Constructivism (Vygotsky, 1978) are still present, albeit less obvious as they are represented through blended learning as objectivism, pragmatism and interpretivism (Siemens, 2008; cited in Kopp and Hill 2008, pp. 2), whereby the content creator sets the conditions which allow the learner to source appropriate information, focus on the internal acquisition of knowledge and use of online social technologies to distribute cognition and build knowledge. The line between located learning, online learning and cloud learning is fine and often blurred. In reality, it is too easy to simply focus on located and online modes of study. Cloud learning tends to be misunderstood or pushed to one side, though it may still have a place here.

The University of Manchester uses a beacon system for image tracking platforms, where the learning experience can truly become blended in that it allows for mixed mode teaching. For example, blended learning can either be *just* located or *just* online, but rarely based within the cloud at any given point. This has the advantage of bringing together larger, diverse audiences. In some instances, in excess of 1500 people could be participating across multiple locations.

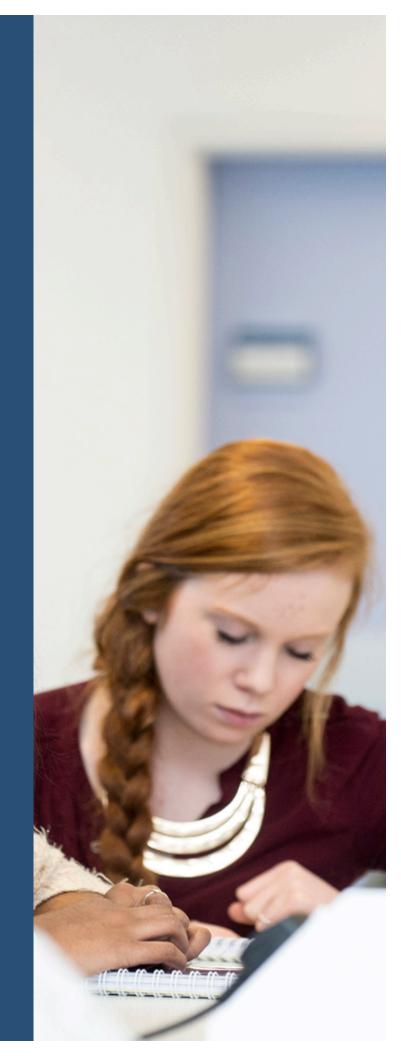
The use of blended learning in initial teacher education can lead to increased use of technology in the classroom. Equally, Masters et al (2012) found in a controlled study that online training for teachers compared to other approaches brought about better outcomes in the classroom for the learners they subsequently taught. Urban-Woldron (2013) also found that long-term blended learning for teachers is more effective than one-off face to face teaching sessions at fostering teachers' abilities to integrate technology into the classroom.

As the School continues to develop its online portfolio, existing located or blended programmes of study will begin to evolve into online learning provision. In order to fully respond to this changing paradigm, the School will need to establish the conditions for nurturing digital culture.

We have seen rapid growth of MOOCs within the University and as the School targets this arena, we can learn lessons from elsewhere. It is crucial that we determine how to best place MOOCs. For example, Robin and McNeil (2015) explore collaborative design and development for teacher professional development, suggesting that reflective, recursive instructional design models within a MOOC may allow for reflection and revision of key theories and ideas. This could later lead to further credit bearing study or act as an agent for transition into other online programmes of study. The same authors highlighted that support within the university to develop their MOOCs was essential, but more often than not they were left to find a quite space, proceed with filming themselves and rely on graduate teaching assistants to administer the content. This was clearly not the case within Deakin, where the development of their MOOCs was very much seen as an extension to developing the online content for courses within undergraduate and postgraduate programmes. This was supported, as stated earlier, by a rich culture of digital learning and teaching – a core element built into the remit of all academic and professional staff.

