



The Learning Ecosystem: A practical, holistic approach to old problems in a new world

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This paper reflects our journey towards the dream of a seamlessly enhanced teaching and learning framework to support our academic excellence through VLEs. While we often seek to move forward and embrace the future of education, it is increasingly important to reflect on the importance of our present, both in terms of a stable base to build onto and as a rich source of lessons to be learnt. We therefore seek move away from repeating the mistakes of our past, taking a broader holistic perspective of the embedding of technology in education. Our model and practices draw on literature to build on analogy of a learning ecosystem, which then informs our first steps in a brave, new "recombinant" form.

Keywords: Learning ecosystem, educational technology, e-learning, recombination, pedagogy, higher education, VLE, evolution

Introduction

This paper reflects the journey which we have embarked upon within Business School X, reaching for the idyll of a seamlessly enhanced teaching and learning framework to support our academic excellence through Virtual Learning Environments (VLEs). While we continually seek to move forward and embrace the future of education, we have increasingly come to reflect on the importance of our present, both in terms of a stable base to build onto, but also, and maybe more importantly, as a rich source of lessons to be learnt.

The School's early exploration of Virtual Learning Environments (VLEs) as tools to support the educational experience began over a decade ago (1992). Since then, this relationship has continued to evolve, and remains an important part of enhancing, extending and reinforcing our teaching and learning, along with developing new innovative and international approaches. Part of a collegiate-structure University, the school now shares a central VLE with other Schools, and both benefits from, and contributes to, a rich culture of pedagogy and educational technology.

However, two years into the most recent VLE upgrade, at the beginning of 2012, it became apparent that though we were still ahead of many of our School contemporaries, age-old problems still remained. The VLE was still perceived institutionally as an isolated element that often replicated previously established tropes, and while pockets of innovation dotted our landscape our use of the system was not fulfilling the promise of our original ambition. Still constrained by older paradigms, we needed to move beyond our baseline use, increase staff uptake and establish an integrated and connected approach, more in line with our academic staff's pedagogic best practice.

At the same time, increasing external pressures were adding further impetus to evolve our educational technology offering. Better support models for larger cohorts of students were needed, while still maintaining a high quality of teaching and personalisation. The extension and integration of other student support services within our support base was required to better extend and enhance our students' employability skills.

Sleepwalking to the future

Despite the ever increasing rate of technology innovation with its vast pedagogic possibilities, wide scale adoption and seamless integration are tantalising close but still elude us. A common theme throughout the literature around educational technology is the feeling that “technology’s promise to transform learning in higher education has not been kept”. (Privateer 1999:78). Even if the rate of innovation and its use for pedagogical benefit within education is rapidly increasing, this is still often patchy and difficult to sustain.

This is an issue that cannot be ignored - Moore’s law denotes the ever increasing importance of equipping our students to navigate an increasingly complex and changeable digital world (see Long, 2002; Santamaria 2012). Yet we still seem unable to evolve ourselves as institutions responding to these changes, and educational technology is still not a natural technological gesture for most of our staff and students - it is still ‘not a chair’. (Jenner 2013)

Some of this can probably be attributed to the level of maturity of the technology itself, which is often deployed before it is easy/familiar enough to allow users to achieve their common tasks. In cases where innovators have determinedly sought to ‘jump ahead’ with immature technology they are often too far ahead of the curve, and have not addressed the basics first. Without a stable enough base of knowledge and practice, innovation therefore continues to remain the prerogative of only the brave and out of reach for the vast majority of users.

A contrasting point also found in surrounding literature suggests that all too often the focus of improvements at an institutional strategic level becomes the technology “as a productivity or information-access enhancer, at the expense of using it to revolutionize pedagogy” Privateer 1999:78. We therefore often seem to recreate previously established tropes- an electronic book, an online form - but not review what could be done (differently) in these new contexts and continue to tackle old problems - student engagement, assessment, group work etc... - with new tools.

