"An exploration of key factors influencing (promoting or hindering) current & future use of technologies in Learning & Teaching, with relevance to metropolitan universities"

MA Learning and Teaching in Higher Education (Dissertation)

Critical Commentary

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Contents

Abstract

Learning and teaching need to adapt more quickly, and perhaps more radically, to accommodate new and diverse sets of learners (Tate & Klein-Collins 2013, Cavanagh, 2013) making best use of any and all technology suited to the purpose of learning and teaching. By beginning to effectively utilise that which the digital information world now affords them, the needs of each individual student can be met with more flexibility (Boys & Ford, 2008), and perhaps the role of universities as custodians and disseminators of society's shared knowledge can be enhanced and even reinvented for a modern digital age (Lynch 2008, Katz & Gandel, 2008).

The Advent of new technologies has had enormous implications for higher education, with "…an extraordinary impact on teaching and learning, institutional management, administration … (and) …library services, research production and dissemination; and student life…" meanwhile "the actual effects of these technologies" have not always measured up to their sweeping expectations (Guri-Rosenblat 2009 in Altbach et al, 2009).

By researching predominant themes appearing in current literature and carrying out a pilot study of primary stakeholders from a variety of academic roles involved directly and indirectly in learning and teaching, this paper seeks to shed light on what those expectations and perceptions might be. Focusing particularly on 'technology enhanced learning' but also related technology practices, it will seek to establish what may most influence the adoption of technology into university life.

Attempting to categorise key themes into a 'Problems and Benefits Hierarchy', conclusions propose new ways of providing effective e-technology training support, noting the most positive and negative forces highlighted in the study, and how to move forward with that knowledge. Focus might then be brought to bear more effectively to begin the 'paradigm shift' transformation helping to create learning and teaching fit for purpose for the 21st century (Hämäläinen & Häkkinen, 2012).

Statement of original work

I hereby certify that I am the sole author of this thesis and that no part of this thesis has been published or submitted for publication.

I certify that, to the best of my knowledge, my thesis does not infringe upon anyone's copyright nor violate any proprietary rights and that any ideas, techniques, quotations, or any other material from the work of other people included in my thesis, published or otherwise, are fully acknowledged in accordance with the standard referencing practices.

I declare that this is a true copy of my thesis, including any final revisions, as approved by my thesis supervisor, and that this thesis has not been submitted for a higher degree to any other University or Institution.

Acknowledgements

The following acknowledgements are made with gratitude and respect to those listed.

- The staff in Research Group 1 who gave their time freely and offered feedback and input in a positive and critically aware way
- The academics who engaged with the discussions on LinkedIn and ResearchGate (Research Group 2), demonstrating amply how new media enhances the academic research process, diversifying input, widening scope and variety of responses and creating vibrant academic exchange
- The students (Research Group 3) who helped to shed light on some of the problems and benefits of using technology in academic efforts
- The Internet in Higher education Journal, for having such a wealth of papers relevant to this topic
- The people at 'Typeform', who granted me an unlimited beta account as part of their user testing. This allowed me to create multiple question sets in a very up to date context, which was in fact remarked upon by at least 2 respondents, who expressed interest in using it for themselves
- Digby Warren (supervisor)

Rationale for research focus

The advent of new and innovative technologies in the past decade has had enormous implications for higher education (Altbach et al, 2009), with significant increases in distance and blended learning provision (Cavanagh, 2013). Web-enabled networked technologies and systems (have) an impact on post-compulsory education's core objective of teaching and learning (Boys & Ford, 2008), giving the student 'more flexibility to focus on areas they have difficulty with […] and to take learning when and where it is most convenient'. The university is still investigating how to provide what the new student customer wants (Boys & Ford 2008), and at the same time not to compromise what the university has always stood for in the past (Lynch, 2008). Many staff may continue to feel alienated by the pressure to adapt to new ways of teaching (Zellweger Moser, 2007), and consequently do not engage with the drive to become technologically literate. Some e-learning practice may not always result in enhanced learning experiences, as 'the actual effects of new technologies in recent decades have not always measured up to the 'sweeping expectations' that have characterised their arrival on the scene' (Guri-Rosenblit, 2009, in Altbach et al, 2009). This all contributes to a murky and unclear picture of how universities are managing to progress into the digital age.

Drawing on technology adoption models, with grounded theory critical realism (Oliver, 2012) as a paradigm, and using 'Integrative Logic' (Mason, 2006), this research seeks to contribute to this dialogue, and has attempted to find some way of prioritising a hierarchy of influencing factors, which may in turn help to formulate policy and professional development for learning and teaching practice. A literature review and a pilot study involving key stakeholders (students and staff) were carried out, the pilot study to provide raw data to contrast with literature review findings. In order to construct meaningful data, an analysis approach consisting of the compilation, correlation and categorisation of themes and sub-themes, recognised for frequency, significance and level of problem or benefit was used. These were then allocated a score in five contextual rankings forming a proposed new hierarchical system, the Problems and Benefits Hierarchy, these rankings were proposed to be Real, Imagined, Intermittent, Persistent and Legacy.

