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Moving beyond the threshold: A TLRI final report 2014–16

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Introduction

Moving beyond the threshold set out to interrogate what it means to think historically in the digital age (Tredinnick, 2013). 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' (Schulmeister, 2015; Tapscott, 1998) 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 evidence of effective practices 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, and address gaps in students' access to resources by demographic, subject matter, ethnicity, and gender. This Teaching and Learning Research Initiative (TLRI) final report tells the story of how a project that combined threshold concepts, historical thinking, and digital technology became, in the process, an investigation into academic identity and the ontological challenges of what Vaughan et al. (2015) have termed 'threshold experiences'.

Tactical frameworks

The 21st Century Learning Reference Group's 2014 report *Future-focused learning in connected communities* offered 10 priorities and 23 recommendations to shape government policy and strategic interventions in the New Zealand educational landscape. A key platform was recognising, understanding, and embracing the changing nature of knowledge, the impact of digital technologies, and the power of transformative teaching and learning. "Digital technologies change the way students learn, the way teachers teach, and where and when learning takes place" (O'Riley & 21st Century Learning Reference Group, 2014, p. 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" (p. 34). Consequently, digital pedagogy "requires us to rethink much of what we believe about education" (p. 28).

In order to address these contemporary challenges, *Moving beyond the threshold* innovatively combined the frameworks of historical thinking (Seixas & Morton, 2013), threshold concepts (Meyer & Land, 2003), and decoding the disciplines (Shopkow, 2010), and positioned digital technology at their intersection. Historical thinking is a set of six key concepts, often termed the 'big six'—derived by Canadian educationalist Peter Seixas—that have shaped secondary school history curriculum development and teaching practices. These key concepts are: historical significance; primary evidence; continuity and change; cause and consequence; historical perspectives; and ethical dimensions. However, the process of fully understanding these often difficult, counter-intuitive, or even alien concepts has been described as an 'unnatural act' (Wineburg, 2001).

We proposed that the acquisition and retention of these concepts shared the characteristics of troublesome knowledge embodied by Ray Land and Jan Meyer's notion of threshold concepts: transformative; troublesome; irreversible; integrative; bounded; discursive; reconstitutive; and liminal. Developing students' grasp of such "troublesome knowledge" (Meyer & Land, 2003) "cannot be acquired purely from everyday experiences" but

rather requires “systematic instruction” (Alexander, 1997). In order to unpick what these threshold concepts meant in practice, the research team followed Leah Shopkow’s rubric for decoding the disciplines: identify a bottleneck; uncover tasks to resolve; model tasks; give students practice and feedback; motivate and lessen resistance; assess student mastery; and share what has been learned.

Moreover, 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, p. 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?

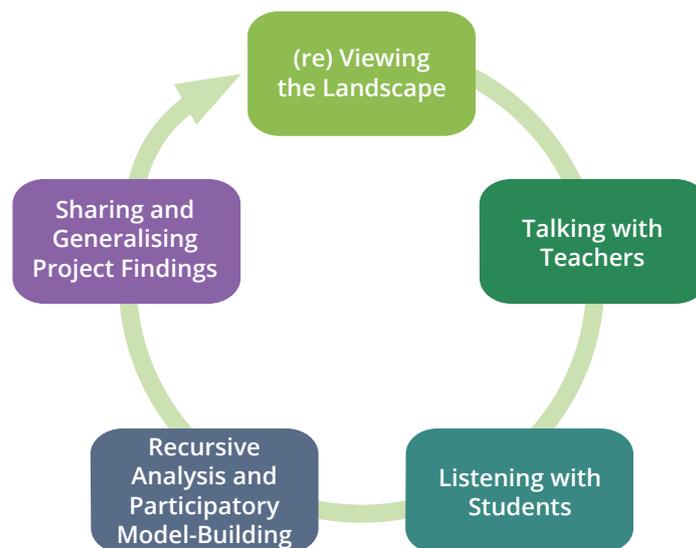
Research design

The project’s cluster of interrelated research questions were: What is the relationship between digital literacies, threshold concepts, and transformative learning outcomes in history-informed disciplines at New Zealand universities? What are the characteristics of digitally-mediated teaching and learning in university programmes and subjects with an historical component? Supporting questions included: How does prior digital technology learning determine how students and teachers engage with digital technology in history-informed subjects? What particular digitally-mediated activities, assessment tasks, and approaches are successful in helping students to achieve the disciplinary threshold concepts of historical thinking? How do/can digital competencies of teachers shape the learning environment and improve students’ learning outcomes in the history-informed classroom?