The first step in our evolution must be to look at the problems staff and students face, addressing administrative and technical frustrations. We can then move on with a realistic hope of successfully tackling new technology and more adventurous and outstanding academic practice. We therefore need to shift our focus of technology adoption to adaption, and tackle afresh the underlying processes that shape the reality of use to finally ensure that technology “[realises] its true revolutionary destiny” (Privateer 1999:78).

Understanding complexity through an ecosystem

Limiting ourselves to using the VLE as a mere technical support for lecture notes hardly justifies the considerable investment (financial and professional) that our effort demanded. We felt this would have little pedagogic impact for the School moving forward without the re-design of an integrated, cohesive support model, moving towards new “recombinant” ways of working (KnowledgeWorks 2012). To do this we would first need to take step back and look at the bigger picture. In order to try to understand the complex interplay of factors apparent in this more holistic approach we needed a model.

The analogy of an ecosystem to explain and explore the interplay of technology or information is not a new one, and is increasingly the ecological is increasingly apparent in e-learning literature, emerging from earlier concepts of information ecology (Nardi & O’Day 1999), learning ecology (Brown 2000), communities of practice (Wenger 1998; Barab et al. 1999), networks as ecosystems (Kelly 1994), and evident in texts such as *Deep Learning for a Digital Age* (Weigel 2001) and *e-Learning for the 21st Century* (Garrison and Anderson 2003).” (Frielick 2004).

Taking the definition of an ecosystem as one where “members benefit from each other’s participation via symbiotic relationships”, this translates in e-learning as a “digital environment populated by [digital species which], like living species, interact, express an independent behavior, and evolve” (Uden & Damiani 2007:114). Each element or species and the inter-relationships between them deserves equal merit and critical reflection, to improve efficiency, effectiveness and innovation and “create a sustainable learning environment that provides the greatest impact for the learner and their organization” (Spencer 2013).

Ecological survey

Determined to get a clear picture of our needs and review our use of the VLE afresh, it seemed “crucial for the

in-depth understanding of online learning environments, and to standardise and promote effective e-learning practices” (Renya 2011:1084) to analyse our learning ecosystem and its different parts. Drawing on Renya’s Digital Teaching and Learning Ecosystem (DTLE) (*ibid.*) model we sought to understand our current position and the ‘health’ of our ecosystem, consulting and involving all those associated in the educational experience.

As part of his ecosystem analogy, Renya identifies two major components: biotic and abiotic.

“The biotic component comprises two subcategories: organisms cohabiting in the Teaching Niche (lecturer, tutor and e-learning officer) and; organisms cohabiting in the Learning Niche, ([students]). The abiotic component comprises the physical devices that students use to access content ([computers, laptops, mobile devices, etc]); the internet connection [...]; the e-learning interface or portal, and the content, which can be static or dynamic” (Reyna 2011:1084).

As Marshall & Mitchell note, analyses of e-learning often only examine the outcomes of “individual practices”, without a “deeper analysis of the contributions of the institutional context” (2006). To move beyond our current processes however we need a “more holistic approach with a focus on best systems” (*ibid.*). Many of the existing ecosystem models we came across still remained too narrow, only looking at specific interaction between the “lecturer, tutor and e-learning officer” (Reyna 2011) and ignoring the impact of the functional administrative and personal support provided by administrative support teams and professional staff. It was also important to us to not just identify components of our ecosystem and define the structures that they operated in to support learning, but also recognise that biotic components especially inhabit multiple ‘webs’ of “Supporting relationships; goals, skills gaps, feedback, processes, outcomes.” (Spencer 2013). We decided to further examine the relationships of components globally and determine what elements and actions already led or could lead to more “symbiotic” and positive collaboration between them (Reyna 2011).

These alterations to the DTLE model try to take into account the holistic impact of wider process and webs of interaction, to build a more realistic and more human perspective on educational technology use in the School. Armed with these conceptual tools, we therefore decided to conduct our own ‘Ecological Survey’ to similarly identify major components and areas of negative impact and gather requirements for further action.