Rationale for online process & use of Research Artefact

Research website: http://webteach.penworks.net/research

A website has been developed and used over the entire duration of the project, both as part of the research process, and to provide a human usable way of navigating the literature review, findings, discussion and conclusions. The site has been used to gather empirical data using online questionnaires, share key responses and findings, facilitate comment around these findings, and also to share and demonstrate some of the process of carrying out this type of work to anyone interested in such work. The website contains the literature review, findings, discussion and conclusions, as well as a reflective blog on the process, and all data analysis for reference.

This website is created using 'semantic' web practices, making it easy and effective to share into LinkedIn, Facebook or Twitter, and consequently helping to act as an example of Web 2.0 technology in academic contexts (see Brown, 2011, Kukulska-Hulme, 2012).

Advantages of an online research artefact

- As an example of Open Research
- As a document of process, both stages of the work, and a case study for others who are either starting out in research practices or are looking for relevant comparisons to their own projects
- Provides an opportunity for iterative feedback from study colleagues and research group participants, plus other interested readers
- It is Open Educational Resources, in practice
- It may be a vehicle by which to practice what I preach, i.e. the proposed 'Desired Situation' (Lewin, 1951) of an increase in use of technology in learning and teaching
- Acts as an example of advantages and pitfalls of using various online tools in academic scenarios

Web Tools used

- Wordpress Content Management (bespoke self hosted, fully customised)
- Social Media as a research tool
- Social Media as a dissemination tool
- Cacoo diagramming platform
- Typeform forms platform (beta)
- Google Sheets for data sharing
- Wordpress Tables and Graph Generator plugins
- Wordpress page to ebook/ PDF generator

Refer to the site at:
http://webteach.penworks.net/research

The approach to the research has been from a generally critical realist perspective, on the presumption that "realism concerns multiple perceptions about a single, mind-independent reality" (Healy & Perry, 2000, in Kraus, 2005). This framework has 'best fit' to how the technology in learning and teaching landscape might effectively be researched and analysed. The single mind independent reality might be the technology itself, as well as the largely consistent real world of higher education institutions and the strategies, processes and bureaucracies that they employ. The multiple perceptions might be the actual support, training and provision of technology in learning and teaching, and all the associated experiences of individual academic employees. According to Dobson (2002), (in Krauss, 2005), the critical realist agrees that our knowledge of reality is a result of social conditioning and, thus, cannot be understood independently of the social actors involved in the knowledge derivation process. This appears to be very relevant to researching technology in learning and teaching as it might be argued many assumptions and preconceptions exist, perhaps some real and some only *imagined*. This is the reasoning behind trying to create the Problems and Benefits Hierarchy (PBH) with its 5 domains of real, imagined, intermittent, persistent and legacy.

The critical realist asserts that "real objects are subject to value laden observation"; the reality and the value-laden observation of reality operating in two different dimensions, one intransitive and relatively enduring; the other transitive and changing (Krauss, 2005). Referring to a summary of critical realism by Gary MacLennan (1999), the PBH also appears to have some empathy with Bhaskar's (1978) three domains, 'the Real, the Actual, and the Empirical'. "The real consists of underlying structures and mechanisms, and relations; events and behaviour; and experiences. The structures and mechanisms generate events in the natural world. Relations generate behaviour in the social world. The domain of the actual consists of these events and behaviour. The domain of the empirical consists of what we experience" (MacLennan (1999). This is interpreted in relation to this research as the Real being the policies, systems and organisational aspects of IT and e-learning, the events and behaviours (the Actual) the provision of events, pedagogies, practices and even perceptions, and the Empirical being the staff and student experiences, and the measurement and interpretation of those experiences from the raw data.

Please refer to http://webteach.penworks.net/research/aims-focus-method/#approach, which expands on this discussion.

Overall critical reflections

Positive Outcomes

The volume of research work being carried out by many practitioners in the field is immense. The most interesting papers, as far as I could tell, were the Tower and the Cloud (2008), and Game Changers (2013). These should perhaps be required reading for all lecturers in any modern university. I also was heartened by the raw data drawn from the stakeholder research which demonstrated that staff predominantly seem at ease with using technology in their daily lives, and seem easily motivated to work of their own volition after 5pm (http://webteach.penworks.net/research/rg1-analysis/3/, Question Set findings, Societal Changes).