The collaborative team of 18 teacher-researchers, educational technologists, and mentors were drawn from history-informed subjects at Victoria University of Wellington. Their expertise ranged from architecture and history of science to English literature and art history, and from Māori studies and Holocaust studies, to text technologies, music, and linguistics. The team conducted a nationwide survey to assess the levels of digital literacy amongst both tertiary teachers and learners and the resulting challenges to curriculum re-engineering, assessment re-design, and professional development across the sector. Within the project team we workshopped various aspects of historical thinking, shared and critiqued discipline-specific learning tasks, and undertook iterative self-reflection on our own teaching practices and learning strategies. We also explored how immersive technologies, embodied experiences, and visual engagements create new learning opportunities and recalibrate historical thinking for the digital age.

Moving beyond the threshold was originally conceived as an integrated, multistage project.

Figure 1:



1. *(re) Viewing the Landscape*, involved an anonymous questionnaire sent to New Zealand university teachers, adjunct, and tutoring staff involved in subjects with an historical component. This environmental scan collected baseline quantitative and qualitative data about digital methods, assessments, literacies, skills, and training to help inform subsequent stages.
2. *Talking with Teachers* was conceived as a mini-MOOC (massive open online course) workshop series that brought together volunteers from the stage one survey in conversation with the project team. The research objectives of this stage were to identify, confirm, or contest threshold concepts for historical thinking; to explore which 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.
3. *Listening with Students* was designed to track student engagement with digital resources, tools, and e-pedagogies through course, module, or individual assessment task(s) developed collaboratively between workshop participants and the project's teacher-researchers.
4. *Recursive Analysis and Participatory Model-Building* was meant 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.
5. *Sharing and Generalising Project Findings* was conceived as a boutique symposium to bring interested colleagues together to build a wider teaching and learning community of practice, encourage participation by junior academics and aspiring teacher technologists, and reach out to members of the wider tertiary sector including polytechnics, wānanga, and private training establishments (PTEs).

Stage one results are reported below. Subsequent stages were modified through the course of this two-year exploratory project: stage two redirected the focus from external engagement to nurturing the self-reflexive skills of our teacher-researchers who then drew from their own teaching experiences and student responses to reshape the focus of stage three. Five teaching case studies enabled the project team to explore the theme of embodiment as an important ontological dimension of digital delivery technologies. A set of seven exit interviews were conducted by one of the project's mentors to help assess project motivations, participants' learnings, and lessons for the future. Six teacher-researchers and one research mentor were available at the time the interviews were conducted. Finally, rather than a single capstone event, participation in various local and international conferences and symposia throughout the project time period enabled the team to share findings using new digital presentation tools, respond to critical feedback, and build new collaborative networks.

(re-) Viewing the landscape

A nationwide survey was sent to 225 potential participants covering the range of history-inflected disciplines represented by the project team and more. It was modelled 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, and McKinley entitled *Exploring digital technologies and historical thinking in undergraduate learning and teaching at Victoria University of Wellington*. Despite the low response rate, the 38 respondents were a fairly even mix of male and female, and covered all ages and career stages: middle-aged senior lecturers and professors in history were the most common respondents. The participants were primarily from outside Victoria University of Wellington and the results both confirmed and challenged our earlier findings.

Digital fluency

Of the 38 respondents, only 11 had a formal teaching qualification, and only seven 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 varied widely between 'almost-novice' and 'almost-expert,' with an average rating of 'competent'. There was a marginally higher level of self-reported digital expertise among respondents aged 44 and under. These responses raised 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 raised 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 highlighted that 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 learned 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, was 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 low response rate, combined with the 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* which observed, "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" (Johnson, Adams Becker, Estrada, & Freeman, 2014, p. 24). 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. (p. 22)

Both the 2014 and 2016 *Horizon reports* categorise low digital fluency of faculty as a solvable challenge. 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: "digital literacy differs for educators and learners, as teaching with technology is inherently different from learning with it" (Johnson, Adams Becker, Estrada, & Freeman, 2016, p. 24). This 'solvable challenge' was addressed at a national level, in the *Future-focused learning in*

connected communities report for the New Zealand Ministry of Education, which prioritised investment in formal and informal professional development in order to build digital learning capability across the education system (O'Riley et al., 2014). But it must be recognised that “digital literacy is not a checklist of specific technical skills, but rather the development of critical thinking and reflection in various social and cultural contexts” (Johnson et al., 2016, p. 24).

