Moving beyond the Threshold: Investigating Digital Literacies and Historical Thinking in New Zealand Universities

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Abstract

The multi-year collaborative project "Moving Beyond the Threshold" set out to interrogate what it means to think historically in the digital age. How do university students and teachers use digital media to transform learning experiences? Do digital approaches present novel ways to engage with key historical concepts? Answers to these questions continue to be important and urgent; large-scale investment in educational resources and technology is based on the assumption that current and future students are or will become digitally literate, and that they know how to use digital media effectively and efficiently in inquiry-led and autonomous learning. There is little evidence to prove, however, that the so-called 'net generation' grasp the disciplinary threshold

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concepts of historical thinking, attain successful learning outcomes through technology-mediated teaching, or achieve the key competencies of critical and creative thinking and citizenship that prepare them for future employment and social engagement. This report-in-progress outlines our early project findings, including the disconnect between technology use and critical thinking.

Keywords: Education, University; Historical Thinking; Threshold Concepts

Introduction

In May 2014, the 21st Century Learning Reference Group published its long-awaited report entitled Future-focused learning in connected communities. Building on the New Zealand Council for Educational Research's 2012 document *Supporting Future-Oriented Learning and Teaching: A New Zealand Perspective*, the 2014 report offers ten priorities and twenty-three recommendations to shape government policy and strategic interventions in the NZ educational landscape. A key platform is recognizing, understanding, and embracing the changing nature of knowledge, the impact of digital technologies, and the power of transformative teaching and learning. If knowledge is moving from a noun - a bucket of stuff— to a verb - the ability to make - then it is no wonder that digital technologies lie at the heart of 21st century learning: "Digital technologies change the way students learn, the way teachers teach, and where and when learning takes place" (O'Riley et al., 2014: 4). As the report makes clear, "using digital technologies to enhance the educational process involves more than just learning how to use specific pieces of hardware and software. It requires understanding pedagogical principles that are specific to using technology in instructional settings" (O'Riley et al., 2014: 34). Consequently, digital pedagogy is the new black and "requires us to rethink much of what we believe about education" (O'Riley et al., 2014: 28).

'Moving Beyond the Threshold: Investigating Digital Literacies and Historical Thinking in New Zealand Universities' is a two-year collaborative, exploratory project funded by the NZ Teaching and Learning Research Initiative (TLRI). It brings together several hitherto disconnected domains and discourses: threshold concepts, historical thinking, and digital pedagogy. The primary question guiding the project is: what is the relationship between digital literacies, threshold concepts, and transformative learning outcomes in

history-informed disciplines at New Zealand universities? Several sub-questions follow: how can digital literacy be used to improve student learning outcomes and promote transformative learning in history-informed subjects at the tertiary level; how might/could digital media be embraced and/or appropriated to shape the way university students and teachers think about the past; how can students become empowered in their own learning pathways through the introduction and sustained use of digital media and methodologies?

Answers to these questions are important because large-scale investment in educational resources and technology is based on the assumption that current and future students are or will become digitally literate, and that they know how to use digital media effectively and efficiently in inquiry-led and autonomous learning. There is little evidence to prove, however, that the 'net generation' grasp the disciplinary threshold concepts of historical thinking, attain successful learning outcomes through technology-mediated teaching, or achieve the key competencies of critical and creative thinking and citizenship that prepare them for future employment and social engagement. Teachers of history-informed subjects need robust research data and best practice evidence to understand and advance the relationship between digital technologies, curriculum planning, and historical thinking in order to effectively integrate digital literacies into the curriculum and to accurately evaluate their impact on student learning. Such evidence can be used to inform public policy about future funding strategies for digital learning practices at universities, addressing where gaps exist in students' access to resources by demographic, subject matter, ethnicity, and gender.

