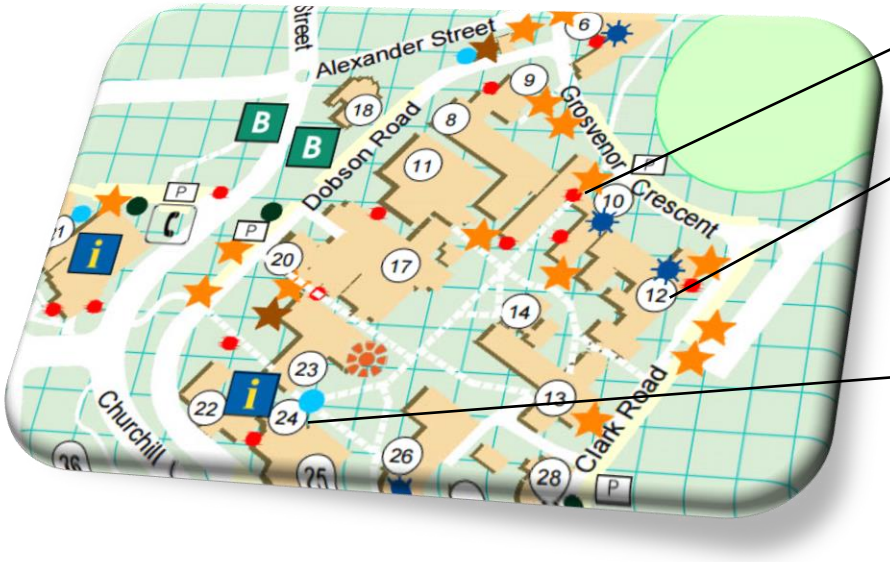
ANZAPS 2017

UNIVERSITY of TASMANIA

Locating places, locating planning

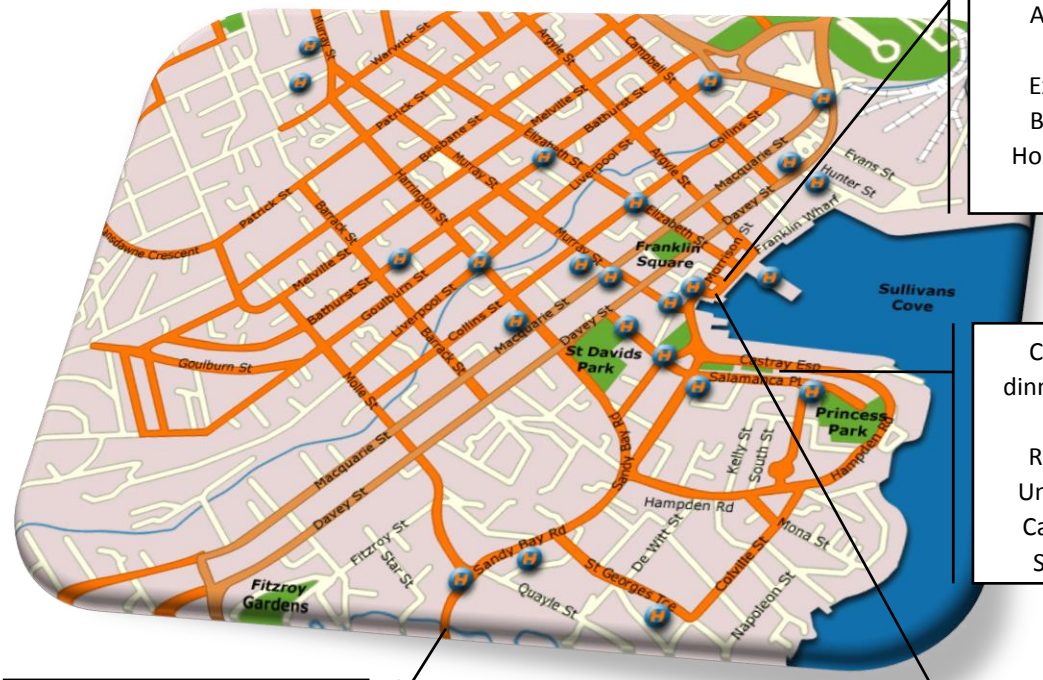
PROCEEDINGS



Trade Table Cafe

Conference venue: Building 12 (Geography), Lecture Theatre 211

Heads of planning breakfast: Lazenbys



Tasmanian Awards for Planning Excellence: Brickworks Hobart Design Studio

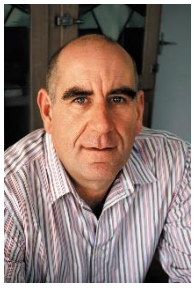
Conference dinner: Blue Eye Seafood Restaurant. Under silos, 1 Castray Esp., Salamanca

