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Object Based Learning in the Social Sciences: Three Approaches to Haptic Knowledge Making

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Abstract
Object-based learning, where students learn by hands-on interactive experiences with skills and objects, provides an active, multi-layered learning experience. Engaging haptic perceptual styles to build meaning and understanding through tactile stimuli, object-based learning can increase student engagement and satisfaction, and improve knowledge retention and higher-level critical thinking. This paper examines three case studies where haptic pedagogical principles were employed to develop learning experiences for key themes, practices and challenges of anthropology. The first, an archaeological laboratory interaction, gave students physical artefacts to touch, manipulate and critically consider, embedded within real-life archaeological case studies. The second, an interactive session using hand-written letters from asylum seekers drawn from an archival collection, connected students with otherwise-inaccessible asylum-seeker voices and multi-sensory modes of critical archival research. The third, a museum curation task, gave students the opportunity to curate and reflect critically on their own museum exhibition of household objects, both meaningful and mundane. All three case studies demonstrate the benefits of utilising the haptic perceptual style in learning design, with engaged and critically reflective understanding being developed. However, there are limitations and considerations inherent in such learning activities, including the ethics of handling objects and the constraints of digital formats for online learning.

Keywords: haptic learning, object-based-learning, touch, experience, tactile stimuli

Introduction

Experiential, participatory and student-centred learning have been best practice in university education for the last few decades, influenced by Kolb's (1984) research on the experiential learning cycle that detailed the importance of experience, active participation and reflection by the learner. At the same time, object-based learning has been well established as a tool used by engagement and learning teams in the GLAM (galleries, libraries, archives and museums) sector, particularly for working with school groups(Chatterjee, 2008; Morris, 2007). Yet this approach of fostering learning through closeness, active participation and co-creation of knowledge, seems largely to stop at the higher education stage, where teaching styles are often more formal and less individualistic, and self-directed reading has traditionally formed a large part of learning (Maher & Mitchell, 2010). There is great potential for object-based learning to provide the deeper understanding and contextual and critical thinking which university education seeks to develop in students. Object-based learning provides a more active, hands-on experience by interacting with objects. It also drives conceptual thinking about these objects, especially as visual and tactile stimuli provide added layers of knowledge experience to the written and spoken word through which we still predominantly share knowledge. Indeed, the ability to learn from the world around us and from each other, and the ability to transmit that learning to others through interaction with physical objects, has been identified as an important contributor to the evolutionary success of our species (Nishiaki & Joris, 2019).

This paper explores the role of experience through three examples of active engagement in object-based learning in archaeology and anthropology. We were inspired to design object-based learning activities for our courses by the growing evidence of its positive effects on student learning, especially its ability to achieve broader learning objectives for our students:

> Objects have the power to inspire, inform, excite and educate; they can be used to acquire subject specific knowledge as well as more generic transferable skills such as communication and teamwork. (Chatterjee, 2011, p.181).

In this paper we investigate the significance of haptic learning and provide three case studies to illustrate how objects can be used in teaching anthropology and archaeology to instil in our students a deeper sense of connection and active engagement with the subject matter at hand.

Haptic Learning in Higher Education

In educational psychology, the concept of 'learning styles' refers to the idea that individual learners process and perceive information in different ways, and learn differently – and sometimes better –in ways that that accommodate their own personalities and cognitive processing capabilities. There are seven standard learning and perceptual styles: print, aural, visual, interactive, haptic, kinesthetic, and olfactory (Higbee et al., 1991). Several of these styles are traditional features of the university learning experience across multiple disciplines: print, where students read written words like textbooks or class readings; aural, where students listen to spoken words like lectures; visual, where students view information through video recordings, graphs and pictures; and interactive, where students learn through group discussion and analysis. Haptic learning, where students learn through a sense of touch, has been described as a 'hands-on approach', or 'learning by doing'. However, looking at haptic learning from a neuroscience perspective, where haptics involves the stimulation of the brain through tactile feedback, haptic learning takes on a deeper significance – above and beyond just practicing techniques by 'doing' with the hands, learners are building meaning and understanding through sensory touch and interaction with objects (Lederman & Klatzky, 2009).

Haptic learning has long been commonplace in the STEM disciplines, in laboratory practical and experimental sessions. However, haptic perceptual styles have been engaged with far less frequently in the traditional anthropology classroom. While practical skills are taught 'hands-on' in the laboratory for scientific archaeology courses, social and cultural anthropology has engaged far less with haptic learning styles, preferring the print, aural and visual. Yet studies of learner preferences have indicated that more than 25% of college or university students have a preference for haptic learning modalities (Chen & Cheng, 2021; Lemire 1998). Indeed, haptic learning was found by Lemire (1998) to be the second most preferred learning style after visual. High levels of connection to learning preference not only leads to high student satisfaction and engagement in the classroom, but can also increase learning efficacy. In a study in the anatomical sciences, learning activities designed using haptic learning modalities were not only significantly more appealing to students, but also led to higher scores in associated assessment, as students could better recall concepts and properties of models they had touched (Bivall et al., 2011; Yeom et al., 2017).