Methodology

Our methodology was multi-stranded, involving a series of structured conversations and workshops with staff, and analysis of data from staff and student surveys. With this mix of qualitative and quantitative methods we hoped to capture a broad perspective of the School’s needs from across these three groups. In addition, all levels within the School were involved as part of a simultaneous top-down and bottom-up approach (see Frayer 1999), to “encourage ownership and [provide] a direction for developments” (Newland et al 2006). Ultimately we tried to ascertain common themes across the School as a whole, as well as more specific priorities for students, and staff.

To make structured conversations relevant to staff and establish a shared frame of reference, we tried to ensure improvements were an open response to staff feedback, and built up a model to allow interlocutors to situate themselves and their aspirations (see Laurillard’s Conversational Framework, 2002). This was inspired by an initial University-wide ‘Pedagogy Upgrade project’, based on the Edinburgh Napier 3E Framework (2011). This aimed to “help academic staff to consider new or further developed uses of technology that are appropriate for the contexts within which they teach” (2011) within their modules. We expanded this beyond benchmarking and into a model for discussing educational excellence with our academic staff, with these categories 3E categories re-emerged as EEI: **Efficiency**, **Effectiveness**, and **Innovation**.



Figure 1: Efficiency, Effectiveness, and Innovation (EEI) Model

A fresh start on a new system was also an opportunity benchmark and look at how (rather than just whether) technology was used for teaching. A Staff Moodle Requirements Survey was sent out in December 2012 to gather anonymous feedback as part of the University-wide VLE upgrade initiative, due in 2013. The results for School staff (49 respondents) were analysed to identify 5 top priorities for improvement in the new system: Group assignments and feedback; Faster adding and more effective management of content; Easier adding of grades and feedback; Improving the integration of other university systems, such as timetabling, within the VLE.

However, even armed with this data, to build a solid foundation we needed to look beyond pure technology solutions and engage our community as a whole in a more shared and consistent effort to evolve together.

Biotic Components

Within the scope of our learning ecosystem we identified three key biotic components: Faculty staff, Programme (Course Office)/Professional staff and Students.

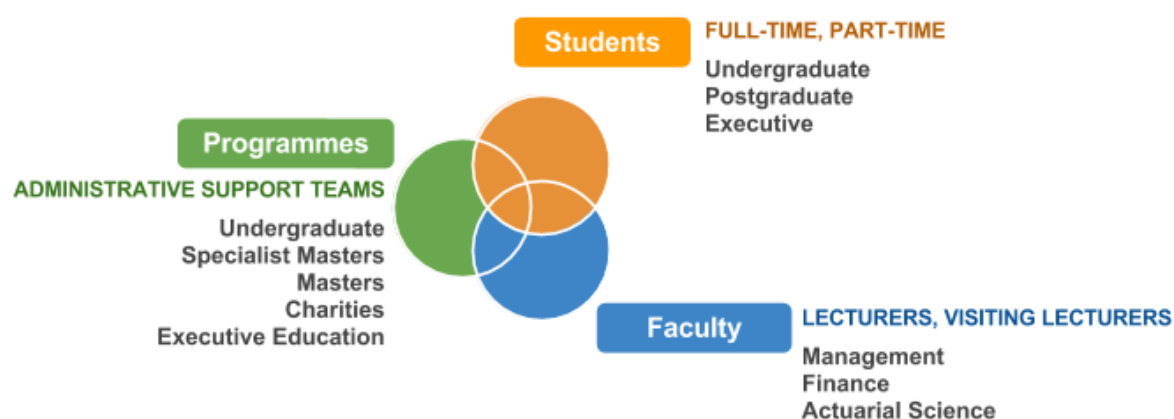


Figure 2: Trifecta of biotic components

Continuing our broad and complex perspective, it was crucial to view these biotic parts as being symbiotic and interrelated - a trifecta rather than isolated initiatives. We therefore set about trying to refine our understanding of this trifecta and its requirements to discover the areas that needed improvement and would provide the “greatest benefits for students and for the institution as a whole” (Marshall & Mitchell 2006).