Low digital fluency in students was 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* identified 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 was reflected in the survey results: 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 in courses with a historical component for university students to equip themselves with stronger digital skills are limited, particularly as the focus of online learning is quickly moving to technology-intensive blended learning environments, flipped classroom pedagogical models, and MOOC-enabled platforms.

Digital resources and digital tools

The survey also examined the use and range of digital resources and tools. Images/visual material and film/video were the predominant forms of digital media adopted to shape the way students think about the past. Online reference resources, facsimiles of historical documents, and maps were the next most prevalent; audio material, news footage, and data sets were used the least. These digital resources were most commonly integrated into teaching via class presentations or the course website. They were less frequently assigned to students for review and/or study, or as the basis of group work.

Respondents indicated that digital resources were used to help illustrate a point in history, providing additional context for course content, and better integrating primary sources into the classroom. The survey found that the most commonly perceived benefits for students of using digital resources in teaching were improving students' understanding of and fostering excitement about a topic. Other perceived benefits were promoting information literacy, and enabling students to use multimedia resources in an historical argument. Surprisingly, the least common motivation for and the least commonly perceived benefits of using digital resources were to better cultivate and/or challenge critical thinking skills.

These findings reinforce both the *2014* and *2016 Horizon reports* that note the tendency to view students as consumers of content rather than creators. They observe that there needs to be a shift within the next three to five years if New Zealand students are to keep pace with international trends, respond to industry-driven demands for vocational education and training, blend formal and informal learning, and make education relevant. The *2014* 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 crowdfunding projects in the past couple of 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. (Johnson et al., 2014, p. 14)

Such a focus on creation and hands-on learning needs to be facilitated by an aptitude with digital tools. Survey respondents noted that the digital tools most commonly used in teaching were bibliographic, image editing,

text analysis, and organisational. Less commonly used were tools for networking, visualisation, data collection, and note taking. Very few respondents used digital tools for reflective thinking, data analysis, transcription, collaborative writing, or brainstorming. Digital tools were most frequently used for organising class materials, and recommended to students for their own use. They were less commonly incorporated as required elements of course assessments, or taught in a workshop setting within a course, and rarely or never used as the basis of group work.

As with digital resources, the most commonly cited reasons for using digital tools in teaching were to stimulate discussion and interaction in the classroom, and provide additional context for course content and a dynamic classroom environment. Similarly, the least common reason was to better challenge critical thinking skills. This emphasis on using tools to 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.

Summary of findings

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, p. 22). The survey results confirmed that, without the responsibility for course development or delivery modes, early career academics are rarely in a position to capitalise 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 was 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’ (Bayne & Ross, 2011).

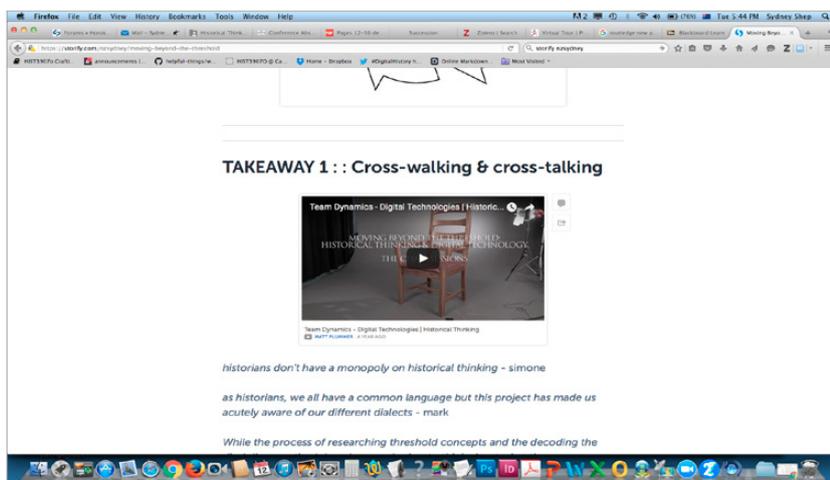
Secondly, the message that digital literacy involves more than just ready access to online resources, whether images or other, predominantly visual material to supplement textual material, is still very slow to get through. Our survey made a point of clearly demarcating digital resources from digital tools. Materials that are either born digital or that have been digitised include digital facsimiles of documents, photographs, ephemera and artwork, 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 visualisation. The survey’s separation of digital resources and digital tools was the result of formal and informal interactions with colleagues for whom the digital was synonymous with the digitised, and for whom the idea of using digital tools upon digital data for digital analysis was foreign territory unless they were already familiar with digital humanities approaches. Predictably, the results revealed 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. This decision was based on the experience of coordinating two earlier digital history workshops which 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.