Finding learning opportunities and activities that engage haptic learning principles is not always straightforward in the social sciences. Much of the guidance provided in the educational literature is either aimed towards the science disciplines in the form of practical labs, or takes the form of simulations and skits which, while encompassing the 'learning by doing' concept, fail to engage the neuroscientific components of touch and tactile activity that are core to true haptic learning (Lemire, 1998). Yet, it should not be forgotten that objects, and human interaction with them, are central to the understandings of human life and culture that anthropology and archaeology seek to explore and critically examine. Objects, in their various stages of production and use, both inform and are informed by human histories and stories, and analysing and understanding such histories and stories is central to both archaeology and anthropology (Gosden & Marshall, 1999). Learning how to understand and critically employ these relationships and processes is central to anthropological and archaeological teaching and learning objectives. This is where haptic learning comes in, to introduce students to the critical analysis of objects based on anthropological and archaeological theory through touch-based activities where students are able to interact with objects from specific times, cultures or societies.

The three case studies presented in this paper draw on the centrality of objects within the discipline – archaeological artifacts, written correspondence, and familiar objects from home – incorporating haptic learning modalities to enable students to learn not only by 'doing', but by building meaning and understanding of culture through touch. First, an example of hands-on teaching of practical and analytical skills in the archaeology laboratory is presented. Next, an examination of the use of written correspondence in the cultural anthropology classroom, both as ethnographic source and as material objects, is outlined. Third, an exploration in social anthropology of the materials and meanings of student-curated everyday objects, both from a haptic and visual learning perspective, is offered. After outlining the three case studies, a discussion further draws together,

compares and critically considers issues arising from these three case studies and the value of haptic learning to the anthropology and archaeology curriculum.

All of the following case studies are from three separate long standing and core courses in the anthropology and archaeology program at the University of Queensland in Australia, a large research-intensive university, that prides itself on providing an excellent student experience based upon research-informed instruction, taught in innovative ways and imparting workplace and critical thinking skills to graduates. The case studies, in different ways, rely on institutional repositories (physical holdings in a library, for example) and investment in teaching and learning infrastructures. Nonetheless, the learnings from object-based teaching and the impact of haptic learning are transferable, as they largely rely on engaged students and engaging teachers.

Object-Based Learning in Archaeology

Archaeology as a discipline focuses on the study of past human lifeways through the analysis of the material remains left behind by past peoples and their interactions with the world around them. Archaeologists investigate every facet of human endeavour through the artefacts and built structures that remain after the passage of time, whether that time is hundreds of thousands of years, or just decades.

Archaeological practice involves both professional and vocational elements. Thus, archaeological training at a tertiary level must encompass the professional (compliance with legislation, cultural heritage management plans, writing reporting documentation, planning and implementing research projects, data analysis and interpretation, placing findings within a theoretical framework) as well as the vocational (mapping, field survey, excavation, data collection, artefact identification, artefact analysis, artefact conservation). To formalise and demonstrate the acquisition of these skills, the Australian Archaeological Association (2019) recently introduced the Australian Archaeology Skills Passport, a document in which students record their experience in gaining a series of skills at three tiers of attainment (requiring full supervision, moderate supervision, and no supervision) and authenticated by a supervisor's comments and signature. Within Australia, tertiary training including undergraduate coursework, and an Honours dissertation, are considered the gold standard required to achieve successful employment as an archaeologist (Australian Archaeological Association, 2008). In professional archaeological practice, the abilities to recognise artefacts or artefact types, to analyse those artefacts, and to interpret their meaning in the broader context of human activity are key factors in peer perceptions of competence/incompetence.

In archaeological education, hands-on experiential learning can sometimes be hampered by funding challenges, inadequate teaching infrastructure, and inflexible administrative structures. Our vocational training in mapping, field survey, and excavation has been available since 1996, with the creation of a purpose-built excavation facility on the campus grounds (Hall et al., 2005). In the Archaeology Teaching Laboratory, tutorial classes utilise physical artefacts in teaching to provide authentic multi-sensory learning embedded within real-life scenarios and archaeological case studies.