Clarity and priorities from Staff

We met with the Heads of each Faculty as part of structured conversations to discuss areas of interest or concern and present the School’s ‘Top 5’ VLE improvements for comment using concepts from the EEI framework. This was also echoed in debates in the School’s Teaching & Learning (T&L) Committee, which counts members of the School’s Academic Quality Services and T&L Champions from each Faculty who raise the profile of educational development opportunities within their discipline and mentor new academic staff. Combined with direction for technological improvements this also had the promise of providing a wider impact of pedagogic benefits.

For our three largest Programme teams (Undergraduate, Specialist Masters and Masters), we ran workshops to map out what support mechanisms they offered to academic staff and students using educational technology, and to identify areas where processes could be streamlined. The three Programme teams also never met so we ran a workshop to aid reflection, helping them and us understand their similarities and differences, and rationalise localised practices. Commonalities emerged around inefficient processes around educational technology, making supporting reluctant Faculty staff harder and creating a need for easier reporting and feedback. Distinct differences between different Programmes’ processes, reflected in their baseline use, also caused confusion but overall, the day allowed staff to get a broader understanding of how things could work, and plan around educational technology as a group for the next academic year.

Lastly, with a more holistic view of the student experience, we met with curricular and non-curricular support services available to students, including Careers, Library Services and Academic Quality Services. From this we gained a better perspective of the resources available to our students and were able to include these in other discussions with staff, as well as later building these into module templates and processes. This should ensure

that paths to student support are consistently and visibly highlighted for all, and that these services have a better quality presence within the educational environment.

Looking through the eyes of our Students

In addition to the results of student feedback from the National Student Survey (NSS), we supported a student-led research project and group discussions around the use of the VLE in the School. Two students surveyed their third year Undergraduate peers, then analysed the 83 responses and collated a report of recommendations. These were often around problems of consistency in communication and information within Moodle, and highlighted a perception that the VLE was only a place to get grades, not an environment for learning. There was also a lack of awareness of the many academic and extra-curricular support opportunities, such as Library Information and Careers.

Alongside other informal group discussions with third year Undergraduate Business in Information Technology students, a clearer representation emerged of how students perceived the system and wanted from it. As recognition for their contribution, the students were offered the opportunity to present their academic paper at the annual Moodle Research Conference. Looking forward, this student-led research offers a great model for engaging with students and gathering feedback, notwithstanding the additional employable skills the students achieved through the process.

Common Themes

From these multiple approaches we gathered key themes across the School, as well as specific priorities for students, each Course Office and Faculties. Alongside our previous actions to build a more cohesive support model and address the system's maturity, we also needed to find:

- Ways to move beyond baseline use and set new expectations for the future, raising educational standards across all courses;
- Better models for distilling and embedding effective teaching practices, offering a wider scope for innovation;
- Providing a more supportive, holistic learning experience by allowing all parts of the trifecta to work consistently in symbiosis;
- Developing better mechanisms for reporting and review of our ongoing recombination models

Shared expectations

Part of working together is knowing what support you can expect from your colleagues, so we set out to make explicit the relationship webs in which each component plays a part. Just as symbiotic relationships within an ecosystem are caught in a delicate equilibrium, we increasingly felt that progress and stability would rely on all parts of our trifecta being aware of their interdependence and working together to a shared understanding.

Based on our conversations and research we therefore set about trying to express some of the basic principles that could, or should, underpin how these components interact. We also realised, from a reflexive perspective during discussions that we the E-learning team, established to support the use of educational technology within the School, were also a key part of the School's learning ecosystem, and added what we hoped summarised what we had to offer.

The shared expectations statements below seek to establish the shared expectations of what each biotic group can offer each other and what they should be able to expect in return.

Faculty (Lecturers and Visiting Lecturers): Faculty, working in partnership with the Course Office, will provide a supportive learning experience to distill educational excellence and strengthen Student learning.

