The Evolution of Long-Term Fieldwork-Based Teaching in Heritage Management: Implications for Non-placement Work Integrated Learning

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Abstract

From a tradition of fieldwork-based teaching in geography, we consider the intersections of fieldwork sites and their social and spatial relationships for implications for non-placement work integrated learning (NPWIL). As the skills agenda gathers pace in universities it is critical to understand forms of NPWIL and their development. As a form of NPWIL in geography and related disciplines, fieldwork generates a range of personal, professional and academic skills for students. Through a case study of site-based fieldwork for cultural heritage teaching, we examine how such teaching can expand our understanding of this form of NPWIL. In contrast to ideas of university work including WIL as characterized and bounded by temporal linearity, we argue for seeing WIL in terms of non-linear temporality and slow "innovation flow". We link this analysis of WIL with understandings of cultural heritage and heritage sites as also non-linear and emergent in both time and space. We reflect on a detailed case study of heritage management teaching that draws on fieldtrip and a long-term relationship with a heritage site that is an historic coal mine. Over time the evolution of the field trip shows that the site itself is a key agent in this form of NPWIL. The site embodies and generates a range of changing social and spatial relationships with community, heritage managers, and other sites linked to the mine and its history. This networked perspective on fieldwork sites illustrates how supporting "slow innovation" in fieldwork based NPWIL can facilitate beneficial teaching and other outcomes.

Practitioner Notes

- Teaching through fieldwork and community engagement generates synergies in beneficial outcomes for students, partners, academics, and universities.
- Fieldwork in geography and related disciplines is a key teaching tool and a means of teaching academic, professional, and personal skills and attributes.
- Fieldwork-based teaching is a form of non-placement work integrated learning which requires practical and pedagogical support to fully realise its contribution to the skills agenda.
- The sites at which fieldwork-based teaching are not passive recipients of teaching activities but are agents of change, setbacks, opportunities, and innovation for teaching.
- This agency is realised through the social and spatial networks of which sites are part. Begin able to discern and access these networks embodies a form of "slow innovation" that takes time and reflective engagement.

Keywords

fieldwork, sites, non-placement work integrated learning, temporality, change

Introduction

Over the last three years there has been much reflection on how COVID has affected WIL activities and how academics, universities, and students have responded and how they have fared (Connor et al., 2021; Kefalaki et al., 2021). In geography, much of this reflection has focussed on fieldtrips and their role as a form of non-placement work integrated learning (NPWIL) in geography and related disciplines (Atchison & Kennedy, 2020; Korson, 2022) where fieldwork is a "touchstone" for learning (Egger, 2019).

Dean et al. (2020a) note COVID has challenged WIL and promoted innovation and change in certain directions. They write "For WIL research, this [COVID] could be the impetus for questioning dominant modes of WIL and extending our understandings and knowledge of the impact of alternative WIL models" (p.3). In particular, there is a need to understand how WIL in non-vocational disciplines, including geography, can be understood and implemented in the context of those disciplines' goals, content, concerns, pedagogies, and practices (Dean et al., 2020a; Lloyd et al., 2021). For geography and allied disciplines this includes the key activity of fieldwork and working through spaces such as landscapes, sites, and places. Fieldwork is a crucial and challenging component of the teaching pedagogy for undergraduate geography students (Driver, 2000). In such disciplines, fieldwork fosters intellectual growth, enhanced skills and personal development among students (Gill, 2005; Hovorka & Wolf, 2009). Critically assessing what this means for WIL as its role and institutionalisation proceeds apace (Swirski & Simpson, 2012) is critical to articulating and understanding a diversity of WIL forms and practices and the experience of academics (Connor et al., 2021; Weakley et al., 2021). Moreover, the impact of COVID has taught us that one challenge facing WIL in general is framing and practicing it with change and unpredictability in mind.

In this paper we consider these issues through a case study of fieldwork-based teaching of cultural heritage that is designed, delivered, and experienced through and around the dynamic landscapes and historical mining sites of the Illawarra escarpment in south-eastern Australia. In the case discussed here an historic mine site and associated sites are the focus of NPWIL teaching. Their status as evocative industrial "ruins" (Edensor, 2016) mean that their histories, stories, significances, relationships, and connections to cultural heritage managers and communities continue to unfold in time. For author Gill, the reality of the site as a changing, dynamic place shapes the temporal experience of designing, redesigning, and delivering NPWIL activities.

Academic Editors

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Literature

Non-placement Work Integrated Learning, fieldwork, and sites as processes

The fieldwork-based collaboration and teaching exercise that we discuss in this paper is an example of non-placement work-integrated learning (NPWIL). This form of WIL is comprised of "educational activities that engage students in authentic experiences that integrate theory with

expanding practices and notions of work. NPWIL prioritises virtual, remote and class-based settings, often alongside and with involvement from industry and community partners" (Dean et al., 2020a, p.4)

Such forms of WIL have been poorly recognised and conceptualised by universities (Dean et al., 2020b). Analyses of existing practices may be compromised by divergent framings and understandings of WIL and its constituent elements (Lloyd et al., 2021). Yet NPWIL holds significant potential for realising student, community, and institutional needs (Dean et al., 2020b). As a form of NPWIL, fieldwork has the capacity to enhance student's intellectual, skill and personal development and provide benefits for academics, communities, and universities (Holton, 2017; Klein et al., 2011; Pawson & Teather, 2002). The sites that are the focus of much fieldwork are central to understanding the links between NPWIL and such teaching and learning.