Why is multisensory learning important in archaeological education? This question goes to the heart of one of the key characteristics of archaeological inquiry: the fact that the passage of time leads to the deterioration of artefacts from their original condition. Students who have gained a thorough knowledge of artefacts made from a variety of manufactured (ceramic, metal, glass) and natural (bone, antler, ivory, shell, leather) materials through their own physical interaction with them during tutorial classes have developed a complex array of information to draw upon in identifying and classifying these artefacts. The physical interaction with artefacts in the classroom allows students to gather and retain information about artefacts that would not be attainable in any other way: mass, volume, density, texture, resistance to touch, temperature, lustre, colour, and smell. Thus, when encountering an artefact which, through deterioration, has lost some of its diagnostic characteristics, students can draw upon their well-rounded knowledge of artefact attributes to successfully identify, analyse and conserve those artefacts, even when some of the key information has been altered or lost by chemical and biological deterioration.

The use of objects in the archaeology classroom has additional benefits that go beyond vocational training. For example, the presence of objects on the laboratory tables assists in the development of an increasingly professional discourse as students focus more on the case studies and discuss their interpretations with reference to what they have previously learned or read (Figure 1). In addition, the use of 'mystery objects' whose functions are not immediately apparent to the students forces them to think outside of their own immediate life experience

and use one of the key tools available to archaeological theorists, analogy, in order to suggest potential function(s) of the objects.

Figure 1: An archaeological scenario in which students interact with the objects to identify them based upon their particular attributes, and then form a hypothesis for the interpretation of the deposit by drawing upon their own knowledge and their reading of the literature prescribed for the class.

Further, there are sound pedagogical reasons for employing objects directly in archaeological teaching. The physical stimulus that comes from handling artefacts embeds learning more deeply than purely auditory or visual learning alone. Moreover, interaction with objects assists students who learn kinesthetically to keep pace with their peers who respond more to auditory or visual stimuli. In addition, when conveying complex and challenging course content, active engagement with objects and the haptic learning that comes with it has the benefit of decreasing cognitive load and improving overall knowledge uptake (a concept first discussed by Sweller, 1994).

Having artefacts in the classroom also presents the opportunity for augmented learning once the prescribed activity has been completed. For example, in the *Science in Archaeology* course, objects are present on the laboratory tables for every tutorial class. The course aims to instruct students on the many types of scientific instrumentation that can be applied to archaeological material, how samples should be taken and processed, and how the resulting data should be interpreted. Individual classes are structured around different types of analysis: low and high magnification microscopy, ancient DNA and proteomics; isotope analysis; chemical analysis; corrosion characterisation etc. Once the tutorial case study has been completed, objects can then be used as a focus for further extension learning, with the tutor prompting discussion by suggesting new questions that could be answered by the artefact: "Now that we have identified this glass artefact, how would we go about determining the ancient glass recipe? What would we need to know to work out the recipe? What instruments would we need to use to gather that data? Would we need to destroy part of the artefact to do the analysis or are there techniques that are non-destructive that will give the same information? Are there things we would need to consider that might skew our data or make it inaccurate? Are there things we need to consider in interpreting our data? How would we place this glass artefact into a broader regional context of glass production- what extra information would we need?" In this way, haptic learning is used as a gateway to broader concepts, implications and theoretical perspectives particular and integral to the archaeology discipline.

Object-Based Learning in Anthropology Through Asylum Seeker Letters

For students of anthropology, ethnographic observation and the ethnographic interview are held up as the gold standard of anthropological data, and of learning how to undertake anthropological research. However, this can be problematic when groups are hard-to-reach (or indeed impossible-to-reach) for the anthropologist-teacher, due to political, legal, or ethical barriers which make it impossible to bring interlocutors to students, or *vice versa*. Asylum seekers in immigration detention are an example of such a group, particularly in an Australian context. Since 1992, the Australian government has had a highly stringent policy of detaining non-citizen migrants without visas, including asylum seekers, who arrive unauthorized or 'illegally' in the country, holding them in immigration detention facilities until they are granted a visa or deported for repatriation. Unlike in most European countries, where refugee reception, processing and accommodation centres are in-country and in the community, and accessible for researchers, Australian policy since 2012 has been to relocate mandatory detention and refugee processing to offshore locations, such as the Pacific Islands of Manus and Nauru, which are effectively locked-down from physical or digital access by outsiders including journalists and researchers (Beine et al., 2016).

Correspondence, however, does flow in and out of these immigration detention facilities and provides an effective way for anthropologists and students of anthropology to connect with the lived experience of asylum seekers' lives. For example, asylum seekers on their way to Australia on board the MV Tampa were intercepted by Australian Special Forces in late 2001 and redirected to mandatory detention on the island of Nauru. During the four years they were there, the Tampa asylum seekers, most of whom were Hazara from Afghanistan, wrote letters to the Australia-based Spare Rooms for Refugees collective, headed by artist and refugee activist Kate Durham, and her husband Julian Burnside QC, a prominent human rights lawyer. In these letters, which Durham and Burnside donated to the university in 2011 and which are held in its Fryer Library, asylum seekers describe their former lives, experiences of fleeing to seek asylum, and experiences of detention and processing on Nauru, seeking to enlist legal aid in their refugee application processes.