Take Sandy Bay Road to the University of Tasmania and conference venue

Brooke St Pier: Mona Field trip

PROGRAM

THURSDAY 2 NOVEMBER 2017

1.00	Registration table opens
1.30	Welcome to country: Rob Anders
	Welcome by Head of Geography & Spatial Sciences: Professor Matt King
	Welcome by PIA Tasmania: Irene Duckett, President
2.15	Keynote: James Boyce  **Freedom from magistrates and masters: the past, present and future of the Van Diemonian common** An engaging speaker and one of Tasmania's leading intellectuals, James Boyce speaks on understanding why land ownership doesn't mean unqualified land use – the case of the Van Diemonian common. James is a University Associate in Geography & Spatial Sciences at the University of Tasmania, and a multi-award winning historian who makes his living by writing scholarly history for a general readership. His books include *Van Diemen's Land* (2008), *1835: The Founding of Melbourne and the Conquest of Australia* (2011), *Born Bad: Original Sin and the Making of the Western World* (2014), and *Losing Streak: How Tasmania was Gamed by the Gambling Industry* (2017). His current research focus is the long history of commoner resistance to the drainage of the English fen.
3.15	Afternoon tea
3.45	Session 1 **DISRUPTING THE ACADEMY** Chair: Andrew Harwood **The bad, the ugly and the good: locating the consequences of the Canterbury earthquakes on the map of planning academia** Hamish G. Rennie and Jesse Forsyth **Keeping practice at heart: revitalising the planning curriculum at the University of New South Wales** Simon Pinnegar **Accredited planning education and globally aware graduates: reflecting on student and faculty views of accredited planning education** Adrienne Keane and Nicole Gurran **Gender gaps in Australian planning academia** Dorina Pojani, Jaime Olvera-Garcia, Neil Sipe and Jason Byrne
5.05	Close
6.30	**Conference dinner** Blue Eye Seafood Restaurant. Under the silos, 1 Castray Esplanade, Salamanca Place A la carte menu with vegetarian options and a selection of Tasmanian wines

FRIDAY 3 NOVEMBER 2017 morning

8.00	**Heads of planning breakfast** Meeting of the university heads of planning schools and programs. Lazenbys small function room (right side of dining area), University of Tasmania
9.15	Keynote: Rob Nolan and Nicole Sommer **Australia's first single state-wide planning scheme** The current (Liberal) State Government has promised a fairer, faster, cheaper, simpler planning system. A core element of the policy was a single state-wide planning scheme. This presentation will trace the making of the new scheme, and ask how are the current planning reforms tracking? Rob has worked in planning at local, regional and State Government levels including in the Tasmanian Planning Commission. He currently works for the National Heart Foundation. Nicole heads the planning and environment practice of legal firm Dobson, Mitchell, Allport, and is studying for a Master of Environmental Management (UTAS).
10.15	Morning tea
10.35	Panel 1 **STARTING THE CONVERSATION: PIA'S INDIGENOUS EDUCATION POLICY** Facilitator: Peter Phibbs In September last year, PIA released its policy for the accreditation of Australian planning qualifications. This policy includes embedding Aboriginal and Torres Strait Islander interests, perspectives and approaches in planning education, as well as incorporating these as an area of supportive knowledge. In this session we pose the question, 'What do we need to do as planning educators to 'start the conversation' regarding PIA's indigenous education policy?' We will be joined by Tasmanian Aboriginal community members Rob Anders and Greg Lehman.
12.05	Session 2 **DECOLONISING PLANNING** Chair: Andrew Harwood **Renewing for a decolonised curricula: scratching beneath the surface?** Dory Reeves and Lena Henry **Locating planning in indigenous Australia: some implications for Australian planning history and practice** Louise Johnson, Libby Porter and Sue Jackson
12.45	Lunch