Background

Digital technologies drive New Zealand's knowledge-based economy and underpin assumptions about the nature and function of 21st century teaching and learning (Bolstad & Gilbert, 2008). University graduate attributes emphasise key competencies such as critical thinking and creativity, autonomous learning and citizenship, and foreground information and communication technologies. Both nationwide and internationally, substantial investment in technology has been predicated upon the expectation of a direct correlation between learning quality and flexibility of delivery

(Cuban, 2001; Oppenheimer, 2003). The *Technology Outlook for NZ Tertiary Education 2011-2016* reported that digital literacy "continues to dominate conversations about the challenges likely to impact the acceptance of technology in tertiary education worldwide, and New Zealand is no different" (Johnson et al., 2011: 3). However, digital literacy is not simply "the ability to manipulate devices" but rather "it is the ability to critically evaluate the information obtained through those devices" (Gluckman, 2012: 3) and there is currently "insufficient knowledge about how ICT-related thinking and practice can be more consistently connected with 'big-picture ideas' about future oriented learning" (Bolstad & Gilbert, 2012: 57). The critical challenge to an overabundance of electronic information is "digital media literacy [which] continues its rise in importance as a key skill in every discipline and profession" (Johnson, Levine, Smith & Stone, 2010: 5). Moreover, "despite the widespread agreement on the importance of digital media literacy, training in the supporting skills and techniques is rare in teacher education and non-existent in the preparation of most university faculty" (Johnson et al., 2012: 6). Given this context, this project asks what are the digital literacy needs for specific disciplines and how can tertiary educators improve learning outcomes for students by better understanding and meeting those needs in the educational market?

Historical Thinking

Many disciplines are underpinned by a set of "threshold concepts" (Meyer & Land, 2003) that, once mastered, transform learning. In history-informed subjects, these threshold concepts have been identified as the "big six": historical significance, evidence, continuity and change, cause and consequence, historical perspectives, and the ethical dimension (Seixas & Morton, 2012). However, the process of acquiring these often difficult, counter-intuitive, or even alien concepts has been described as an "unnatural act" (Wineburg, 2001). Developing students' grasp of such "troublesome knowledge" (Meyer & Land, 2003) "cannot be acquired purely from everyday experiences" but rather requires "systematic instruction" (Alexander, 1997). To achieve academic success in historical subjects, students are required to engage in a form of "critical literacy," drawing on disciplinary knowledge and understanding to make sense of what they study (Mcdonald & Thornley, 2009: 56) and to grasp the specialised vocabulary and discipline-based methodologies of the subject (Sturtevant & Linek, 2004). Increasingly, these literacies are mediated by digital technologies. How do

students move beyond the threshold of understanding the "big six" to applying them in their own critical thinking and improving their learning outcomes? If virtually all academic disciplines engage with history to some degree, how do teachers use the threshold concepts of historical thinking to shape learning objectives and develop better teaching practices in an environment where the resources, tools, and increasingly, delivery modes are mediated through digital technologies?

Digital History and ePedagogy

Although digital humanities and digital history have had almost two decades of scholarly activity and pedagogical reflection overseas, they are relative newcomers to New Zealand. Defined as the application of digital technologies to investigating and representing the past, digital history, in particular, is considered both a field and a method (Sword cited in Cohen et al, 2008) and embraces a diversity of subjects including History, English, Art History, Geography, Architecture and Design. Religious Studies, Theatre, Classics, Languages, Māori Studies, Pacific Studies, Anthropology, Sociology, Music, Media, Commerce, Law, Film, Philosophy, Political Studies, Education and History of Science. Digital history relies on an increasing breadth of web-delivered digitised resources that enable scholars and students "to make, define, query, and annotate associations in the human record of the past" (Seefeldt & Thomas, 2009) often in the context of Web 2.0 social media (such as Twitter and Facebook) and gaming interfaces (such as Second Life or games with a purpose [GWAP]). Digital history has the potential to offer powerful tools for inquiry-based and autonomous learning, but as Stéphane Lévesque (2006) has noted in the Canadian setting, "how do we engage students in meaningful historical inquiry"? Or, as Luke Tredinnick (2013) has provocatively remarked, "What does the past look like through the lens of digital culture"?