Course Office (with other Professional Services): The Course Office will provide a consistent point of contact for Students engagement while working in partnership with Faculty to provide an efficient educational environment.

Students: Students will engage with the Course Office through consolidated support mechanisms while developing their educational strength with the culmination of educational excellence.

Educational Technologists: Interweaving this model are Educational Technologists who facilitate initial discussions and provide a framework for the sharing of good practice by embedding any efficiencies directly into the technology that everyone uses. We ensure the stable set-up and tailoring of these processes in the

VLE/other (abiotic) technologies, with good feedback channels in place for all parties involved. Once this common framework and support base is established for all to refer to, we then provide training and specialist expertise around effective and innovative practice.

Abiotic components

While seeking to look beyond pure implementation and adoption of technology, educational technology “abiotic components also have roles which contribute to the organisation of the system” (Reyna 2011:1085). To move our educational technologies towards becoming natural technological gestures, they must be mature, stable and pedagogically relevant from the beginnings of their adaptation. If we wanted the VLE especially to be deeply embedded we needed to address the system’s maturity, and improve its functionality and make it more user-friendly. For shared expectations to be a success, and make moving beyond effortless and attractive, initial effort must be put in to establish the basics and ensure our systems are tailored and fit for our purpose.

A template for excellence

In conjunction with the shared expectations which explicitly highlighted working relationships, points of contact and services were also embedded across templates for VLE courses. This should ensure that across all levels of a Course’s online presence (Programme, Degree and Module) everyone has easy and obvious access to relevant academic, administrative and extra-curricular information. Beyond streamlining support and processes, this also tried to address issues of consistency to build a better, more reliable and familiar learning environment.

Three standardised support blocks, set to appear in the same place on every School module template, form the basis for more embedded and consolidated support services and resources. This should ensure that across all levels of a modules’ online presence (Programme, Degree and Module) students (and staff) have easy and obvious access to the relevant academic, administrative and extra-curricular information. Centralised support modules, consistently linked through the standardised blocks, were designed to encapsulate knowledge from across the School for both Students and Staff and improve knowledge management and increase dissemination. For VLE help, separate online induction modules for staff and students hold relevant guides while purely technical problems are redirected to IT.

In addition our templates also aim to reduce unnecessary technical complexity for staff and make good educational practice the norm, taking and embedding best practice in terms of set-up from all three Programmes. This seems key to allow all staff to concentrate on more effective and innovative ways of sharing their knowledge and engaging with students.

To provide a consistent model for baseline coursework assessment, modules now include a Coursework Assessment section with model assessment ‘shells’, with the section as a whole restricted from students until they agree to a pre-set submission statement. Guidance is also built-in, with staff guides located next to activities, and assessment instructions for students outlined in the pre-populated shells.

Adapting the VLE

Though much of the work so far may seem pragmatic and down-to-earth, we hope it is understandable that this groundwork is necessary to give a stable environment where more elaborate and innovative teaching and learning methods can grow and be shared. Our work around these templates is an attempt to respond to the constraints of working with a tool that is not perfectly designed for our needs. However, it is hoped that this way of working gives students the consistency and access to support they expect and deserve, while easing the technical burden on staff leaving them more energy to support greater developments towards more innovative and inclusive teaching.

We also looked more broadly at fundamental institutional issues, understanding that these processes would also shape users’ experience of the VLE and other media-based improvements. To make these easy to use and reliable we sought to embed the necessary technical requirements for incorporation into development of University-wide IT infrastructure.

Alongside the School’s individual requirements, the University also focussed on ensuring efficiencies were built-in. A University Usability study was undertaken which highlighted continued points for improvement, some of which could be achieved by the updated VLE while others still required further customisation. These resulted in three areas for improvement, overall look and feel, navigation and easier access to personally relevant content. These lessons learnt were then shared back to the wider VLE community, feeding back improvements we had requested and tested to continue our mission to share best practice.