Refocusing the project

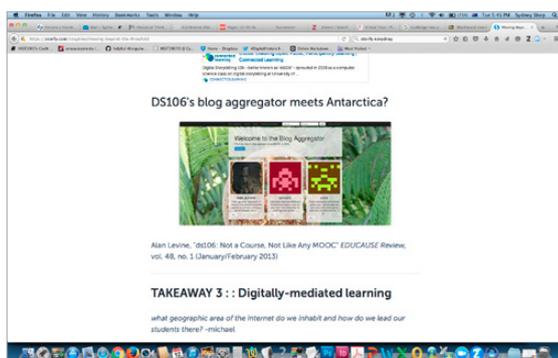
While the survey results were being processed, the project team explored various digital platforms for project management, communication, resource sharing, and archiving. We selected CourseSites, a prototype MOOC platform that shared the look and feel of the university's standard Blackboard learning management system and one that could harness the socialisation rather than simply technological aspects of an engaged MOOC environment. The project site was structured into content, discussion, and reflective journaling spaces signalled by action verbs such as inform, share, study, view, talk, reflect, make. A twitter feed and Zotero bibliography kept participants up to date with relevant new material. At the same time, video footage was captured from project participants about motivations to join the project, what historical thinking meant to them, and stories of exemplar teaching and learning experiences. This footage was later edited into The Chair Sessions, thematic shorts about aspects of the project that were screened at several symposia.

Figure 2:



A significant early intervention came in the form of a guest seminar and workshop by the founder of the digital storytelling platform ds106, Alan Levine. This inspired the team to consider trialling a blog aggregator in conjunction with our MOOC-enabled workshops as a way of empowering students to be curators of their own digital presence, to share ideas and assessment tasks across multiple platforms, and to facilitate fast feedback by teachers.

Figure 3:



Team members had the opportunity to present work-in-progress findings at a Digital Learning Symposium at the University of Waikato: <https://storify.com/nzsydney/moving-beyond-the-threshold> and at a joint TLRI/NPF colloquium in Wellington: http://prezi.com/xykj1owfczD0/?utm_campaign=share&utm_medium=copy&rc=ex0share. We also kept abreast of the increasingly robust discussions, both in New Zealand and overseas, around the pedagogical value of MOOCs. Upon reflection, we coined the term COOL (connected

open online learning) to describe our proposed interactive platform, thus shifting attention from a structure-driven course to the learning experience itself.

During formal and informal discussions amongst project participants, it became apparent that threshold concepts *were* a threshold concept and thus a barrier to productive engagement. Furthermore, a number of structural biases impacted on sustained motivation and thus project deliverables as originally conceived. Participants remained pedagogically hungry but were chronically time poor; twice-monthly team meetings were not enough to maintain project momentum, and we relied upon our online spaces to foster continuity—for better or worse. Edu-speak was a perceived stumbling block and several questioned the return on investment of engaging with literature outside their primary disciplinary domain:

I've been surprised by how challenging I've found the language and jargon ... that feels like a constant battle.

[W]e had too much on, and I couldn't see any benefit. I was getting a lot of messages from the university system saying you have got to focus on the things that are going to give you the research outputs and teaching outputs that you need.

[Education literature] ... a foreign language compared to anything I was used to ... a big time commitment, and reading in a different discipline is hard work... I would find myself thinking, why am I doing this, and I had at that time things that seemed higher priorities. You know, grant proposals, and lectures to write, and my own research, which I considered to be my research.

Consequently, the project shifted from implementing historical thinking practices through MOOC workshops with self-selected survey participants to encouraging teacher-researchers to learn about historical thinking and threshold concepts while reflecting on their own practice. We conducted several blended learning seminars, each led by a different teacher-researcher, which introduced one of the historical thinking concepts, provided readings and reflective prompts, and provided face-to-face and online forums for investigating the nuances of disciplinary contexts:

I guess I'm not alone in starting an academic career with no training... What's been great about this group—the readings, the sharing with other academics—is that I've discovered that some of the stuff I have done kind of instinctively, or things that have felt like fun and creative and useful ways to teach have some pedagogical grounding and words to describe them! Learning about all this—historical thinking, threshold concepts etc—means that I can now apply these sorts of techniques and tools in a much more conscious and consistent way across my teaching. It will also help me better share with others (colleagues, students) if I can better articulate what I'm actually doing! I've also learned a lot of new things, and been exposed to new ideas and concepts that I'll be able to use in my future teaching.