Integrating digital history with e-pedagogy to improve student achievement is a logical development but nonetheless challenging in many formal educational settings. Often, teachers assume the 'digital' in digital history refers simply to the use of digitised print resources that offer exciting opportunities to roll out ever more content in multi-media formats; or, 'digital' can refer to business-as-usual approaches such as conventional virtual communication and web-based dissemination interfaces such as e-mail,

discussion fora, blogs, and wikis, mediated (or not) by learning management systems (Crookston, 2006; Shep, Sheehan & McKinley, 2013). Such limited adoption of digital tools and technologies overall is consistent with the NZ Technology Outlook report: "most academics are not using new and compelling technologies for learning and teaching, nor for organising their own research" (Johnson, Adams & Cummins, 2011: 3). Institutions frequently take a standardised approach to e-pedagogy; they do not recognise or cannot afford to resource discipline-specific needs, particularly for historically-informed subjects that are not considered to be as technologically intensive as, for example, science or engineering, but which may, nevertheless, have affinities and points of intersection otherwise unexplored. Furthermore, the development and implementation of advanced digital literacies amongst teachers, often digital immigrants themselves, is shaped by prior knowledge, time availability, and commitment to ongoing training and support at the local institutional level. Finally, assumptions are made about the transferability of digital fluency amongst digital natives from social media tools such as Facebook and Twitter to more interactive environments that include multimedia and mash-ups, or programming tools for analysis and visualization. As The Horizon Report (2010; 2012) makes abundantly clear, short to medium-term educational technology priorities should be e-books, open access content, mobile, tablet, and gesture-based computing, visual data analysis, and various forms of augmented reality (AR). Given AR's potential for facilitating historical thinking by providing "powerful contextual, in situ learning experiences" (Nye et al. 2011: 13), this priority is not surprising. Yet, despite NZ-specific knowledge derived from a recent project on ICT and eLearning in universities (Johnson, Cowie, & Khoo, 2011), there is still a gap in understanding how digitally-mediated, history-informed disciplines can engage productively with contemporary scholarship on e-pedagogy, facilitate transformative learning practices, and improve student learning outcomes.

Research design

'Moving Beyond the Threshold' investigates how university students and teachers use digital media to support the acquisition and retention of disciplinary threshold concepts for transformative learning and improved student outcomes in history-informed subjects. An NZ-wide environmental survey, an online workshop series, and the development,

implementation and evaluation of digitally-mediated coursework will provide research evidence to enhance teaching practice and benefit future-oriented student learning. Innovative features include the creation of a digital history portal for communication, project management, and dissemination, plus the use of self-reflective e-portfolios. Mentoring junior teacher-researchers who are at the forefront of digital adoption and e-pedagogy is a priority. The 16-strong project team consists of six early career teacher-researchers, a research assistant, three mentors, an educational technologist, an eResearch specialist, and three overseas quality assurance mentors. Disciplines covered include: architecture, history, english, art history, music, history of science, book history, education, linguistics, academic development, computer science, and graduate research support.

We have completed stage one of the project, *(re) Viewing the Landscape*, which involved an anonymous questionnaire sent to university teachers, adjunct and tutoring staff involved in subjects with an historical component. This environmental scan collected base-line quantitative and qualitative data about digital methods, assessments, literacies, skills and training. Results are discussed in the following section of this paper. The questionnaire encouraged teachers to volunteer to participate in stage two of the project, *Talking with Teachers*, a workshop series to be run as a mini-MOOC. Given current debates about the efficacy of MOOCs, the concept has been reconfigured by the team as a Connected Open Online Learning (COOL) environment, thus shifting attention from a structure-driven course to the learning experience itself. Extending and the deepening the evidence obtained from the stage one survey, the research objectives of this stage are: to identify, confirm, or contest threshold concepts for historical thinking; to explore what digital literacies are required to reach and move beyond the threshold; and to investigate how these concepts and practices can be embedded into digitally-mediated curriculum design and evaluation. Early in year two, workshop participants will collaborate with the project's teacher-researchers to rollout and evaluate the course, module, or individual assessment task(s) developed in year one. These teams will track student engagement with digital resources, tools, and e-pedagogies at both the formative and summative stages in the *Listening with Students* stage of the project. The aim of stage four, *Recursive Analysis and Participatory Model-building*, is twofold: to integrate the data collected and analysed in stages one through three with a view to developing a flexible framework for understanding the

interrelationships between digital literacies, threshold concepts, and historical thinking; and to consolidate a practice- and evidence-based curriculum development methodology for implementing and evaluating digital literacy and historical thinking in the tertiary classroom setting. The culminating event for the project will be a two-day Teaching and Learning Symposium at Victoria University of Wellington. This symposium will combine team-led focus group sessions for participants across the educational spectrum, as well as curriculum design discussions and the showcasing of digital projects that use specific methods identified through the course of the project as applicable to digitally-enabled historical thinking.