SectionFour

Towards a Digital Culture



DIGITAL SHORT LIFE WORKING GROUP

The Digital Short Life Working Group (SLWG) is an open forum for all staff in the School of Education. There is no set membership and all members of academic and professional staff are free to contribute as much or as little as they can manage. It is currently chaired by the School Lead for Digital Learning and Teaching (TELT). All staff interested in the use of technology for the purposes of administration, research and learning / teaching are encouraged to take a proactive role in putting forward their thoughts and ideas. Members do not need to have any extensive experience or knowledge of technology.

The SLWG is used as a 'sounding board' to identify challenges and to respond with opportunities to nurture digital culture within any of the four conditional areas as outlined within this report. It was established in September 2015 and it is intended as a temporary group which promotes collegiality, reflects on group discussion papers (as outlined within the conceptual framework) and makes recommendations. It will run for one academic year at which point the discussion will be channeled into a digital vision which can then inform the whole school strategic plan.

It is clear from the case studies and vignettes taken from other institutions, that there is a need for the development of a whole school resource which is best placed to make the most of College and University support, whilst building internal capacity in people, leadership and infrastructure. This is a crucial building block if the School wishes to further develop provision in online and blended learning programmes. It is recommended that the School creates a Digital Futures and Innovation Team to take forward key aspects of the emerging strategic plan, whilst acting as a key liaison point on matters related to TELT.

CONCLUSION: DIGITAL FUTURES AND INNOVATION TEAM

We already use a range of digital and online technologies to support learning, research and administration. Our focus on TELT suggests a need to develop new pedagogies with a growing focus on emerging technologies and online instruction. Following on from the early work of the SLWG, we have identified a need to pool existing expertise and experience within the School so that we can begin to enable transformation and systemic change within a number of key areas. These areas will drive forward digital culture and enhance our portfolio of online programmes and courses by playing a key role in realising the future strategic direction of the School (see Paper 4a).

The Digital Futures and Innovation Team would be a formal component of the School, integrated into several areas of future strategic development e.g. Communications and Learning and Teaching. Crucially, it will provide the School with a mechanism by which it can explore challenges, exploit opportunities and design practical strategies to enable the creation of a digital culture. The Team would be the catalyst for implementing an ambitious, and necessary, digital strategy in the School. It would be accountable to the Head of School via the School Executive and it would work closely with senior colleagues e.g. Director of Learning and Teaching and Director of Postgraduate Taught Programmes. The premise would be academic in nature and would work alongside the College of Social Sciences Learning Innovation Team, where training, advice and professional support would compliment the resources of the School.

In the first instance, the unit would build upon existing and internal expertise. It would sit centrally within the emerging school structure, accounting for a wide range of activities:

Supporting the School in developing online and blended learning programmes and courses; and in implementing and contributing to university / college learning and teaching / TELT / eLearning and IT Strategies;

Acting on opportunities and managing the challenges involved in moving to a new building, necessitating changes to how we work;

Building capacity within initial teacher education through innovative, technological approaches e.g. in further enhancing the partnership model; in developing online modes of delivery for UG and PGT initial teacher education courses.

Developing confidence amongst staff in using digital technology;

Working with CoSS and wider university support / services by building resilience within the School e.g. College Innovation Officer / Team, University Services and the Learning and Teaching Centre etc;

Connecting internal expertise to external partners e.g. Scottish Government and Education Scotland Digital Teams as they implement the National Digital Learning and Teaching Strategy as part of the Scottish Attainment Challenge;

Ensuring that it is research capable and research informed – collating evidence and baseline data for evaluation – acting as a model of excellence for the wider institution and measuring progress on its range of activities;

Reflecting and encouraging distinctive and permeating themes of Social Justice through its activities;