These seminars were resoundingly successful, providing unexpected connections between disciplines and practices as well as surprising challenges to individual participants' assumptions and expectations. The teacher-researchers thus became the project's learners as we turned from the epistemologies of subject domain content to the ontologies of academic identity. Along the way, the team focused on understanding what embodiment means in the digital domain and we shifted our thinking from threshold concepts to threshold experiences.

Practice stories

In *From MOOCs to Makerspaces*, presented at the Distance Education Association of New Zealand (DEANZ) 2016 conference, we explored how immersive technologies, both past and present, embody new learning opportunities and recalibrate historical thinking for the digital age. Five case studies were drawn from our current practices and investigated a complex spectrum of ideas and experiences from embodiment to disembodiment <http://www.tlri-deanz2016.strikingly.com>. This theme resulted from trying to understand our tactical frameworks of historical thinking, threshold concepts and decoding the disciplines in the context of digital approaches, digital technologies, digital solutions, and digital literacies. The theme also reflected a need to reposition ourselves as teacher-learners and understand better what the affordances of the digital might be in relation to our own personal engagement and identity politics. The key findings of each of these studies,

using the voices of individual project participants, are noted below. Our presentation was singled out by Professor Curtis Bonk, Indiana University and DEANZ international keynote speaker, as one of the highlights of his conference experience; this was both gratifying and humbling.

Ozenfant studio [Michael Dudding]

We use the tools at our disposal as best suits each situation, whether analogue or digital, and with the ultimate aim of guiding our students' learning and staging transformative learning experiences. So, how do history educators make the most of whatever tools are being employed? What are the commonalities of approach or effect that allow us to explore the intersections between physical and virtual learning? For architectural history students, the disparity between the typical 19th century urban fabric and the comparatively alien architecture of modernism in the early 20th century is a juxtaposition that needs to be experienced to be appreciated. Using Google Street View, I take my students for a pleasant stroll down a Parisian avenue in class, discussing elements of the facades as we do so until we arrive at the Ozenfant house and studio <https://goo.gl/maps/48XwMUMT1o62>. To show a picture of the building on its own does little. To show a picture of the building with some context does a little more. But to approximate the act of walking down the street and discovering that contrast as an experiential sequence is the next best thing to doing it in 'real life'. In fact, I think it is better, because I can control the gaze. By acknowledging that our bodies are involved in how we interpret the world, I have sought to evoke an embodiment through digitally-mediated representations of real physical spaces. It is an embodied immersion effected/affected by the absence of the body in a spatialised experience—a phenomenon familiar to gamers everywhere. There are other forms of embodiment that are useful to us as educators in the contemporary and connected world but the crucial point to keep in mind is Merleau-Ponty's concept of 'extension'. He argues that tools can be incorporated into one's body schema and thus are as equally involved in how we interpret the world as the body itself. Digital tools, from our point of view, are no different, be it Google Maps or a YouTube video. If they are part of students' schema for experiencing and interpreting the world, then they're also fair game for our attempts to deploy them to achieve embodied teaching and learning experiences.

Retro Meets Metro [Matt Plummer]

Retro Meets Metro is a pop-up makerspace @ Victoria University of Wellington facilitated by ITS and Wai-te-ata Press. It is a free, participatory, and creative space where people gather to share resources and knowledge, work on projects, network, and build, but with a difference: firstly, its focus is as much on starting conversations and generating ideas as it is on making things; secondly, it is portable, having made appearances across campus, various spots in our main student hub, at a futurism symposium in the film and theatre department, and at Wai-te-ata Press itself. The idea driving this mobile initiative is to use technology as the engagement hook, a kind of Trojan horse for catalysing creative and critical thinking about language and history, particularly by reinforcing the idea that technology develops in a continuum rather than in a vacuum. The digital thus provides a space for making content, not just receiving it, in ways that are not tied to a specific physical location. As proactive and interactive, fun, and relaxed, the makerspace incorporates aspects of historical thinking, digital technology, and transformative learning in an informal but potentially rich learning environment. By using a 3-D printed text block in a 19th century press, or combining a stereoscopic viewer with a Viewmaster and an Oculus Rift, technology is simultaneously old and new, both physically 'real' and digitally emulated. Technological immersion enables students to reconsider and reflect on their connection to the world around them and to interrogate what, how, and where their body sits in an embodiment continuum. In an informal poll, students either agreed or strongly agreed that the nature of the experience had some impact on the way they think about both history and technology, and they wanted more of the same.