Stage one results

The stage one nationwide survey was sent to 225 potential participants covering the range of history-inflected disciplines represented by the project team and more. It was modeled on a 2006 graduate research project 'Digital resources in tertiary education: a survey of New Zealand studies faculty' by archivist Mark Crookston, and a 2013 pilot study undertaken by Shep, Sheehan & McKinley entitled 'Exploring Digital Technologies and Historical Thinking in Undergraduate learning and teaching at Victoria University of Wellington.' While the 38 respondents are a fairly even mix of male and female, and cover all ages and career stages, middle-aged senior lecturers and professors in history were the most common respondents.

Of the 38 respondents, only 11 have a formal teaching qualification, and only 7 regularly read, and 13 sometimes read, literature on the use of digital resources and digital tools in education. In their own assessment, the level of digital expertise among respondents varies widely between almost-novice and almost-expert, with an average rating of competent. There is a marginally higher level of self-reported digital expertise among respondents aged 44 and under. These responses raise an important question for this study: to what extent does teacher training and digital fluency impact on the willingness and ability of faculty to reflect on digital literacies and threshold concepts, and explore new digitally-enabled practices? These results in turn raise a follow-up question: how might the digital literacy of faculty be most effectively improved, given that for the majority this instruction is likely to take place outside the bounds of a formal teaching

qualification? The survey highlights participation in digital training varies, from informal training with a colleague/friend/student (47%) or online (26%), to formal training in a workshop (39%) or classroom setting (11%). Clearly many respondents learn via a combination of informal and formal channels, but the question of whether the comparative popularity of informal training is due to preference, or the result of a lack of formal alternatives, is left open. Interestingly, no respondents had received formal training online, which suggests that, in New Zealand at least, there is a significant opportunity to improve digital literacy by increased engagement with webinars, MOOCs, and other online platforms, all of which could be delivered across academic institutions and in cooperation with commercial vendors or online communities.

The survey's suggestion that there is significant room for improvement in the area of professional development is reflected in the findings of the 2014 Horizon Report on Higher Education (Johnson et al., 2014), which observes, "There is an overarching sense in the academic world that research credentials are a more valuable asset than talent and skill as an instructor. Because of this way of thinking, efforts to implement effective pedagogies are lacking." It goes on to report that:

> *Despite the widespread agreement on the importance of digital media literacy, training in the supporting skills and techniques is rare in teacher education and non-existent in the preparation of faculty. As lecturers and professors begin to realize that they are limiting their students by not helping them to develop and use digital media literacy skills across the curriculum, the lack of formal training is being offset through professional development or informal learning, but we are far from seeing digital media literacy as a norm. This challenge is exacerbated by the fact that digital literacy is less about tools and more about thinking, and thus skills and standards based on tools and platforms have proven to be somewhat ephemeral.*

The Horizon Report categorises low digital fluency of faculty as a solvable challenge: one that "we understand and know how to solve." Nevertheless, until a higher level of digital fluency is achieved across faculty, their ability to broadly and effectively nurture digital literacies in students is limited. This "solvable challenge" has recently been addressed at a national level, in the aforementioned 2014 Future-focused learning in connected communities report for the New Zealand Ministry of Education, which

prioritises investment in formal and informal professional development in order to build digital learning capability across the education system (O'Riley et al., 2014).

Low digital fluency in students is also an issue recognised by respondents. When asked about the perceived challenges faced by students when digital resources and tools are used in their teaching, 10 of 16 respondents described low digital fluency as a problem. The *2014 Horizon Report* identifies the integration of online, hybrid and collaborative learning as a trend driving changes in education over the next one to two years. The report found that "online learning environments can offer different affordances than physical campuses, including opportunities for increased collaboration while equipping students with stronger digital skills." This trend is reflected in the survey results for this study, which found that 87% of respondents typically teach face-to-face courses with some digital interaction, and 29% typically teach face-to-face courses in which digital technology is a key element. However, traditional face-to-face courses with no online component still account for 34% of respondents' typical teaching environment, hybrid courses account for only 11%, and online courses account for just 5%. This suggests that the opportunities for tertiary students in courses with a historical component to equip themselves with stronger digital skills are limited.