The letters in this collection have great potential for teaching students the anthropology of migration. They provide multiple learning opportunities for students, not only giving insights into the lived experiences of migration and asylum-seeking, but opening up discussions about the role of narrative and rhetoric in written accounts, about the material culture of the letters as objects, and about the act and meanings of curation. In partnership with librarians at the Fryer Library, a subset of letters from the collection were curated which provided the richest detail on experiences of migration and asylum seeking and life in the detention facilities. This subset was then brought to a seminar session of the *Migration, Culture and Identity* course, with a librarian and teaching assistant guiding students through a group task of analyzing different selections of letters. The task asked questions regarding the narratives these letters told about the experience of migration and seeking asylum, and the language used by refugees to describe their experiences. It also asked questions about the material nature of the letters themselves. This encouraged students to think of the letters both as sources, and as objects, which provided insights into asylum seekers' lives.

The use of letters as primary sources is well-established in teaching students of history. However, letters provide insight for students of anthropology as well. As Earle (1999, p.2) states "letters display the signs of the distinct environments in which they were conceived"; letters might thus be conceived as a form of autoethnographic description on the part of the writer. By reading written letters from immigration detention centres, students gained information about what these environments and spaces are like, how they function, and how daily life functions within them, in great detail. Letters are also a product of the context and purpose for which they are written (Earle, 1999); students gain insight into the way narratives of identity and self are crafted within the context of immigration detention. They give a sense of the relationality between writer and recipient (Basso, 1974), and students can gain a deeper understanding of the power relations inherent in migration and asylum-seeking. They can also learn to read the visual narratives included in the letter (Danet, 1997) through analysis of drawings and the visual style of words and letters as they are placed on the page, and start to identify emic rhetorical patterns of language around asylum and immigration detention that differ from typical state narratives and from refugee advocate narratives.

As well as being sources, these letters can be viewed and taught as artefacts, to introduce students to anthropological approaches to material culture and museology. While many university archival collections, particularly older ones, are 'white glove' and require students to use protective equipment in order to interact with the documents, this collection was able to be directly handled by students with bare hands, allowing full tactile access to the letters as objects. Students are guided "to go beyond 'texts' as linguistic forms and to think

about texts as something closer to textiles, woven creations of material and semantic content" (Stauffer, 2012, p.336). They gain insight into the 'aesthetics' of the letter as an object through its material and sensory characteristics – this includes the feel of the ink, pencil, and paper used, pressure marks, thumbprints, smudges, and other marks of the physical touch of the writers upon the object (Danet, 1997). Through the ability to bodily touch these marks of bodily connection between object and creator, the letter thus becomes a "physical and social interface" for human connection across time and space (Stauffer, 2012, p.337). Students can be guided to begin critically exploring the meanings behind how these materials came to be used and valued in certain ways by the letter writers, and what activities and emotions may lie behind the physical, touchable characteristics of the objects. Students also explore questions around the curation of such objects: what narratives are inherent in keeping these letters, and keeping them together in context with one another and within the university archive? Students thus gain critical insight into the idea of museum and archival curation, not only as an act but as activism (Flinn & Alexander, 2015).

Object Based Learning in Anthropology Through a Museum Project

In a large introductory anthropology course, we combine lectures with workshops and have integrated a massive open online course. The course is divided into modules that first introduce social anthropology, its history and applications, then focuses on a range of research specialisms of academics in the department , ranging from Indigeneity to 'life within limits', from environmental anthropology to migration and heritage. In one week, we focus on material culture and utilise the university's Anthropology Museum and its various exhibitions. We particularly focus on a 2014 exhibition 'Written on The Body' curated by Indigenous artist Judy Watson and academic and director of the UQ Anthropology Museum, Diana Young, that juxtaposed collected items from the museum's collection with ordinary everyday objects that may be found around one's house. It thereby unsettled Western taxonomies and scientific categories implied by the labelling of museum objects and called into question who creates museum labels and what they represent in the life of an object. Importantly, the presentation of the objects in "clusters also encourage viewers to imagine the museum object in multiple uses that defy its museum label" (Denison, 2014). Watson (2014, p.2) notes that by "rubbing these 'things' (the collected museum objects and the kitchen utensils), against each other in a visual display, a sort of friction is created: a new way of seeing." Fluid interpretations of meaning, identity and representation in museum curation like this challenge Western-centric ethnographic museum practices and call for more critical thought from both curators and viewers (Bolton, 1997). This is also a direct challenge to the complicated history and relationship anthropology has with object-based learning in light of much of the University of Queensland's Anthropology Museum's holdings. How such objects have been collected and catalogued is called into question by Watson and new meanings and connections are fostered that we encourage our students to engage with. Watsons's aim is to interrogate the actions of earlier anthropologists who collected and labelled objects. That is why we feature her exhibition as a good case study to start the discussion with students on the process of and interrelationship between collecting, ordering and governing anthropologists have in the past, and continue to engage in (see also Bennett et al 2017).