While WIL is best conceptualised as a process of learning through practice (Dean et al., 2020b), WIL of various sorts is often described in terms of discrete activities – placements, events such as a fieldtrip or a hackathon, a project; that is *things* that students do. The university definition of WIL that Dean et al. (2020b) discuss reflects this – WIL is defined in terms of "activities" that students "undertake". Such framings are valuable. However, this framing also positions WIL in terms of the "project-based" way of understanding academic activities (Ylijoki, 2015) and is entangled in the skills agenda of which WIL is a key expression (Bengtsen et al., 2021; Swirski & Simpson, 2012). The project format focusses on fixed tasks for fixed periods; projects have a beginning and an end, focus on pre-defined goals, and do not encompass continuity (Ylijoki, 2016; Ylijoki, 2015). Moreover, it is based in a specific temporary framing whereby projects have clear temporal boundaries (e.g., start and finish times) and where time is "linear, cumulative and progressive" (Ylijoki, 2016, p.14). Projects are anchored to clock time and time is thus "invariant and independent of context" (Bengtsen et al., 2021; Ylijoki, 2016, p.15). Where time does feature in discussions of WIL and teaching it is in such terms, largely via discussion of workload pressures and the shortage of time (Bednarz et al., 2008; Connor et al., 2021; Dean et al., 2020b; Sheridan et al., 2021).

In contrast to project time, temporalities of university activity can be seen in terms of process time. In process time universities' activities are evolving and creative, follow their own internal logic, move forwards or backwards irregularly as dictated by circumstances, are shaped by context, and their outcomes are open and emergent (Ylijoki, 2016). In this perspective, university activities such as teaching and learning are "lived" experiences that develop as academic communities respond to communities and changing social circumstance – their temporalities are non-linear and contextual (Bengtsen et al., 2021, p.97). For WIL, this suggests the value of allowing change and innovation in WIL to be "slow" and for it to emerge from non-linear, careful, and reflective processes that are attentive to context and the long term (Dorado & Giles Jr, 2004; Sheridan et al., 2021; Swirski & Simpson, 2012). Swirski and Sheridan propose (2012) an ecological model of WIL practice. This model emphasises relationships, networks, interconnectedness, holism, and complexity. To frame our results, we draw on their idea of slow "WIL innovation flow" and its key elements: WIL challenges, WIL drivers, WIL enablers, and WIL well-being. Slow innovation provides room and time for reflection, learning, and co-relation; WIL practice itself is seen emergent, as flowing. Here we are concerned with what this means for NPWIL teaching through

a fieldwork site rather than with external partners and workplaces. Thus, we now consider further the idea of a "site" in heritage studies and management.

Heritage studies and management have long had an emphasis on materials – buildings, artefacts, monuments, ruins, and the sites or places where these material remains are to be found (Khafajah & Badran, 2015). Consequently, agencies charged with heritage management have tended to map and manage cultural sites and places as distinct objects, bounded in space and in time, and unmoored from the physical and social landscapes of which they are a part (Byrne, 2008; Harvey, 2001). Temporally, the significance of sites has been perceived as fixed and authentically derived from a particular point or period in time (Byrne et al., 2001; Silverman, 2015).

An alternative view of heritage sites has parallels to thinking about teaching and learning in terms of process time. Heritage studies has moved to thinking of both heritage itself and heritage sites in terms of both process and relationships. Heritage itself has been characterised in terms of diverse forms of social action rather than being something only evident in material objects such as artefacts, sites, or buildings (Byrne, 2008; Harrison, 2010) – it is a "process…rather than as a single movement or…project" (Harvey, 2001, p.320). In this framing, heritage is more than things, it is also something performed or done to keep the past alive in the present. Heritage is emergent, relational, temporally non-linear, experiential, and characterised by connectivity (Harrison, 2013). Similarly, heritage sites themselves have come to been seen as both temporally and spatially dynamic and relational.

Sites or places are now seen as verb-based, they "happen", are "part of a vast cultural landscape of memory and action [that] evoke a sense of movement and change through space and time" (Thomas & Ross, 2018, pp.57 and 64), and are "always becoming" (Cresswell, 2014, p.37). Thus, rather than being the primary entities in heritage, sites are now seen as part of non-hierarchical cultural landscapes in which they are "points on trajectories of movement – call them pathways, routes, itineraries…The sites represent moments in lives lived across landscapes rather than lives lived inside sites" (Byrne, 2008, p.260).

This analysis of how sites are understood in heritage studies and management demonstrates the value of taking a long term and contextual perspective to understand the form and evolution of fieldwork-based teaching through sites. Such teaching as a form of NPWIL can therefore be seen in terms of process time and understood as emerging through relationships with the site and its own fixed and shifting materialities, meanings, and connections. For an academic involved in such teaching, the experience is not only in terms of the discrete student activities year to year but is also an outcome of long-term entanglement with the nature and dynamics of the specific site and its connections. Sites compel responses from academics to attend to the design, framing, and reach of teaching and learning activities and of the fieldwork visits to the sites themselves (Atchison & Kennedy, 2020; Gill et al., 2012; Korson, 2022).

In the remainder of this paper, we provide the background to the teaching project and describe our methods. Finally, we discuss this material and draw our conclusions regarding NPWIL, fieldwork, and working through sites.

Method

The teaching that is the focus of this paper is part of an environmental and heritage management subject, currently called GEOG337 Policy for Environmental and Heritage Management. The subject is offered at the University of Wollongong, which like many universities has high level strategic WIL goals.