The survey suggests that images/visual material and film/video are the predominant forms of digital media currently being embraced and/or appropriated to shape the way students think about the past. Other types of digital resources most used in teaching are online reference resources, facsimiles of historical documents, and maps. Digital resources less commonly used are audio material, news footage and data sets. These digital resources are most commonly integrated into teaching via class presentations or the course website. They are less commonly assigned to students for review and/or study, or as the basis of group work. Generally, the survey results point towards senior academics being more likely to use digital resources in more sophisticated ways than their junior colleagues.

Respondents indicated that digital resources are used in teaching for a wide range of reasons, such as helping to illustrate a point in history, providing additional context for course content, and better integrating primary sources into the classroom. The least common motivation to use digital resources in teaching was to better challenge critical

thinking skills, which suggests this is territory as yet largely unexplored. The survey found that the most commonly perceived benefits for students of using digital resources in teaching are improving students' understanding of a topic and fostering excitement about a topic. Other perceived benefits are promoting information literacy, and enabling students to use multimedia resources in an historical argument. The least commonly perceived benefits are, surprisingly, in the context of critical thinking.

The 2014 Horizon Report suggests that this tendency to view students as consumers of content rather than creators needs to shift within the next three to five years, if New Zealand students are to keep pace with international trends. The report explains:

> *A shift is taking place in the focus of pedagogical practice on university campuses all over the world as students across a wide variety of disciplines are learning by making and creating rather than from the simple consumption of content. Creativity, as illustrated by the growth of user-generated videos, maker communities, and crowdfunded projects in the past couple years, is increasingly the means for active, hands-on learning. University departments in areas that have not traditionally had lab or hands-on components are shifting to incorporate hands-on learning experiences as an integral part of the curriculum. Courses and degree plans across all disciplines at institutions are in the process of changing to reflect the importance of media creation, design, and entrepreneurship.*

For respondents, the digital tools most commonly used in teaching are bibliographic, image editing, text analysis, and organizational. Less commonly used are tools for networking, visualization, data collection and note-taking. Very few respondents use digital tools for reflective thinking, data analysis, transcription, collaborative writing or brainstorming. Digital tools are most commonly used for organizing class materials, and highlighted as suggestions for students' own use. They are less commonly incorporated as required elements of course assessments, or specific tools taught in a workshop setting within a course, and rarely or never used as the basis of group work.

The most common reasons for using digital tools in teaching are to stimulate discussion and interaction in the classroom, and provide additional context for course content and a dynamic classroom environment. The least common reason is to better challenge

critical thinking skills. This current emphasis on using tools that assist with the presentation of course content rather than enabling interaction with it, also suggests a focus on the student as consumer, rather than creator; however, a third of respondents indicated a desire to make more use of digital tools for brainstorming, collaborative writing and reflective thinking. The most common reasons for using digital tools in teaching appear somewhat at odds with the most commonly perceived benefits for students, which are promoting information literacy and providing students with a vocational/more widely applicable skill. Other perceived benefits are keeping students up to date with new technologies, improving understanding about a topic and getting students excited about a topic. Again, the least commonly perceived benefits are demanding a response and the use of critical thinking, which suggests that the connection between digital literacies and critical thinking is an area yet largely unexplored in New Zealand tertiary courses with an historical component.

Considering the results from the perspective of age group, the overall impression is that both younger ($\leq$45) and older ($\geq$45) academics approach digital technology in a similar manner. Differences are nuanced, such as the tendency for younger academics to perceive somewhat greater benefits from digital tool use than older academics, and vice versa for digital resource use. The results suggest that older academics are keeping pace with digital technology along with their younger colleagues. Alternatively, those older academics who are more digitally savvy may have been more likely to respond to the survey than less savvy colleagues. And, of course, unlike their junior colleagues, well-established academics are more likely to have the time, access to resources, and independence to experiment with course design and delivery.