Conclusions

The process of change and recombining practice to build principles of action which empower and support an excellent educational experience is likely to be a long and complex journey. However, we have taken the first steps in our evolution by looking at the learning ecosystem more broadly and moving away from replicating purely tool-based or pedagogic approaches. By making explicit and addressing the relationship and technical problems staff and students face, we hope to position ourselves to better “leverage changes in technology practices to meet increasing demands” (Grajek & Pirani, 2006:9).

Set in a constantly changing digital world, we are concerned with building practical principles and heuristic models that enable actors within the learning ecosystem to understand their environment and shape their digital future accordingly. It is important to emphasise that the model above does not seek to apply a ‘one-size-fits-all’ attitude, but build methodologies for requirements gathering and development which are flexible and agnostic, allowing us to respond to environmental pressures and maintain a healthy learning ecosystem.

Next steps

Having upgraded to a new VLE and hopefully built a solid foundation with the agreement and hard work of our community as a whole, our next steps are now to move beyond the basics, beyond current methods and ideas, to do things to support excellent student learning that were just not possible before. Part of this will involve examining how to recombine better models for distilling and embedding effective teaching practices, raising the bar across the School and allowing us to aim beyond mere stability towards innovation and new forms of education.

Though our plans for the future must be tempered with the practicality of the present to be realistic, we are also wary of being caught unawares again by a rapidly moving technological and educational context. We are required to actively evolve our practice, or “risk letting the disruptions of the coming decade perpetuate inequities for learners, undermine the learning ecosystem’s capacity to adapt, and narrow the impact of education innovations by keeping them largely uncoordinated, opportunistic, and fragmented” (KnowledgeWorks 2012:3).

To maintain our momentum and stay true to our dreams, we need to improve our technology to better “facilitate delivery of readily accessible and useful metrics[, allowing us] to recognize and realign incentives and investments that induce positive change in learning, teaching, admin processes, etc” (Grajek 2012:9). Review and report points are already being set with Course Offices and we are looking to use new functionalities in the VLE to track points of engagement and disconnection by staff and students using the system. We also want to build on our successful student-led research practices and engage our community of users as a whole more in review processes, drawing on usability testing and the expertise our staff hold in data analysis and modelling.

Closing remarks

Having reflected upon our previous experiences and our present challenges we have broadened our perspectives and are now at the stage of sharing, refining and trying to recombine our processes and practice. We feel that this ongoing and reflective evolution is key to Business School X’s ambition of offering an enhanced, and continually outstanding, educational experience. Though Business School X and the wider University are going through a time of change we are determined to support staff and students to the best of our ability and ensure that education at the School continues to deliver an educational experience that provides both academic rigor and opportunities for student to expand their capabilities based on interests and aspirations.

We hope you will find this attempt to explore new ways of thinking, working together, and educating, a thought-provoking example of a reflexive yet practical approach to embedding educational technology at the heart of Higher Education. We look forward to testing the strengths and areas for improvement of these new paradigms and sharing these once again in the global community.

References

Edinburgh Napier University, (2011), University benchmark for the use of technology in modules. *Edinburgh Napier University website (November 2011)*. <http://staff.napier.ac.uk/services/vice-principal-academic/academic/TEL/TechBenchmark/Pages/home.aspx> [viewed 10 July 2013]