A fieldtrip to the abandoned Mt Kembla coal mine has been part of the subject since 2009. The heritage significance of the Mount Kembla mine partly derives from long term community interest in commemorating a 1902 explosion at the Mt Kembla coalmine that killed ninety-six people (Piggin & Lee, 1992). It is now part of the Illawarra Escarpment State Conservation Area (IESCA) managed by the NSW National Parks and Wildlife Service (NPWS). The area of which Wollongong is a part is a significant coal producing region and coal mining heritage has a modest but persistent profile (O.H.M. Consultants, 2006). Between 2001 to 2018, a local NGO, Mt Kembla Mining Heritage Incorporated (MKMHI), ran public events and a heritage centre to commemorate the disaster (Smith & Campbell, 2017), and worked with the NPWS to improve site management. One of the authors (Gill) first met members of MKMHI around 2004 when on an external stakeholder group for the site. Some years later, through discussions between author Gill and members of MKMHI, the initial Mt Kembla project for GEOG337 was jointly developed and implemented. The aim was to develop a project that incorporated field-based and other learning opportunities for students and which produced outcomes for MKMHI. These outcomes included a student assignment producing biographies of people involved or killed in the disaster. Between 2010 and 2016 about 100 of these assignments were completed and provided to MKHMI. MKMHI unfortunately experienced a lack of volunteer capacity and ceased operations in 2018.

During the collaboration with MKMHI, the students went on a fieldtrip to Mt Kembla. They visited the heritage centre run by MKMHI and other nearby sites. They visited the mine site itself, often in the company of a member of MKMHI or the NPWS ranger or both. The mine site is largely reforested and most of the buildings were bulldozed at the time of mine closure in 1971. It is possible, however, to discern the remains of various structures and to visit the still standing pit pony stables (Figure 1). A fieldtrip to the mine site remains part of the subject. The site is an opportunity to discuss archaeological and historical interpretation, heritage planning and designation processes, management and funding issues, the role of agency-community partnerships, and the roles of other players such as local government. During the collaboration with MKMHI the students had a class with the University archivist in which they learnt how to access and use primary historical sources relevant to the Mt Kembla explosion. This class supported the biographical assignment.

Figure 1

Pit pony stables at Mt Kembla Mine (Gill 2021)

Methodologically, we approach this study of fieldwork at and through Mt Kembla mine as a case study. The idea of a case is usually characterised as some sort of bounded entity or system (Patton, 2015) such as sites like Mt Kembla mine or an exercise such as the fieldtrip. As in the Mt Kembla fieldtrip, the content of a case study often evolves as the researchers' exposure to the case deepens (Stake, 2000). By assessing and reflecting on the fieldtrip over time through several sources we realise benefits of the case study approach such as perceiving "social networks and…complexes of social action" and the application of "the dimensions of time and history to the study of social life to bring out "continuity and change" (Orum et al., 1991, pp.7-6).

More generally, in assembling our sources and directing analysis towards them we have engaged in methodological bricolage (Pratt et al., 2020). Bricolage in research is a creative and pragmatic way of "combining old things in new ways" (Patton, 2015, p.154), working with the "available resources", and combining them for a "new purpose" (Pratt et al., 2020, p.218). Here, we draw on empirical material collected in the past as part of evaluating the fieldtrip activities and author Gill's reflections on the past and present fieldtrip. Initially envisaging a relatively straightforward

evaluation, we now find our data and analysis exists in a time of concern for student skills, WIL opportunities, and the form of NPWIL.

The first empirical data that we collected was via a student survey after several iterations of the fieldtrip. We surveyed students via close-ended and open-ended questions about the Mt Kembla exercise. The survey response rate was 73%. Subsequently we interviewed our MKMHI collaborators and the University archivist. We received approval for these steps from the university's Human Research Ethics Committee. The second source of empirical material is the site itself, both its material makeup and its heritage significance. The site effectively plays a role as an agent in the fieldtrip exercise. It is included through a detailed description of the site, its heritage significance, and its social and spatial connections. The third source of empirical material is reflection by author Gill on the fieldtrip at Mt Kembla mine. This comprised activities such as working back through teaching materials from 2009, tracing the genesis, evolution, and drivers of the fieldtrip design, and re-walking the mine site. This generated a timeline and a set of reflective notes.

We analysed the survey responses to the Likert scale questions to derive descriptive statistics. We analysed the student's textual responses, the interviews with MKMHI members and the archivists, and author Gill's reflections for codes relating to synergies across our various areas of work. These initial codes included perception of the university, the process of engagement, and the development of relationships and collaborations. This was essentially a step of descriptive coding (Saldaña, 2015) that provided the basis for initial interpretation of the sources. From here we revisited these codes and their content to identify a smaller number of themes (Braun & Clarke, 2006) that provided more abstract interpretation of the sources. These themes include those we use to structure and inform the results below. They include relationships, networking, the nature of the site (as either material bounded "object" or a more open networked entity), the agency of the site, people and organisations, change and response, student experience and learning. Accordingly, our results are structured into four sections: one on the mine site itself as material entity, working with the site and its people, linking to other sites, and author Gill's reflections on a non-linear heritage site.

Results

The Mine Site – Material Features and Significance

The site and the remaining material elements of the mine are themselves central to the running and evolution of the fieldwork and other activities described here. They form a connecting hub for the various other places and relationships that are outlined in this paper.