Website Online Progress and Data

Sharing approaches and possible relevant theory early in the project elicited useful informal feedback from colleagues or fellow students in the study group. As the project progressed, I was able to share data in graphs to gather further comment about results. This allowed for a relatively 'agile' approach to the research. The website itself was an engaging artefact to work with, and found it's own momentum, helping to keep motivation going and steer the direction of the project with more clarity.

Flaws in method

The flaws in the method were many, and varying in significance - sample sizes, sample selection methods, and category analysis. The sample of papers was too small to make proper conclusions and needed a more robust method by which to select what was included (see http://webteach.penworks.net/research/discussion/). If there had been more time to devote to the project, then more planning for **devising questionnaire items directly in response to literature findings** (to run questionnaires after the literature review, not concurrently). This would allow much more effective use of the RDI indicator information (http://webteach.penworks.net/research/rg1-analysis/4/).

Research paradigms

Mixed Methods and research paradigms in a social sciences context have been enlightening to learn about, and it has been rewarding to think about the nature of reality and what is 'known' in that setting. The philosophy of education is becoming an increasingly interesting topic to me. Critical Realism, Critical Realist Grounded Theory (Oliver, 2012) and Integrative Logic (Mason, 2006) are all new concepts to me, and have over the course of the project been more meaningfully understood. I believe I will revisit these topics.

Likely follow-up

As per the conclusions (http://webteach.penworks.net/research/conclusions/), this may form early ideas for a '*let the training find you*' model – i.e. intelligent semantic training provision, utilizing the RDI indicator as well as other data. This could work on an intelligent decision basis, like Tate & Klein-Collins examples of decision-making applications and services cited in chapter five of Game Changers (2013). The PBH could be developed into a scale of priority measurement or used as a scale of factor effectiveness. It has only limited reliability here, but based on a larger sample that was more representative and more robustly randomised, could become a useful method by which to measure or evaluate sets of mixed method qualitative and quantitative data. I feel in the end this project has been one-fifth of a PhD.

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Appendices

Website Architecture

MA Research Project
The Research Project (Overview of the project, homepage hub)
Aims, Focus and Methods (Including data analysis approach)
Areas of Investigation
Taking Part in the Research
Lit Review Summary
Literature Review (3 pages)
Findings Summary
Findings (3 pages)
Discussion Summary
Discussion (3 pages)
Conclusions Summary
Conclusions & Recommendations
References

General Appendices
Appendices (General Appendices overview)
- Research Blog Updates (A blog with reflective updates on project work)
- Rights (CC licence and contact the author)
- Downloads (PDF downloads of the project and key sections)
- Technical Profiles Questions (question sets for RG1)
- Participants (password protected, available on request, includes examples of consent)
- Project Planning (Planning work)
- Lit Review Plan (Planning work)

Data Analysis Appendices (all raw data plus in depth results)
Set A: Literature Theme Analysis
Set B: RG1 Question Set Results
Set B: RG1 Question Set / Lit Themes
Set B: RG1 Question Set Findings
Set B: RG1 RDI Indicator
Set C: RG2 LinkedIn & ResearchGate
Set C: RG2 Context and PBH
Set D: RG3 The Students

Record of Supervision

Please see separate PDF of all email transcripts between myself and Digby Warren.

Word Count & Structure

As this project was carried out and submitted by artefact, it may be useful to have an overview of what is included as dissertation text in the word count. *Some pages exist to help online users understand the website or the project process for learning purposes.* ***The homepage, the blog updates section, the appendices list, as well as all appendices are not included in the word count.***

MA Research Project
The Research Project overview *[not included]*
Aims, Focus and Methods *[1773]*
Areas of Investigation *[201]*
Taking Part in the Research *[261]*
Lit Review Summary *[294]*
Literature Review (3 pages) *[p1 2850, p2 856, p3 1781 total 5487]*
Findings Summary *[389]*
Findings (3 pages) *[p1 762, p2 1570, p3 545 (minus tables) total 2877]*
Discussion Summary *[331]*
Discussion (3 pages) *[p1 1312, p2 1244, p3 1176 total 3732]*
Conclusions Summary *[325]*
Conclusions & Recommendations *[1976]*
References *[not included]*

General Appendices *[not included]*
Appendices overview
Research Blog Updates
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Technical Profiles Questions
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Project Planning
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Set B: RG1 Question Set Findings
Set B: RG1 RDI Indicator
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Set C: RG2 Context and PBH
Set D: RG3 The Students

Critical Commentary (this document) [1887]

(Total word-count 17,646, plus critical commentary 1,887 = 19,533 words)

Nb All counts are approximate though effort is made to be as accurate as possible