- Fraye, D. (1999) Creating a Campus Culture to Support a Teaching and Learning Revolution. *CAUSE/EFFECT journal*, 22 (2). <http://net.educause.edu/ir/library/html/cem/cem99/cem9923.html> [viewed 10 July 2013]
- Frielick, S. (2004). Beyond constructivism: An ecological approach to e-learning. In R. Atkinson, C. McBeath, D. Jonas-Dwyer & R. Phillips (Eds), *Beyond the comfort zone: Proceedings of the 21st ASCILITE Conference* (pp. 328-332). <http://www.ascilite.org.au/conferences/perth04/procs/frielick.html> [viewed 10 July 2013]
- Grajek, S. & Pirani, J. (2012) Through a Glass, Brightly: IT's Impact on Higher Education by 2020. *EDUCAUSE Center for Applied Research, (Research Bulletin)*, August 28, 2012. <http://net.educause.edu/ir/library/pdf/ERB1209.pdf> [viewed 10 July 2013]
- Jenner, M. (2013) When does a technology no longer become a technology?, *UCL E-Learning Environments team blog*, 15 February 2013. <https://blogs.ucl.ac.uk/e/e/2013/02/15/when-does-a-technology-no-longer-become-a-technology/> [viewed 10 July 2013]
- KnowledgeWorks (2012) Recombinant Education: Regenerating the Learning Ecosystem, *KnowledgeWorks Forecast 3: October 2012*. http://knowledgeworks.org/sites/default/files/u1/Forecast3_0.pdf [viewed 10 July 2013]
- Laurillard, D. (2002). *Rethinking University Teaching. A conversational framework for the effective use of learning technologies*. London: Routledge.
- Long, P.D., (2002) Moore's law and the conundrum of human learning. *Educause review*, 37 (3). <http://net.educause.edu/ir/library/pdf/erm0230.pdf> [viewed 10 July 2013]
- Marshall, S., & Mitchell, G. (2006). Assessing sector e-learning capability with an e-learning maturity model. *Association for Learning Technologies Conference*, 2006. Edinburgh. http://ubir.bolton.ac.uk/index.php?action=fileDownload&resourceId=488&hash=a0a27c0407e27ade24082d254d191f6e08011275&filename=M.W.%20Johnson%20research_proceedings_altc2006.pdf [viewed 10 July 2013]
- Newland, B., Jenkins, M., Ringan, N. (2006) Academic Experiences of Using VLEs: Overarching Lessons for Preparing and Supporting Staff. In O'Donoghue, J, ed *Technology Supported Learning and Teaching: A Staff Perspective*, Information Science Publishing, London, 2006.
- Privateer, P.M., (1999) Academic Technology and the Future of Higher Education: Strategic Paths Taken and Not Taken. *The Journal of Higher Education* Vol. 70, No. 1 (Jan. - Feb., 1999), pp. 60-79 Published by: Ohio State University Press. <http://www.jstor.org/stable/2649118> [viewed 10 July 2013]
- Renya, J. (2011) Digital Teaching and Learning Ecosystem (DTLE): A Theoretical Approach for Online Learning Environments. In G. Williams, P. Statham, N. Brown & B. Cleland (Eds.), *Changing Demands, Changing Directions. Proceedings ascilite Hobart 2011*. (pp.1083-1088). <http://www.ascilite.org.au/conferences/hobart11/downloads/papers/Reyna-concise.pdf> [viewed 10 July 2013]
- Santamaria, G. (2012) Moore's Law Explains Poor Education, *Plus Ultra Technologies/30Steps 2 Blog*, 26th April 2012. <http://plusultratech1.blogspot.co.uk/2012/04/moores-law-explains-poor-education.html> [viewed 10 July 2013]
- Spencer, E. (2013) Managing a Learning Ecosystem: Creating Immersive Learning Environment. *Brandon Hall Group Blog*, February 23, 2013. <http://www.brandonhall.com/blogs/managing-a-learning-ecosystem-creating-immersive-learning-environments-2> [viewed 10 July 2013]
- Uden, L., Wangsa, T.I., Damiani, E. (2007). The future of E-learning – E-learning ecosystem, *The Inaugural IEEE International Digital Ecosystems and Technologies Conference, IEEE-DEST 2007*. http://www.fcet.staffs.ac.uk/itw1/loma_ince.pdf [viewed 10 July 2013]

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Please cite as: Norris, L., Yet-Dessus, A. & Holtham, C. (2013). The Learning Ecosystem: A practical, holistic approach to old problems in a new world. In H. Carter, M. Gosper and J. Hedberg (Eds.), *Electric Dreams. Proceedings ascilite 2013 Sydney*. (pp.633-641)

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