The Mt Kembla mine is on the Illawarra escarpment (Figure 2) near the Wollongong suburb of Mt Kembla, south of Sydney, the capital of the Australian state of New South Wales. There are several such defunct escarpment mines dating largely from second half of the 19th century (Mayne-Wilson & Associates & Heritage Futures, 2007). These mines particularly targeted the valuable Bulli coal seam which continues to yield coking coal. The Mt Kembla mine opened in 1883. It became the largest mine in the region and, with a railway to a purpose built and relatively

sheltered jetty at Port Kembla, it played a significant role in the development of what remains a key industrial area and port (Piggin & Lee, 1992).

Figure 2

Mt Kembla and escarpment slopes from Mt Keira. The mine site is located approximately in the forested mid-slopes in the centre of the photo (Gill, 2023).

The mine site is now largely reforested and not readily discernible from the road. It is a difficult site for the NPWS to manage. Much of the four terraces that were created to house the mine and its infrastructure on the steep slope are difficult to move about on due to dense vegetation, erosion gullies, and the remains of infrastructure and equipment. The site is seen as unstable due to waste dumps and the steep slope. Surviving elements include the bath house slab, rail tracks, the explosives magazine, building footings, and items such as lamps and parts of coal skips. The only remaining buildings are the toilet block and pit pony stables.

The Mt Kembla mine stands out for its heritage significance from other abandoned mines by virtue of ongoing community interest in commemorating the 1902 explosion. This event still looms large in the Mt Kembla community and is evident in the local landscape in memorials and graveyards. The site has been assessed as having state level heritage significance for its role in mining and industrial development, its significance to the local community, its remnants and technologies, and the 1902 disaster (Department of Environment and Climate Change, 2007). It is, however, heritage listed only at the local government level. The pit pony stables have been assessed as significant for their rarity (Department of Environment and Climate Change, 2007). The stables are valuable for teaching and form a key component of the fieldtrip. The stables provide a tangible opportunity to discuss how official heritage significance is determined and how criteria, including

rarity, are applied to sites. Here, we also cover more intangible aspects of heritage such as how stories of the ponies connect to community significance. The stables also present the NPWS with challenges regarding use and maintenance of a heritage building. The stables have been vandalised, timber used in the interior has been stolen, water drainage is a problem, and repairs present compromises between originality and practicality. Adaptive reuse has been considered but would require significant expenditure for uncertain outcomes. Finally, if NPWS staff are accompanying the fieldtrip, we can access the building. Students can enter and experience the stables themselves – the once busy space, full of animals and their handlers, now empty and dark; they can step around the missing floor timbers and ascend to the second floor, a large, light, open space. Once here, it is easy to think, despite knowing the obstacles, that surely a use can be found for this space. Thus, in the context of teaching and learning, the stables, and the site as whole, serve to materially ground heritage practices and to challenge students in thinking about how they might connect the past and present.

Working with the site and its people

As significant as the site itself is, it is part of broader social relationships and landscapes. For the academic experience of teaching with and through the site over a long period of time the social relationships that the site is part of are key. For the author involved in teaching through the mine site, the work has been a process of working with and teaching a variety of people and groups.

The Students. The first group here are the students who have been enrolled in the subject from 2009. Since the demise of MKMHI, the students have undertaken either a fieldtrip to the site or a virtual fieldtrip in 2020-2021. Students now have assignments that are indirectly linked to what is learnt and experienced during the fieldtrip.

When we evaluated the fieldtrip during the involvement of MKMHI, the responses of the students indicated that the fieldtrip was achieving its teaching goals. For example, 79% students agreed or strongly agreed that they learnt and applied new skills through the experience and 87.5% of agreed or strongly agreed that they understood this much more clearly because of their hands-on experience.

From the students' perspective connecting their institutional-based learning with the 'real-world' scenarios offered great benefit. Eighty-seven percent of students either agreed or strongly agreed that their understanding of heritage management was enhanced by community engagement. For example, one student wrote:

> I felt the assignment and the field trip were really worth-while, to do an assignment that had real world placement made it seem more important and worth doing.

The collaboration brought their learning to life and gave it relevance by providing a context that can otherwise be missing. Students valued the opportunity to understand and appreciate the work of community groups more. One student wrote that being able to help a local group "made me work harder" and another stated that the opportunity "made them 'own' their work more". Another said they felt "great sense of pride and achievement on completion" Finally, one student stated that "they felt more involved [by participating in] a valuable task for real and immediate community benefit". Direct involvement with community and the site enhanced students' understanding of the complexities involved in heritage and students' sense of themselves as active citizens.

Mount Kembla Mining Heritage Inc. During the collaboration, the individuals from MKMHI involved changed as members varied or ceased their roles. For the academic involved this required the development of new relationships and adjustments to the fieldtrip due to the varying knowledge and experience of the MKHMI members.

At all times MKMHI was an active partner with clear goals for the organisation and its work. They were not interested in being a passive partner but in being part of a partnership. At its best community engagement is a reciprocal relationship between academia and the community. It is necessarily based on the needs of the community group involved but must also offer all players the chance to meet their goals. For MKHMI this was through a combination of corporate, government and institutional partnerships, one of which was with the university. As a small NGO, they perceived that links with the university added strength to their endeavours, noting in the interview with them that it "strengthens and validates" them:

> Just the fact that we are working with the university…helps us, it gives us more credibility…when we apply for funding…Those applications are enhanced by our link (MKMHI committee member).