Antarctica live [Jacqueline Dohaney and Rebecca Priestley]

Antarctica Online (AO) was a new, entirely online course launched in 2015 at Victoria University of Wellington. It was run in Blackboard's Open Education learning management system and consisted of three modules: Antarctic Science History; Geology of Antarctica; and Constructing Antarctica (i.e., the societal and political views of Antarctica). An introductory module allowed students to become familiar with the learning platform and introduce themselves to the course participants and lecturing staff. A unique component of AO was using immersive video lectures to create authentic 'field experiences' through deferred embodiment. These videos were the primary mode of content delivery, and were also the focus of promoting historical thinking and engaging learners in threshold experiences. Given the difficulty in taking students physically to Antarctica, the digital solution enabled them to participate in an authentic, albeit virtual, experience and allow them to feel that they were in the field alongside the lecturers. The immersive experiences were framed by several questions: 1) What does a scientist look like in Antarctica?; 2) Where does a scientist go in Antarctica?; and 3) What does a scientist do in Antarctica? Descriptive language and imagery, authentic costumes and characters, and inviting landscapes were all used as inquiry pathways. Through immersion learners could travel through space and time in their imaginations and embody the Antarctic experience.

For the first module, the lecturer took the students on a 'Discovery Channel'-style journey in Antarctica, in time (back to the early explorers, and to the present) and in space (sites around Ross Island), employing historical empathy/perspectives in her dialogue and her behaviour, and reading from primary sources from early explorers. As the lecturer explains,

I often include narratives about personal experiences as a way of engaging the audience. The video lecture format—and the extremity of the experience—gave me an opportunity to do this on a deeper and more intimate level. Rather than recounting a past experience to students, I was inviting them to join me while I was living the experience. I tell them that I'm feeling cold, that the sun is bright, they watch as I put on sunscreen, I talk about the clothes I'm wearing and invite them into my tent to see my sleeping space. In part, I'm trying to create a sense of intimacy with the student early on in the module. The medium I'm working with is video and the closest parallel I can find is not from classroom lectures but from nature and historical documentaries.

Students' responses to the immersive videos were overwhelmingly positive:

I enjoyed being able to see what it's like down there, the landscape, historic huts, stations etc. Pleased you filmed it on location and not just in a lecture room somewhere"; "It was a lot better than pictures because you could get a better feel of the place and it was easier to feel like you were there seeing what the camera was seeing"; "A great way to learn, as well as see exactly what the working environment and surrounds are like at Antarctica, as well as the diversity of research and jobs there.

Visualising Holocaust narratives [Simone Gigliotti]

The History Honours course *A Usable Past: Normalising the Extreme in Postwar Germany* addresses how the Nazi past and the Holocaust have been understood in legal, social, and political terms in postwar West and East Germany and since reunification in 1990. It studies how the Nazi past was represented in perpetrator and Jewish victim testimony and in war crimes trials, and how these crimes were addressed politically in Allied occupation policies, democratisation strategies, social protest, and policies on immigration. Finally, it investigates encounters with difficult histories in memorials, literature, art, and film. My goal, as course coordinator, was to see how students curated the space 'in between' Jewish presence and absence, or Jewish embodiment in Germany and its Nazi-engineered disembodiment. The course's final assessment item asked students to curate a visual workbook consisting of 15 images and a 3,000 word commentary that demonstrated the student's ability to engage in thinking through and reflecting on critical visual memory and practice over time and place. I was interested to see how students curated a storyboard about the memory of the Nazi past in landscapes, memorials, and commemoration. I also wanted to understand how students balanced their potential emotional fallout from reading about the presence and absence of Jews in Nazi Europe. In addition to detailed instructions, I was available as a guide for students throughout the learning journey. The resulting

visual workbooks showcased how struggles to translate the legacies of extreme pasts can be told. The students' empathetic engagement with memorials as the space in between embodiment and disembodiment was an inter-textual exercise in what James E. Young* has articulated as rhetoric and its arts. By being both present and absent themselves, and identifying with and critiquing the process of memorialisation, the students clearly connected their historical, visual thinking with "the never-to-be-resolved debate over which kind of memory to preserve".

*James E. Young. (1993). *The texture of memory: Holocaust memorials and meaning*. New Haven and London: Yale University Press.