Discussion

The survey results both confirmed and challenged some of our project assumptions. Firstly, the research literature and our 2013 pilot study suggested that early adopters and pedagogical innovators were more likely to be found amongst junior staff who had neither disciplinary nor institutional traction to make a difference. "Many future-focused teachers find themselves working in isolation, 'reinventing the wheel' with limited opportunities for sharing innovations or collaborating" (O'Riley et al., 2014: 22). The

survey results confirm that, without the responsibility for course development or delivery modes, early career academics are rarely in a position to capitalize on their digital expertise. Moreover, several teach only face-to-face, and thus have no opportunity to explore a full complement of digital pedagogies. And yet, surprisingly, there is no correlation between age and the use of digital content in teaching among lecturers and professors, leading us to again question the already contested divide between the digital native and the digital immigrant.

Secondly, the message that digital literacy involves more than just ready access to online resources whether images or other, predominantly, visual material to supplement textual material is still very slow to get through. Our survey made a point of clearly demarcating digital resources from digital tools. Materials that are either born digital or that have been digitized include digital facsimiles of documents, photographs, ephemera and art work, news footage, audio material, data sets, online reference resources, and maps. Digital tools are used to manipulate, catalogue, interpret, and analyse material and include tools used for citation/bibliographic management, data collection, management and analysis, image editing, note taking, textual analysis, transcription, and visualization. This separation was the result of formal and informal interactions with colleagues for whom the digital was synonymous with the digitized, and for whom the idea of using digital tools upon digital data for digital analysis was foreign territory; predictably, the results reveal that digital tools are most often used behind the scenes by teachers to prepare course material for delivery with the responsibility for developing students' digital competencies left to themselves.

Thirdly, improvement of critical thinking skills was not perceived as one of the main benefits of digital resource and tool use. We originally added a series of open-ended questions to the survey to encourage reflections on threshold concepts and historical thinking. We even defined each of the 'Big Six' of historical thinking to provide some guidance and prompt discussion. In the final cut, however, we replaced them with a brace of questions on the perceived effect of digital resources and tools on critical thinking and student engagement. Why? Two earlier digital history workshops revealed that even amongst seasoned 'digital pedagogists' in the tertiary sector and despite several significant recent TLRI projects, threshold concepts are still not well-known in New Zealand and historical thinking hardly at all. Stage two, Talking with Teachers

through our COOL online workshop series, will, we trust, promote awareness and application of threshold concepts and historical thinking as our teacher-researchers and wider university participants reflect upon and evaluate their own practice in light of the insights offered by this pedagogical framework.

Conclusion

When library and information studies student Mark Crookston surveyed university faculty in 2006 to assess whether digital resources were meeting the needs of tertiary educators of New Zealand history and Māori studies, the results were sobering. Despite a plethora of digitized resources and an almost-universal awareness of the pedagogical significance of using digital, especially visual, resources in the curriculum, there was little understanding of the end-users, whether students or teachers, or structures in place to develop that understanding amongst the library and archive professionals. In 2013, Jock Philips, Senior Historian with the Ministry for Culture and Heritage and Director of *te Ara*, the online encyclopedia of New Zealand, updated his 2001 study on internet usage and web-based content creation amongst NZ professional historians and educators. As he noted: "Eight years ago I was bold enough to predict the likely future of digital history. I was proven very wrong. I do not dare predict the next decade; but I can hope. My hope is that archivists and historians start talking together and that historians not only use the internet for their research, but also see it as a creative outlet, as way to bring the past to life in a meaningful way and to inspire others with the passion to explore for themselves. Unless this happens I fear that historians will end up talking only to themselves."

This sobering assessment suggests that for many academics teaching historically-informed subjects, the creative deployment of digital technologies to promote critical thinking may itself amount to a threshold. Like the authors of the Horizon Report, however, Philips' comments suggest that this is a solvable problem, particularly if these very same digital technologies are employed (in concert with more traditional avenues) to facilitate robust discussion, debate, innovation and collaboration that will help engaged academics push past this state of liminality. Over the next two years, the 'Moving beyond the threshold' project team hopes to make a difference to a new

generation of digital pedagogists and historical thinkers, inspiring teaching and learning in the 21st century as a space for both knowledge creation and knowledge sharing, a space for "complex problem-solving, innovation, communication, and collaboration" (O'Reily et al., 2104: 6).

Acknowledgements

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