However, they experienced their relationship with the university in general as fragile and fragmented. One of them said "it's more potential [than anything else]". They felt that there was a lack of coordination for community partners at the university and they thus experienced arbitrariness, unrealised potential, and insecurity in "multiple negotiations":

> like the university, there is a corporate culture that may be quite counter-productive, but I find that if you get the right people that are interested, and they have a bit of passion … I find that the personality of a person can, shall we say, circumvent the culture … So, I find that the people are the most important thing. (Mt Kembla Heritage Inc. committee member)

This experience emphasises the centrality of personal relationships in the process of running this sort of community engaged fieldtrip. It also places responsibility on the academics involved. This was particularly important in this case as the student work on the biographical project required development after the initial iterations did not provide a lot of new information. The key here was the long-term view that both author Gill and MKMHI adopted:

> It's all just the baby steps on the way to developing something bigger and somewhere along the line, we will hit on something that's going to be gold for both of us…and if we don't do these initial steps, you don't ever get there (MKMHI committee member).

The relationship with MKMHI and the development of the fieldtrip and assignment activities occurred around and through the site. The site was not always the primary focus but it provided a critical material grounding for the relationship and its development over time.

The National Parks and Wildlife Service. Early in our collaboration with MKMHI, the NPWS and MKMHI were actively collaborating together to manage the mine site. Involvement of NPWS staff has been another part of the fieldtrips to Mt Kembla mine that has continuously changed since 2009. This reflects career changes for individuals, organisational priorities, and individual interest in the mine. These changes have materially led to changes and development in the fieldtrip and in the subject more generally.

Since 2009 there have been four NPWS staff responsible for the mine site. These NPWS staff have varied in their knowledge of the site, their interest in it, the extent to which it is a priority in their work schedule, and their willingness to assist with fieldtrips. While the NPWs staff are generally interested, their variable availability has meant that author Gill has had to be ready to deliver the fieldtrip and activities under different circumstances and has needed to put time into engaging with new NPWS staff.

In 2009, the NPWS employee responsible for the area had a strong interest in the mine site and in working with MKHMI. This individual participated significantly in the fieldtrips. Their knowledge of the site, their work with MKMHI, and their willingness to share these also played a key role in developing the capacity of author Gill to run fieldtrips to the site. This capacity continues to be central to the fieldtrip. Further, continuing outcomes include an ongoing relationship with a second NPWS staff member who was until recently responsible for the site over several years. This NPWS staff member provided a different emphasis, largely focussing on site management issues and the challenges that such sites pose for a heritage manager. During COVID lockdowns they took part in filming at the site to create a virtual fieldtrip with a video tour of the site. Additionally, this staff member has facilitated a further WIL opportunity in a guest lecture to students about their job and about heritage and environmental management careers.

At the time of writing, responsibility for the site has changed again. The current NPWS employee responsible for the site is themselves a graduate of the University of Wollongong and was among those students who participated in the MKMHI collaboration. They are in this role on a secondment and so their long-term involvement in the site and the fieldtrip is uncertain. However, this employee has talked to the students about their career since graduating and how they gained their current role as a ranger. Again, the site acts as point through which various people and activities circulate and move.

Linking to other sites

As the fieldtrip and associated activities have evolved over time other sites have come and gone into focus. There are multiple sites that could be linked to the mine site as part of a fieldtrip. Here we focus on those sites that have been or are part of the fieldtrip. We also include the university archives as a metaphorical site which became part of the network of sites linked to the mine.

Mt Kembla sites. Today the only site at Mt Kembla that is part of the fieldtrip is the mine site itself. This is a consequence of changes in the fieldtrip following the demise of MKMHI. However, during the collaboration with MKMHI, the students visited other sites in Mt Kembla associated with the mine and the 1902 disaster as well. The key site was the heritage centre run by MKMHI. Hosted by members of MKHMI, here students learnt about the disaster and its ongoing significance for the community. They saw the displays their research was to contribute to. They also learnt about the operation of MKMHI as a small volunteer organisation and its work with other organisations such as the NPWS and the current coal company operating in the area. Depending on which member of MKMHI was involved at the time, they then either visited one of two other sites. One was the Anglican church where annual memorial services have been held since the disaster. Victims associated with that church are buried in its graveyard and there is a memorial to the disaster and to the mine and miners. The second was an informal cemetery created at the time of the disaster where victims such as those without close social ties to Mt Kembla or churches

are buried. These two sites provide different insights into the disaster and the community at the time. They also linked in different ways to the stories and life of the MKHMI members. For example, one had grown up near the informal cemetery and could provide personal stories of living near it and the then operating mine. Both their stories provided different insights into the social significance of the mine and the disaster and linked to the idea of heritage as social action where sites are one part of broader heritage practice.

Port Kembla sites and the Indigenous past and present. Since the demise of MKHMI forced a rethink of the fieldtrip and its role in the subject, the fieldtrip has evolved to encompass the connections of the mine site to other sites of industrial and social significance more explicitly. This is done in two ways. First, in the narrative at the mine site, it is more strongly contextualised in terms of its role in stimulating industrial development in Wollongong. It is also discussed in terms of the development of mine rail infrastructure down the escarpment to the harbours. This early rail infrastructure is itself memorialised in heritage interpretation elsewhere and forms a small part of another fieldtrip. Second, as part of the Mt Kembla fieldtrip, the fieldtrip has been expanded to include a visit to the Port Kembla foreshore. We now travel down the escarpment, more or less following the contemporary coal rail line from Mt Kembla. We visit a state heritage listed precinct near the industrial harbour of Port Kembla and its coal handling infrastructure. We link the mine site to this geography of industrial development and current conflict over coal mining. We look back at the escarpment and consider these connections to it and its Indigenous significance. Further, this Port Kembla site is a place Indigenous people managed to occupy for many decades after their dispossession and exclusion by farming, industrial, and urban development. We explore how Indigenous people managed to find material and metaphorical spaces to survive and make a living in and around these industrial landscapes. These histories are themselves increasingly recognised in heritage listings, public histories, and interpretive material at Port Kembla. We walk the site and the places where Indigenous people lived and ran fishing enterprises until WWII. Speaking to yet longer occupation of the site, students walk over the shells that comprise middens at the site and are enjoined to "look down". We see the remains of the military infrastructure for which Indigenous people were finally evicted and talk about official and unofficial heritage significance at the site and its surroundings. Thus, while we start with the Mt Kembla mine site and continuously link back to it, we do not fetishize the site, but locate it in landscape scale understanding of heritage sites and their temporal and spatial relationships.