Wulf and Eadwacer [Lizzie Towl]

Students respond positively to other, more low-tech forms of deferred embodiment. In my lectures on Anglo-Saxon literature as part of a history of English literature course, I read the poem 'Wulf and Eadwacer' aloud to the class. The poem itself is deeply ambiguous; one of the few certainties is that the 'I' of the poem is female, because she uses the feminine form of an adjective to describe herself ('rēotugu' [mournful]). Against the grammatical detail to which scholars tend to cling in cases of narrative ambiguity (and with which students are often less interested) stands the strong voice of this female 'I'. Part of my approach to reading this poem involves explaining my own experience of getting goosebumps every time I read it. I spend time building the empathetic links between the present and the present of the speaker of the poem, focusing on a single line: 'Geh-rest þū, Ēadwacer?' [Do you hear me, Eadwacer?]. This phrase—the modern equivalent of which the students themselves might use to get or check for someone's attention—has the effect of closing the thousand-year gap between those in the lecture theatre and this female voice. The lecturer's voice—a woman's voice, speaking a woman's words—is a bridge; she becomes a proxy, bringing this unnamed woman nearer to them. By contextualising the experience of reading the poem and being prepared to admit that my body reacts involuntarily to speaking these words makes this reading different and gives the students permission to have and to admit to similar experiences themselves. Students' evaluations repeatedly featured positive comments about reading the poem to the class. Given that reading aloud in a lecture is a very common practice in my discipline, and the fact that the students did not comment on the my reading of Middle English poetry (at which I am much more experienced and probably, therefore, more adept), the sheer volume of comments suggest that there must have been something special about this reading, something tied to the embodied voice and the resulting effect of embodiment that collapsed the distance between time and space, between past and present.

Embodied discussions

In the practice stories outlined above, the use of Google Street View enabled students to interact dynamically with a contemporary Parisian cityscape and understand the radical impact of the Ozenfant studio designed in 1922 by Le Corbusier. Video lectures for virtual field trips in a MOOC-enabled course about Antarctica situated students empathetically in place by proxy. The introduction of historical technologies such as stereoscopes and handpresses into 'Retro Meets Metro' interactive technology makerspaces attuned students to the continuities between old and new media as well as physical and virtual haptic learning. The analysis of an Honours assessment that used reflective visual workbooks to interrogate Holocaust memorialisation practices in Germany combined disembodied thinking about cultural memory with visual thinking and empathy. Finally, reading aloud the Anglo-Saxon poem 'Wulf and Eadwacer' in an undergraduate literature class demonstrated the power of embodied voice to create a tangible presence in a non-digital environment.

In retrospect, the steer towards focusing on embodiment was the natural extension of a concern with ourselves as learning instruments and related issues of academic identity and its construction. As one participant noted:

...decoding the disciplines gives me a framework to think about a learning exercise or the course design and moving away from lectures towards teaching and the mediation of knowledge through digital tools, and what that means beyond blended learning, in an experiential level and how those tools become extensions of ourselves.

Another suggested that:

...threshold concepts I really found engaging ... bringing the big six into my teaching and thinking about how I structure teaching and decoding the disciplines ... it reinforces what I do, how I think about history myself, but really for my students ... it's not about making them into historians, but it's making them appreciate this body [of knowledge], it's about identity building more than anything.

These five case studies exemplified how themes such as continuity and change, cause and consequence, historical perspectives, and place-based empathy can transform learners' engagement with historical thinking as a digitally-immersive experience across diverse delivery platforms. We explored and gained useful insights into how historical thinking can be unsettled and enriched by these immersive, if not potentially disruptive, technologies of embodiment.

We also had the opportunity to reflect on the similarities and differences of our respective disciplinary contexts:

...what I found really valuable was when we went over the big six historical thinking concepts and people showed how they used them in their teaching ... seeing the way different people taught history and in different disciplines, and the way that the theory was informing their teaching.

It gave me the opportunity to think more about the theory of historical thinking, and how other people from different disciplines approach it, even though it's very abstract, for a lot of people they don't know how to integrate it. And for historians, we implicitly teach historical thinking without stipulating it as such.

The project as a whole challenged how we communicate and work across disciplines, and became another kind of threshold concept grounded in our academic identity formation.

From threshold concepts to threshold experiences

In *Knowing practice*, Karen Vaughan, Linda Bonne, and Jan Eyre examined the authentic learning experiences, mentoring, and support arrangements, and ontological challenges amongst three groups of industry practitioners in New Zealand: GP registrars, carpenters, and engineering technicians. The study extended Land and Myer's notion of threshold concepts to consider 'vocational thresholds'; that is, opportunities "to move to a new level of capability and vocational identity that integrates what they know, what they can do, and *how they are* as practitioners" (Vaughan et al., *Summary report*, 2015, p. 2). This focus on vocational identity shifts thinking from concepts to experiences, and emphasises that learning thresholds are not solely epistemological, but rather, profoundly ontological. Our project team held several discussions with Karen. It was perceived that her study was transferable to the university sector and, in fact, provided the critical key to unlocking the team's difficulties with threshold concepts. It became startlingly clear that the thresholds we were endeavouring to move beyond were less about content, and more about the nature of academic identity itself.