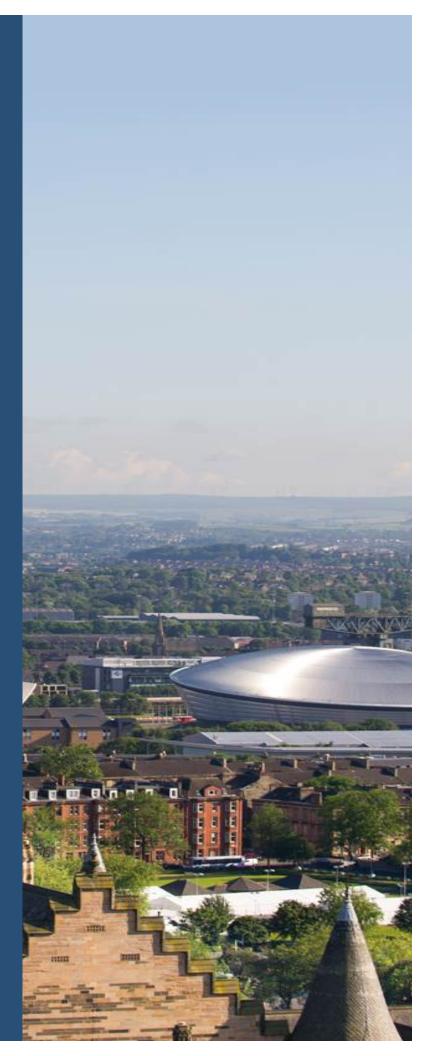
Seeking funding and bids for grants to support the student experience, research activity and school business.

The actual costs of setting up such a team would be relatively low, however there would be costs to the School in terms of staff workload and remit. This is likely to mean that those working within the team are given a significant chunk of time to carefully plan and deliver activities with consideration and full attention to detail. This could be offset by

other internal funding mechanisms e.g. in the longer term it would provide an alternative model to initiatives such as BOLD (Blended Online Learning and Development). By seeking support from the College and the University Management Groups, it is expected that instead of reacting to calls for funding, initial allocations made to both the School and College teams would allow for a more integrated and effective approach to moving programmes and courses online, where budgeting allows local decisions to be made as and when required. The Team will provide high level pedagogical advice and support to the School in relation to both emerging and established programmes. It will allow us to mentor individuals and small groups of staff as they begin to build their confidence and understanding of digital technologies. It will initiate and maintain collaborative relationships by acting as a local satellite for College and University support. Although the specific remit would need to be established and agreed, the Team could also seek to:

- Work with internal stakeholders (e.g. Assistant Vice Principal, College Innovation Officer, conveners of working groups and committees related to digital education);
- Identify opportunities to shape the strategic direction of the School;
- Lead networking opportunities for colleagues within the School (and also in other Schools);
- Draw upon pedagogical expertise and experience in learning and teaching to assist course designers to develop online and blended learning opportunities as part of the School's vision – negating reliance on other funding mechanisms e.g. BOLD;
- Manage local resources e.g. (digital technologies for media filming and production) and a small budget to support and mentor staff;
- Develop an online community of practice for staff on themes of digital education;
- Support colleagues to design and develop MOOCS based on themes of social justice, acting as complimentary components for our online programmes e.g. for marketing and recruitment or as a credit-bearing constituent within a course.

References



REFERENCES

Beetham, H. and Sharpe, R. (2007) Rethinking Pedagogy for a Digital Age: Designing and delivering e-learning, London: Routeledge.

Bernard, R., and McNeil, S. (2015) The Collaborative Design and Development of MOOCs For Teacher Professional Development *in MOOCs and Open Education* (Bonk, Curtis,. Mimi, Lee., Reeves, T., and Reynolds, T.) Ch16, pp180. Routeledge, London.

Blackwell, C. (2013) Teacher Practices With Mobile Technology Integrating Tablet Computers Into The Early Childhood Classroom. Journal of Education Research.

Bowen, K. (2012) Mobile Learning Infokit [online] www.mobilelearninginfokit.pbworks.com (last accessed 07.01.2016)

Cheok and Wong. (2015) Predictors of E-Learning Satisfaction in Teaching and Learning for School Teachers: A Literature Review. International Journal of Instruction.

Dearnley, C. (2012) Mobile Learning Infokit [online] www.mobilelearninginfokit.pbworks.com (last accessed 07.01.2016)

Dunn, L. (2012) Why it's time to start BOYD in your school in Edudemic [online]. http://www.edudemic.com (last accessed 12.11.15).