Following the Bulli seam and looking ahead. Escarpment mines such as Mt Kembla were primarily established to extract coking coal from the Bulli coal seam. The mines followed the seams across the escarpment. Following the coal mines and the seam across the escarpment, the "flow" of heritage teaching through a coal mining site has led to WIL teaching possibilities elsewhere on the escarpment.

The first of these arose from the relationship with one of NPWS staff developed through the Mt Kembla mine. This was a course credit internship for two students at another abandoned mine site in the Mt Kembla area on NPWS land. Like the Mt Kembla mine, this site has heritage significance and intractable management issues. The students' task was to undertake some design work for interpretation of the site. The students had done the Mt Kembla mine fieldtrip exercise with MKMHI and so brought background in Wollongong coal mining heritage that they were able to apply.

Second, in 2022 we followed the Bulli seam north from the Mt Kembla mine and to escarpment land variously owned by the university, private individuals, and the NPWS. Here, an internship student researched sites on Mt Keira associated with other abandoned coal mines. These mines and their infrastructure are scattered across now largely reforested escarpment land on Mt Keira north of Mt Kembla. They are located and shaped by the dictates of mine engineering and landscape. Once part of an industrial landscape that represented progress and development, they now exist largely as remnants, partially buried in soil and forest floor debris, and hidden among the trees – revealed to the attentive visitor or when heavy rain washes away surface soil and leaf litter. The temporality of idealised progress for these sites has been disrupted as the forest reclaims them. However, they represent future teaching possibilities. These include with the university itself as a heritage manager.

The University of Wollongong Archives and the 1902 Disaster. Finally, we also include a metaphorical site that links the university to the Mt Kembla mine site, to MKHMI, to other parts of the Mt Kembla community, to the students, and to author Gill. The university library archives hold documentary and audio-visual material relating to the 1902 disaster. For example, the library holds a copy of the report of the Royal Commission into the inquiry and oral and video histories recorded with survivors of the disaster (Piggin & Lee, 1992). These materials were deteriorating and were not readily accessible to staff, students, or the community. Motivated by access requests by MKMHI to ageing and fragile resources, university community engagement goals, and a desire to increase student use of the archives, the archives staff had already started to digitise Mt Kembla materials. Bolstered by the GEOG337 Mt Kembla project, the university archivist was able to justify investing resources in this digitisation. It also strengthened a successful application with MKMHI to a Mt Kembla community grant scheme funded by the current coal mine. This grant enabled further digitisation of the Mt Kembla holdings. For the university archivist the case of the Mt Kembla digitisation work represented both a rich and practical example of community engagement that addressed the interests of multiple parties:

> Our involvement in [GEOG337] is seen as a real success story. It allows us the opportunity to address the goals of many all at the same time together – the university as a whole; the library and specifically the archives section; the academics involved, the faculty, the students, and the NGO. (Library Archivist)

Today, the Mt Kembla material in the University archives remain online and readily accessible for anyone interested in Wollongong and Mt Kembla mining history and heritage. The digital archives represent a further point on the network of the dynamic relationships that revolve around the mine site itself. The digitisation project was an unanticipated and emergent outcome of these relationships and process of "doing" heritage at Mt Kembla.

The academic – reflections on a non-linear site

As we discuss, the above sites are dynamic places that compel responses from academics. In some ways, the experience of author Gill of teaching with the Mt Kembla mine site has been similar to many academics' experiences of WIL teaching with a significant investment of time that is not necessarily recognised or rewarded (Dean et al., 2020b). To leave it at this, however, would not do justice to what the site has meant academically and personally for author Gill. The site has been significant in shaping academic Gill's capacity as an academic who themselves is

embedded in place as a long-term teacher and resident. It is a site that affected author Gill sensorily and bodily, largely in terms of his perception of the escarpment as a place and playing a role in initiating his education in its environmental, industrial, and social history and generating a propensity to walk some of its lesser-known places. First visited early in his time in the region, the Mt Kembla mine was the first place on the escarpment where author Gill experienced and walked around such a place with purpose. It is an evocative ruined industrial site that brought home an "awareness of the cyclical characteristics of capitalist production, innumerable and obscure traces of the past…a sudden grasp of the demise of a particular industrial future, [and] temporal rates of decay and natural growth which continually alter the characteristics of the site (Edensor, 2016, p.137). Moreover, it is, like many such escarpment sites a place that disrupts "temporal and physical linearity" (Edensor, 2016, p.137). In this case the disruption is in both the displacement of the site from the course of industrial development and its resurrection of value in the present via nature and heritage. Author Gill has also experienced this non-linearity of the site continuing through the constant change in people and connections and the Mt Keira possibilities that have emerged since his engagement with Mt Kembla mine.