We wanted students to engage with these issues of collecting and labelling for an assessment item: the 'museum project'. The aim was to challenge students to think in a more personal, reflexive and experiential way about museums and the objects that are displayed within them. The museum project asks students to find two items in their house, two everyday items, they think worthy of inclusion in a museum to tell a story about our lives 50 years from now. Students then must take pictures of the items and write a reflective short essay about the two pieces and explain how they relate to the student's life, museums and collecting more broadly. They handled the objects themselves, engaged with the meaning, use, and the value these objects held for them and society more broadly. Therefore, they were able to experience tactile and haptic learning by engaging the sensory world of the objects they chose. However, in order to facilitate marking of the assessment items, the three-dimensional objects had to be converted into a two-dimensional format in the form of pictures. This diminished the marker's ability to engage with the objects in the same way the students had, but was a necessary compromise.

At the 1st year level using any such object and enquiry-based learning tools holds specific challenges. For instance, Levy and Petrulis (2012, p.98) note that their research "indicates that students following the same programme may not only hold differing conceptions of inquiry, but also may understand inquiry tasks in ways that do not align with the conceptions or pedagogical intentions of their educators." This was evidenced in mixed student feedback for this assessment task, as some students demonstrated different levels of understanding of the context of the 2014 exhibition in museum anthropology, history of colonialism and the role of white settler collections of Indigenous material culture. The choices students made were often not

contextualised or lacked in-depth reflection on why the items had been chosen beyond their immediate personal value. This was an important intervention to rethink the format of the assessment and the role individual assessment pieces play in allowing students to self-direct their learning and where they need more direction and more foundational knowledge before we ask them to critique, reflect and interrogate disciplinary knowledge. At the end of semester, we collaboratively staged a pop-up exhibit in the Anthropology Museum in which a selection of museum projects was exhibited, which coincided with an official gallery opening at the Anthropology Museum. Usually, the Anthropology Museum director, or previously the department's anthropology professor, have given talks at these events to imbue them with ceremonial significance. To be placed into the Anthropology Museum also raises issues of representation, power and the role museums play in displaying, obscuring or creating new meanings for these objects. For all participants, co-creating the exhibition, having their own museum projects displayed and talked about in a real museum and engaging with museum staff about their assessment item, enlivened and enriched their student experience on this course.

Unlike viewing an exhibition in museums, where the majority of learning is still visual, by handling their own objects to be placed in a museum, students engaged with the objects, the stories, values and representations they hold for them in a haptic way. The assessment required students to take a picture, for which they received detailed information on visualising objects from the museum director, a specialist in anthropological photographic research. Holding, touching and manoeuvering the objects for the picture taking, arranging them into a composition, and framing them suitably, thus combined the visual with the haptic in this case study.

Haptic Learning in Practice: Properties, Connections and Paradoxes

Are these three cases examples of true haptic learning modalities, or merely 'hands-on' without involving the deeper principles of haptic learning? In the case of teaching archaeology through hands-on interaction with artefacts, the haptic properties of this learning activity are clear: students are gaining crucial information about common archaeological items by experiencing their mass, volume, density, texture, resistance and temperature by touch. Through this touch-centred activity, students are not only learning the items' properties, but are learning enough about them to be able to apply and extend this knowledge to the analysis of similar but deteriorated items. This aligns with neuropsychological understandings of haptic learning and processing, where meaning and understanding are built through sensory touch and interaction with objects in a way that goes beyond the potential that simple visual interaction could offer (Lederman & Klatzky, 2009).

In the case of the asylum-seeker letters, the value of the objects as textual autoethnographic sources was not unique to their physical forms, and students could likely have studied the themes and discourses of their written contents in a reproduced, non-physical form, such as a transcript or a digital image, just as well. However, archival studies research has found that the physical and sensual aspects of hands-on research with written archival documents deepens not only the researcher's emotional identification and 'living connection' with document writers, but also their critical insight into the writer's experiences (Hicks, 2003). This was borne out by feedback from the students, who also spoke about feeling a deeper connection with the asylum seeker writers, more awareness of their experiences and more critical awareness of their positionality within the knowledge exchange taking place, through touching what the letter-writers had touched. Thus, haptic learning is taking place; while not as direct and applied as in the archaeology exercise, students are learning the act of critical 'reading along the grain' (de Leeuw, 2012) of archival and ethnographic material enhanced by the intimate nature of touch-based connection to the subject. The learning experience also led to several students electing to undertake an optional archival analysis assessment, working further with the letters at both an object and documentary level, and achieving increased scholarly results.