In an academic setting, domain knowledge is acquired through a dynamic process that leads from novice to expert. It is solidified through teaching and/or research activity during and subsequent to postgraduate studies. Early career appointments, then promotion and tenure, seal the professional stature and identity politics of the fully-fledged academic. However, when drawn out of disciplinary comfort zones, particularly while that identity is in the process of being fashioned, certainty and confidence wane, anxiety mounts and, over time, can have a debilitating effect on personal as well as professional identity:

You know, social science research is a special language, I'm quite good at languages but it's still not comfortable. So I've just finished doing all this stuff ... then I went back to my book and it was like coming home, I was going back into [the world] where I was trained and I'd read everything and I understood everything ... there's an extent to which, although fascinating, there's an extra level of intellectual engagement required when you're not at home.

As the project developed, it became apparent that, while our teacher-researchers were experts in their own subject domains and good teachers who aspired to be better, they were, for the most part, uncomfortable with

educational research and its discourse. They also had difficulty in arguing for the relevance of understanding pedagogically-driven frameworks in a world that prioritises performance-based research assessment, industry relevance, and employment-readiness imperatives, that must function in a climate of persistent fiscal constraint, and is pressured by new, increasingly digital, delivery modes.

In situations such as experienced by our teacher-researchers, those who were most successful in navigating the foreign world of educational research were nimble edgewalkers (Krebs, 1999; Tupuola, 2004): confident in their own skin, often working across disciplines, and happy to embrace new challenges even if they were replete with doubt and discomfort:

I've taken to calling on doubt and discomfort to challenge students, to move beyond the threshold ... to find those parts the students are really having trouble getting and ... teach them one way in a way that's familiar, then expose that in a different setting or point of view to show them that the path of knowledge they've already acquired is not always the only path. If we shake that up we can resettle them into different ways of knowing. ...that came from me but was inspired by the ideas of liminality in threshold concepts, a period of being unsettled, and that's what it takes to get beyond the threshold.

Personally this for me has been about knowing more ... about how/why I do things rather than about outputs. It's been more personal or professional development than getting those research outputs or even dissemination even though there are still opportunities for that and we're doing a paper very soon, but that's mainly what I've taken out of it and it shouldn't be overlooked as an output in itself. Because we've all done this from different schools so that development has happened across the university in a more general sense as we talk to our colleagues about the project so that filters out, so I think that's a real nice output in itself but hard to measure.

Looking forward

This project has taught us many things. We began by exploring how digital technologies framed by the intersection of historical thinking, threshold concepts, and decoding the disciplines could help transform learning and improve student engagement in history-informed subjects. We examined closely the role of embodiment and disembodiment in connecting teachers and learners with content. We ended by acknowledging that issues of academic identity lay at the heart of the project's teaching and learning experiences.

Some of the participants will continue to explore questions raised by the project: How do disciplinary frameworks across arts, humanities, social sciences, management, and science impact on historical literacy? How can we further engage students through an understanding of embodiment in the COOL environment? How does the ability for academics to negotiate the liminality of threshold concepts shape the learning experiences of their students? How do educational beliefs and philosophies impact on the success of or create barriers to engaging with threshold experiences?

In the bigger picture, the project led us to question the quick fix, 'tips and tricks' mentality that currently frames much of the pedagogical training in tertiary institutions. This is not to say that sustained self-reflection and robust practitioner-led dialogue does not occur in the university setting. However, in a profession that does not require a teaching degree, that privileges research over teaching, and remains chronically time-poor, incentives are lacking, quality is potentially compromised, and authentic learning experiences are fragmented. Institutional refocusing, structural change, and policy realignment are necessary if education under the sign of the digital is to flourish and impact future teachers and learners. This is critical for those involved in cross-disciplinary projects, practices, and activities that enrich the teaching and learning environment.

Nevertheless, small steps and small interventions can make a difference. In echoing the chief takeaway of the *Knowing practice* study, university sector academics and professional support teams should all be asking: "What is the most significant learning experience I have had that led to a change in my practice and/or a change in how I saw myself as a practitioner? What happened? What has been different since?" (Vaughan et al., *Summary report*, 2015, p. 7). Until we undertake this kind of deep reflection, we will not cross thresholds, be in a position to help others do so, or move beyond them ourselves and/or together in the spirit of *ako*.

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