As discussed in various places above, this non-linearity has led to changes in how the fieldtrip is run, its content and themes, the people who participate, and the other sites that are part of the fieldtrip. The role of the mine site has itself changed to being part of a broader network of sites and relationships. The non-linearity and the unanticipated has catalysed other activities such as the internships, guest lectures by NPWS staff, and the archival digitisation. As well, author Gill's developing comprehension of the significance of various lines of non-linearity for the site and concrete experience of it since 2009, has enhanced his capacity for teaching heritage studies and management. It has brought thinking about heritage in terms of social action and about sites as process more to the fore. Each person and each site involved at different times have brought different knowledge, insights, and perspectives on the mine and on heritage practice. Finally, MKMHI's demise provides a salutary lesson, now part of author Gill's experience and of the fieldtrip, in limits to community participation and the resources it takes to render it sustainable and effective.

Discussion

Reflecting on the Mt Kembla fieldtrip and associated activities over a long period of time locates the mine site itself and discrete activities within broader spatial and temporal contexts. The mine emerges as part of a network of sites, people, and activities that has developed and changed over time (Figure 3). Consistent with conceptions of sites in heritage studies, it simultaneously highlights the centrality of the mine site, while also decentring it as various connections and relationships develop, grow, and diminish in time. We now use Swirski and Simpson's (2012) slow innovation framework of challenges, drivers, enablers, and well-being to discuss our results.

WIL challenges refer largely to the complexity and specific contexts of any given WIL setting and responding to these as they emerge. In this case, the site provides a specific setting with a long community history, changes in landownership and land use, and a complex of spatial links to related sites in the immediate locale and in the region.

Figure 3

The network of the mine site, fieldtrip, and associated people and sites
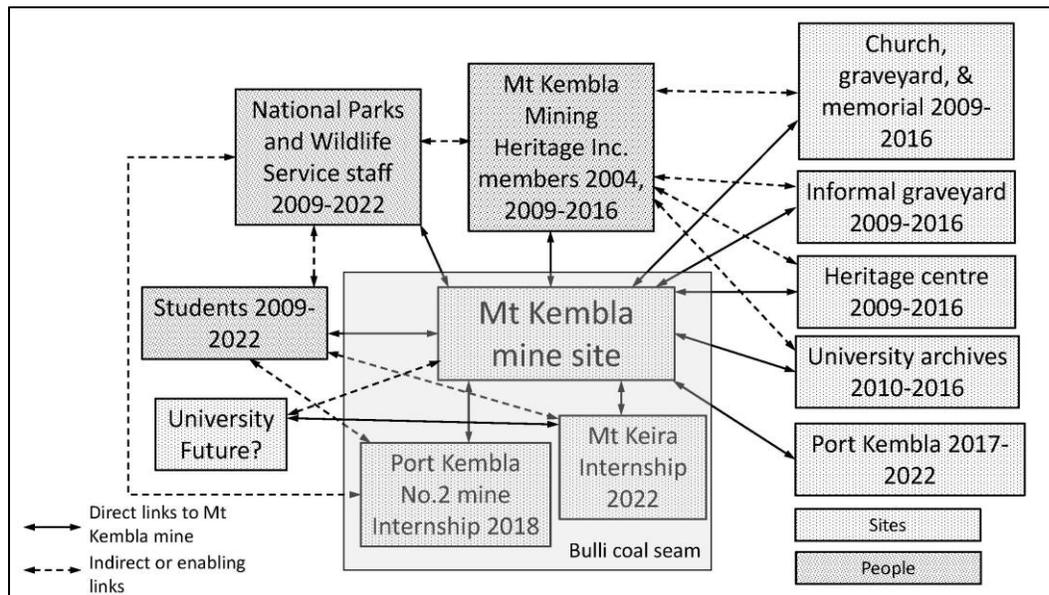
Moreover, as the fieldtrip has evolved over time and as those involved has changed these connections have variously become more or less part of the fieldtrip, opening up new connections and issues for the fieldtrip and author Gill. For example, the church and graveyards at Mt Kembla are not part of the current fieldtrip. Instead, related but quite different heritage sites at Port Kembla now are included. As discussed below for well-being this raises both opportunities and challenges. This slow evolution of the trip amid the specifics of the site and its network highlights the value of taking and supporting a long term and open approach to supporting fieldwork based NPWIL and its practitioners. Having to change in response to what is lost or no longer possible should not be only seen as a problem. Rather, as part of slow innovation, it is simply part of a process of navigating complexity and seeing and realising alternative perspectives.

WIL Drivers lead to or initiate new practices. Foremost here is the mine site itself. As discussed, it is an evocative site that has attracted long term attention from the community, NPWS, and other parties. This interest arises from the material elements of the site itself, its links in time to the 1902 disaster and to regional industrial development, and from very local links to the Mt Kembla community. As an evocative site, it has influenced author Gill to engage with other escarpment mine sites and to follow the Bulli seam to the Mt Keira internship. This exercise looks to the future evolution of the fieldtrip. Supporting fieldwork based NPWIL involves recognising that the sites themselves become agents in the process. They will provide some of the parameters and play a role in the evolution and flow of the WIL activities.