In the case of the museum project, pinning down the haptic properties of the learning exercise is more complex, and introduces somewhat of a paradox. Students do learn and construct meaning about the objects they select for inclusion in their submission by handling and touching, which is clearly haptic learning. They also construct more dynamic meanings about their selected objects, particularly about their physical properties and uses, and can more critically question their 'value', in a cultural sense (Foster, 2012). This increase in dynamic conceptualisation of objects mirrors findings by Bivall, Ainsworth & Tibell (2011) who found haptic learning tasks led to a more dynamic understanding of phenomena being studied. However, in order to be practically evaluated, students needed to photograph their objects in order to submit them in their projects for assessment. Just as Denison (2014) observes that museum labelling "perpetuate[s] the lacuna between the museum object and what it purports to represent", there is a gap between what students learn haptically about their objects and what they can articulate through text and photography in their assessment submissions. The learning activity may

be haptic for students at its heart, but in order to make it assessable within the requirements of university assessment frameworks, these haptic meanings must be rendered in a visually and textual format instead. While there is an argument that incorporating multiple learning modalities together increases learning cognition (Lemire, 1998), the gap between what the learner experiences haptically and what the assessor perceives of this learning textually and visually can lead to misperceptions on both sides (Levy & Petrulis, 2012), which can affect assessment outcomes and student learning experiences.

Qualitative feedback was sought from students after each of these three learning exercises, and findings suggest that, in all three cases, students were consciously experiencing the enriched construction of meaning and context that is at the core of haptic learning processes. Students in the archaeology classes commented that they "were able to touch and observe in person the artefacts and how the chemistry affects different artefacts" which "makes it much easier to understand and learn". Students in the asylum seeker letters class commented that the exercise "not only made the class interactive, but made the theoretical discussion more real", and "fosters deeper connection" which "made our course so much more relevant". One student noted that the museum project "helped me to grow personally, by helping me to reflect on my life, on my family history and how we were implicated in broader social forces". Another found the pop-up exhibition,

> …was an intriguing introduction to … thinking about how we interact with these displays and how removed or connected we can be from these pieces [objects]. Seeing the variety of pieces selected under the same guidelines was a fascinating insight into the multitude of elements that can be studied in/through anthropology.

Practical and Ethical Considerations

Humanity's cultural heritage is a non-renewable resource, and this fragility has been recognised at local, state, national and international levels with cultural heritage preservation legislation, as well as in ethical guidelines for the treatment, display and curation of cultural heritage objects. A tension therefore exists between the need to curate and preserve objects, and their value as haptic teaching tools for the education of future professionals in the fields of anthropology and archaeology, as well as their importance and accessibility to the public and descendant communities.

In the case of archaeology, the process of excavation is in itself considered destructive, with ethical guidelines in place to limit new excavation activities in order to minimise damage to cultural heritage resources (e.g., *The Burra Charter 2013*, Article 28.1). Artefacts and their analysis are a key focus of archaeology as a discipline, with some researchers (e.g., Rehren, 2002) advocating more intensive, even destructive, analysis of excavated artefacts curated in museums and universities as a way to maximise the information generated from a single excavation activity, rather than conduct additional, destructive excavations. Within an archaeology classroom employing haptic learning principles, it is important to recognise the potential for artefact damage through student handling over a period of years or even decades. Therefore, wherever possible, the artefacts selected for haptic augmentation of learning should be those for which little documentary information remains, due to information loss over time or initial poor record-keeping. That is, the artefacts are essentially without historical attachment or archaeological context, ensuring that damage or eventual breakage has minimal impact on the cultural record more broadly.

In the case of the asylum-seeker letters, the manual handling of the haptic learning experience is perhaps less invasive than in the case of the archaeological artefacts, and the items in the collection are 'newer' both as teaching tools and as objects themselves; however, with repeated classroom use over the years, similar concerns about their use are likely to arise. Nevertheless, there is value in allowing students to handle the letters themselves, as opposed to digital reproductions, as long as possible, as a purely digitized format would pose an "impoverished" understanding of the educational value of the text as object (Stauffer, 2012, p.338). Ethical concerns also arise with the use of the collection, particularly as some of the individual letter authors still have open asylum claims and legal processes (Stewart & Shaffer, 2021); students were cautioned not to take photographs or recordings of the letters or to take away identifying notes. Curation and preservation of the letters is currently managed by the university archives through environmentally controlled storage, limiting physical access to the collection beyond essential teaching and research, prohibition of reproduction of the items, and regularly rotating the small selection of objects used for teaching from amongst the larger body of the collection to minimise the use of any one individual item.