Dunn, L. (2013) Using social media to enhance learning and teaching. In: Social Media 2013: 18th International Conference on Education and Technology, 1-3 Aug 2013, Hong Kong, China.

Dunn, L., Dickson, B., Trinder, J., Kerr, J., and Andrews, M. (2015) Analysis of Digital Media: Supporting University-Wide Online Learning via Moodle. Project Report. University of Glasgow, Glasgow.

Fischbacher-Smith, M., and Spaeth, D. (2015) Inspiring pedagogic innovation through innovative space design. Internal Report. The University of Glasgow.

Gardner, H. (2006) The Development and Education of the Mind: The selected works of Howard Gardner, London: Routledge.

Goodwyn, A. (2011) English Teachers in the Digital Age--A Case Study of Policy and Expert Practice from England. English in Australia.

Harris, S. (2009) Lessons From e-Learning: Transforming Teaching' Proceedings of the International Conference on e-Learning.

Hamilton, M. (2015) Mobile Learning Infokit. Jisc.

Kington, A,. Harris, S,. Lee,. B. and Leask, M. (2001) Information and communications technology and whole school improvement: case studies of organisational change, *education-line*.

Knowles, M. (1984) Andragogy in action. San Francisco: Jossey-Bass.

Laxton, J. (2012) Mobile Learning Infokit [online] www.mobilelearninginfokit.pbworks.com (last accessed 07.01.2016).

Masters et al. (2012) The Effects of Online Teacher Professional Development on Fourth Grade Students' Knowledge and Practices in English Language Arts.' Journal of Technology and Teacher Education.

Mishra, P., and Koehler, M.M. (2006) Technological pedagogical content knowledge: a framework for teacher knowledge. *Teacher College Record*, *108*(6), pp 1017-1054.

Piaget, J. (1963) The origins if intelligence in children, New York, Norton.

Reimann, Freebody and Hornibrook. (2009) 'Designing for Immersive Learning Environments: a Study of Teacher Innovation Using The Learninf Federation (TLF) Digital Learning Resources.' European Conference on eLearning.

Saliba, G., Rankine, L., and Cortez, H. (2013) Fundementals of Blended Learning. University of Western Sydney [online],

https://www.uws.edu.au/__data/assets/pdf_file/0004/467095/Fundamentals_of_Blended _Learning.pdf (last accessed 11.11.2015).

Savin-Baden, M. (2007) A Practical Guide to Problem-Based Learning Online, London, Routeledge.

Spector, J.M. (2012) Foundations of educational technology. Routeledge. New York.

Shulman, L.S. (1986) Those who understand: Knowledge growth in teaching. *Educational researcher*, *15*(2), pp 4-14.

Urban-Woldron. H. (2013) Integration of Digital Tools into the Mathematics Classroom: A Challenge for Preparing and Supporting the Teacher' International Journal for Technology in Mathematics Education, July.

Usher, J. (2012) Mobile Learning Infokit [online] www.mobilelearninginfokit.pbworks.com (last accessed 07.01.2016)

Vavoula, G.N. & Sharples, M. (2009) 'Challenges in Evaluating Mobile Learning' (in Traxler, J., Riordan, B., Dennett, C. (eds) *Proceedings of the mLearn 2008 Conference* (School of Computing and Information Technology, University of Wolverhampton, pp. 296-303)

Vygotsky, L.S. (1978) Mind and Society, Cambridge, ma: Harvard University Press.

Watson, J.B. (1924) Behavourism, New York: J.B. Lippincott.

Wheeler, S. (2015) Learning with 'e's. Education theory and practice in a digital age. Crown House publishing. Wales.

Wragg, E.C. (2004) he RouteledgeFarmer Reader in Teacher and Learning, London: RouteledgeFarmer.

Younie, S. and Leask, M. (2013) Teaching with Technologies: The Essential Guide. United Kingdom: Open University Press.