Changes in the people associated with the site are also drivers to change. The loss of MKMHI prompted a wholesale redesign of the fieldtrip. Changes in NPWS staff have had various influences. Finally, one the drivers of the redesign was a perceived need to provide a fieldtrip that engaged with contemporary ideas of sites as process. The spatial relationships of the site itself facilitated exploration of possibilities for this. Academics delivering NPWIL through sites will be working through sets of challenges thrown up by the site and its relationships. The sites are not passive recipients of fieldtrips but bring agency to the fieldtrip exercises.

WIL enablers sustain the practice of slow innovation in WIL over the long term and amid inevitable change. As for drivers, the site is a key agent in this, particularly insofar it is seen as not only a bounded entity, but also within its broader network. This network has provided and generated opportunities for participation and co-creation, centred around an alignment of interests and a shared stake in the site. The collaboration with MKHMI is the main example of this but the collaboration with the university archivist and the digitisation of library holdings for enduring community benefit was an unexpected and valuable outcome. Perhaps more expected were the positive outcomes and experiences for students. Their feedback provided assurance that the teaching goals of the fieldtrip exercise were being met. This supported author Gill in continuing with the fieldtrip, its development, and its collaborations.

WIL well-being is concerned with the values, ethics, and social responsibilities of WIL, especially as it encompasses more diverse forms (Swirski & Simpson, 2012). One of the issues with a focus on sites per se is that their bounded nature can fix their meaning in time and thereby be exclusive of other meanings. Without direct involvement of the Mt Kembla community, there is the risk that community perspectives on the mine presented as part of the fieldtrip may themselves ossify over time. Further, opening up the site and looking to connections in this case has created scope for the fieldtrip to now include Indigenous histories and perspectives. This development of the fieldtrip further highlights that these exercises are continually unfolding. Incorporating Indigenous perspectives and histories into a fieldtrip raises ethical questions as to who should be telling the stories for those sites (Atchison & Kennedy, 2020). To address this means new directions in relationship building and resourcing of fieldtrips. Indigenous involvement would also likely introduce cultural and practical issues that would demand change in the fieldtrip and its place in the subject. The current rollout of fieldtrips across the subject and the running of the Mt Kembla mine fieldtrip itself would probably need to "slow down", in Swirski and Simpson's (2012) language, to accommodate such a change. With fieldtrip evolution, community changes, and the incorporation of new sites, come new responsibilities for the academics involved. It also gives new opportunities to demonstrate professional practice such as good community engagement in heritage management.

The framework of challenges, drivers, enablers, and well-being illustrates the multiple and intersecting elements of the network of sites, people, and relationships that facilitate a fieldtrip and associated activities at and around Mt Kembla mine. It highlights not only the important role of the material site but the also the network that gives it further and more diverse meaning and significance. In addition, it shows how the site generates and embodies relationships that contribute to the ongoing process of slow innovation for fieldwork based NPWIL.

Conclusion

In this paper we look back over a long-standing fieldwork based and collaborative teaching exercise in light of contemporary moves to expand and frame WIL activities. We consider what a long-term perspective brings and what we can learn from bringing fieldwork sites into discussions about the nature of NPWIL. We do this through an in-depth case study of the fieldtrip exercise and its evolution over time. Our analysis has implications for other disciplines that use fieldwork such as ecology, urban studies, geomorphology, and environmental management. Like practice-based learning by students in workplace placements (Billett, 2015), fieldwork can enhance teaching and learning by stitching together multiple "sites" of learning (Dean et al., 2020b).

A long-term perspective on the fieldtrip exercise shows the non-linear temporality of this form of teaching. Rather than identifiable stages of development over time (Dorado & Giles Jr, 2004), the fieldtrip exercise and associated activities are characterised by large and small changes, set-backs, new community contexts, paradigm shifts, and iterative adaptation and responses at various scales. In time, one can see what appears as a setback, such as the demise of MKMHI, as part of a longer flow of innovation (Swirski & Simpson, 2012) and a moment to reflect on the theoretical and practical design and orientation of the exercise. Taking a networked view of the fieldwork site and the fieldtrip brought into view ways to take the fieldtrip in new directions.

For non-vocational disciplines that use fieldwork in teaching, sites are a key tool. We show that the sites are not tightly bounded spaces. They are, in theory and practice, emergent and relational networked spaces and not reducible to "projects". These characteristics are valuable in teaching for they allow us to think and talk in terms of the temporal and spatial connections that create, sustain, and change the site. What we show here is that being able to perceive and create these networks for teaching is itself a complex learning and doing process that must be given time. For fieldwork-based teaching at sites, we can then link that site to social, economic, or ecological processes that affect the site and in which the site is also an agent. In heritage studies, this helps to integrate the fieldtrip exercise with contemporary theory. As a networked agent rather than simply a passive recipient of teaching activities, a site may alternately facilitate or frustrate NPWIL activities. This suggests that fieldwork based NPWIL may need practical and pedagogical support analogous to that required for other forms of WIL where community and industry partners may be involved.

We started with Dean et al.'s (2020a) call for great insights into forms of NPWIL and their outcomes. Extending existing work on using fieldwork to tackle teaching problems (Atchison & Kennedy, 2020; Gill et al., 2012), we focus on how fieldwork sites themselves help us understand this form of NPWIL and what it can offer staff and students. Challenges identified by Dean et al. (2020a) remain. Like other forms of NPWIL, fieldwork activities should be scaffolded across courses. Virtual fieldtrips introduced as response to COVID restrictions have shifted the nexus of technologies, teaching design, and student expectations in uncertain ways. Nonetheless, we show that site-based fieldwork NPWIL that "flows" from spatial and temporal context has a strong role to play in fieldwork disciplines.

Conflict of Interest

Acknowledgements

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