In the case of the museum project, the major practical hurdle pertained to the limitations of objects and their handling in a large classroom. The solution was to visually represent the objects so that students could still see each other's objects. This, however, limited the haptic learning to each individual's handling of their own objects. In some tutorials we encouraged students to bring in their objects, a way to share the experience with each other and explore a wider range of objects physically. This was interrupted due to COVID-19 and the move to online teaching where the dominance of the visual and textual was again reiterated. With museums closed and students stuck at home, haptic learning was subdued. Yet, this made it all the more important to connect with students, and for students to connect through objects, to the course and its learning objectives. Increased safety and cleaning protocols have allowed some of the object-based learning to persist, but the museum project was firmly relegated to two-dimensional representation through visual and textual means once more. Many museums have used technology to provide 3D walkthroughs of their collections and exhibitions, broadening access to people from around the world who merely require an internet connection to see important collections, particularly during COVID-19 (e.g., Hoffman, 2020). As discussed, these technological 'answers', however, merely reproduce the visual primacy and diminish the opportunities for haptic learning.

Conclusion

The three approaches discussed in this paper use haptic learning to enrich the learning experience of students as a gateway to deeper knowledge-making. In each case, meaning and understanding are built through touch and physical feedback, a form of interaction with primary materials that goes beyond the potential that simple visual interaction could offer. Through these haptic learning processes, students become active partners and co-creators of knowledge, which not only enhances the student experience, but also stimulates students to contemplate larger issues such as professional practice and ethics, cultural value, the lived experience, and power relationships.

This paper discussed how we encouraged students to use objects to process information that is linked to a certain place or space, which is very different to processing digital information that usually lacks a link to a specific place or space. Haptic learning 'grounds' the learning endeavour and helps students to reflect on and reconnect with the material parts of everyday life, while strengthening the learning experience. Feedback from student evaluations of these learning activities suggested the students not only enjoyed participating in new activities, but felt more connected to their learning objectives through them: for example, one student in the asylum seeker letter activity stated in a session evaluation "I really liked this session, it allows for a sensory way of learning that isn't so detached."

Haptic learning is humanity's earliest mode of learning, but this does not mean that the haptic approach has been superseded by other techniques. Rather, haptic learning provides students with new ways into knowledge-making, through engagement with material objects that embody multiple layers of information and meaning. Haptic learning assists students to develop new ways of organising information and helps build fluency in multiple pathways to learning.

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References

Australian Archaeological Association (2008). By Degrees: Benchmarking Archaeology Degrees in Australian Universities. http://australianarchaeology.com/wp-content/uploads/2012/05/By-Degrees-Benchmarking-Archaeology-Degrees-in-Austrlaian-Universities.pdf

Australian Archaeological Association (2019). *The Australian Archaeological Skills Passport.* https://australianarchaeologicalassociation.com.au/skillspassport/

Basso, K.H. (1974). The Ethnography of Writing. In R. Bauman & J. Sherzer (Eds.), *Explorations in the Ethnography of Speaking* (pp. 425-32). Cambridge University Press.

Beine, M., Boucher, A., Burgoon, B., Crock, M., Gest, J., Hiscox, M., McGovern, P., Rapoport, H., Schaper, J., & Thielemann, E. (2016). Comparing immigration policies: An overview from the IMPALA Database. *International Migration Review* 50(4), 827–863. doi:10.1111/imre.12169.

Bennett, T., Cameron, F., Dias, N., Dibley, B., Harrison, R., Jacknis, I., & McCarthy, C. (2017). *Collecting, ordering, governing: anthropology, museums, and liberal government*. Duke University Press.

Bivall, P., Ainsworth, S., & Tibell, L. A. E. (2011). Do haptic representations help complex molecular learning? *Science Education*, 95(4), 700-719. doi:10.1002/sce.20439

Bolton, L. (1997). A place containing many places: Museums and the use of objects to represent place in Melanesia. *The Australian Journal of Anthropology*, 8(1), 18-34. doi:10.1111/j.1835-9310.1997.tb00175.x

Chen, I-J., & Cheng, K-R. (2021). Learning style preferences in college students with different Majors. *American Journal of Educational Research and Review* 6, 81. doi:10.28933/ajerr-2020-11-2307

Chatterjee, H. (Ed.) (2008). *Touch in Museums: Policy and Practice in Object Handling*. Berg.

Chatterjee, H. (2011). Object-based learning in higher education: The pedagogical power of museums, *International Committee for University Museums and Collections (UMAC) Journal* 3, 179-181. doi:10.18452/8697

Danet, B. (1997). Books, letters, documents: The changing aesthetic of texts in late print culture. *Journal of Material Culture* 2(1), 5–38. doi:10.1177/135918359700200101

de Leeuw, S. (2012). Alice through the looking glass: Emotion, personal connection, and reading colonial archives along the grain. *Journal of Historical Geography,* 38(3), 273-281. doi:10.1016/j.jhg.2012.02.003

Denison, J. (2014). 'Written on the body' [blog post].In Artistic Visualisation. Panopticon Press. **Error! Hyperlink reference not valid.**https://panopticpress.org.au/home-page/article-index/written-on-the-body-university-of-queensland-anthropology-museum

Earle, R. (Ed.). (1999). *Epistolary selves: Letters and letter-writers, 1600-1945*. Ashgate.

Flinn, A., & Alexander, B. (2015). "Humanizing an inevitability political craft": Introduction to the special issue on archiving activism and activist archiving. *Archival Science* 15(4),329–335. doi:10.1007/s10502-015-9260-6

Foster, R. J. (2012). Art/artefact/commodity: Installation design and the exhibition of Oceanic things at two New York museums in the 1940s. *The Australian Journal of Anthropology*, 23(2), 129–157. doi:10.1111/j.1757-6547.2012.00178.x

Gosden, C., & Marshall, Y. (1999). The cultural biography of objects. *World Archaeology* 31(2), 169-78. doi:10.1080/00438243.1999.9980439

Hall, J., O'Connor, S., Prangnell, J., & Smith, T. (2005) Teaching archaeological excavation at the University of Queensland: Eight years inside TARDIS. *Australian Archaeology* 61(1), 48-55. doi: 10.1080/03122417.2005.11681820

Hicks, J. E. (2003). "I wasn't prepared for the emotion": Archival research in religious and theological studies. *Teaching Theology and Religion*, 6(1), 43–47. doi:10.1111/1467-9647.t01-1-00152

Higbee, J.L., Ginter, E.J., & Taylor, W.D. (1991). Enhancing academic performance: Seven perceptual styles of learning. *Research and Teaching in Developmental Education* 7(2), 5-10.

Hoffman, S. K. (2020). Online exhibitions during the COVID-19 pandemic. *Museum Worlds*, 8(1), 210-215. doi:10.3167/armw.2020.080115

Julian Burnside and Kate Durham Papers, UQFL430, Fryer Library, The University of Queensland, Australia.

Kolb, D.A. (1984). *Experiential Learning: Experience as the source of learning and development* (Vol. 1). Prentice-Hall.

Lederman, S.J., & Klatzky, R.L. (2009). Haptic perception: A tutorial. *Attention, Perception, & Psychophysics* 71(7), 1439-59. doi:10.3758/APP.71.7.1439

Lemire, D. (1998) Three learning styles models: Research and recommendations for developmental education. *Learning Assistance Review* 3(2), 26-40.

Levy, P., & Petrulis, R. (2012). How do first-year university students experience inquiry and research, and what are the implications for the practice of inquiry-based learning? *Studies in Higher Education* 37(1), 85-101. doi:10.1080/03075079.2010.499166

Maher, J. & Mitchell, J. (2010). I'm not sure what to do! Learning experiences in the humanities and social sciences. *Issues in Educational Research* 20(2), 137-148.

Morris, J. (2007). Handling Stored Collections. *Museum Practice* 37: 65-67.

Nishiaki, Y., & Joris, O. (Eds.) (2019). *Learning among Neanderthals and Palaeolithic modern humans: Archaeological evidence.* Springer Nature Singapore Pte Ltd.

Rehren, T. (2002). Object integrity; or why do we excavate? *Papers from the Institute of Archaeology* 13, 9-12.

Stauffer, A. (2012). The Nineteenth-Century Archive in the Digital Age. *European Romantic Review*, 23(3), 335-341. doi:10.1080/10509585.2012.674264

Stewart, E., & Shaffer, M. (2021). The ethical and practical challenges of archiving refugee accounts: Reflections from two research projects in the UK. *Bulletin of Sociological Methodology/Bulletin de Méthodologie Sociologique*, 150(1), 51–69. doi:10.1177/0759106321995707

Sweller, J. (1994). Cognitive load theory, learning difficulty and instructional design. *Learning and Instruction* 4(4), 295-312. doi:10.1016/0959-4752(94)90003-5

The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance, 2013. Australia ICOMOS Incorporated https://australia.icomos.org/publications/burra-charter-practice-notes/.

Watson, J. (2014). Found with bones. In D. Young (Ed.) *Written on the body* (pp. 2-3). The University of Queensland Anthropology Museum.

Yeom, S., Fluck, A., & Sale, A. (2017). Evaluating acceptance of a haptic learning resource from various perspectives. In A. Tatnall & M. Webb (Eds.) *Tomorrow's Learning: Involving everyone. Learning with and about technologies and computing* (pp. 243-250.). Springer International Publishing.