FRIDAY 3 NOVEMBER afternoon

1.35	Session 3 **URBANESQUE** Chair: Kate Booth **The unseen and hidden life of the everyday** Claire Freeman **Keeping pace with technology: drones, disturbance and policy deficiency** Pip Wallace, Ross Martin and Iain White **Entropy, honesty, sustainability: challenges for planning to 2050** David Wadley
3.15	Afternoon tea
3.40	Session 4 **TEACHING SKILLS AND PRACTICE** Chair: Emma Pharo **Reflexively teaching professional planning practice: using food systems planning to 'cater' for a diversity of learning needs** Joanna Ross **Getting visual! Building planning students' spatial skills through a sequential GIS-enabled curriculum** Yan Liu, Lavinia Poruschi, Derlie Mateo-Babiano and Sebastien Darchen **How best to assess students taking work placements? An empirical investigation from Australian urban and regional planning** John Jackson **Uncomfortable teaching: diversity in the planning classroom** Andrew Butt and Julie Rudner
5.00	Close
5.30-8pm	**Tasmanian Awards for Planning Excellence** With 10 Awards and Commendations to be presented this year, you are invited to join PIA to celebrate and congratulate the 2017 State recipients Brickworks Hobart Design Studio, 9 Franklin Wharf Attendance is free, but registrations are essential for catering

SATURDAY 4 NOVEMBER

9.00	Session 5 **MAPPING HAZARDS** Chair: Kate Booth **Risky spaces: creating, contesting and communicating lines on environmental hazard maps** Iain White and Graham Haughton **State-wide wetlands and waterways planning overlay for Tasmania** Vishnu Prahalad, Adelina Latinovic and Jason Whitehead **Enabling managed retreat in New Zealand: a national review of resource management instruments** Christina Hanna, Iain White and Bruce Glavovic
10.00	Morning tea
10.30	Panel 2 **ROLE OF FIELD TRIPS IN EDUCATION PLANNING** Chairs: Aysin Dedekorkut-Howes and Jason Byrne Using an interdisciplinary evidence-based approach, this panel will discuss the experiences and challenges of running field trips in planning and best practices for effectively embedding field trips into planning courses to maximize their benefits. The panel includes Andrew Butt, Sebastien Darchen and Pip Wallace, with papers: **The role of field trips in fostering employability skills in planning students** Aysin Dedekorkut-Howes and Jason Byrne **The value of student field trips for the city planning academic** Daniel O'Hare
11.45	**ANZAPS annual meeting** Your opportunity to make a pitch to host ANZAPS 2018!
12.15	Lunch
1.00	Field trip **MT WELLINGTON** MEET: 1pm at Conference venue (return at 4pm) Join Professor Jamie Kirkpatrick and Associate Professor Michael Lockwood on a bus trip to the spectacular alpine summit of Mt Wellington. Mt Wellington towers over the city of Hobart and, like many natural areas, is facing planning challenges from tourism and climate change. BRING: Warm clothes, rain coat and comfortable shoes. COST: Free for registered participants. Field trip **MUSEUM OF OLD AND NEW ART (MONA)** MEET: 1pm at Brooke Street Pier Join planning consultant Irene Duckett and Dr Kate Booth for an afternoon at the iconic Museum of Old and New Art (MONA). Hear about planning challenges within the striated cultural and social geographies of Hobart, then enjoy the MONA experience. BRING: Pre-purchased ferry tickets (dpt 1.15, rtn 5pm. Available at www.mona.net.au). COSTS: Rtn ferry ride ($22pp) and MONA entry ($28pp).

ABSTRACTS

Uncomfortable teaching: diversity in the planning classroom

Andrew Butt and Julie Rudner (La Trobe University)

Academically and professionally, planners are trained to consider diversity in policy, procedures and community engagement activities. We implement planning and design principles aimed at creating healthier, safer and more inclusive cities, and seek to increase cultural representation within our ranks. In tertiary education, we teach future planners about the process and practice of inclusion, despite the tensions this creates for planning in its more technically informed guises. But what does 'planning for diversity' and 'managing our co-existence' mean in our teaching spaces? This paper explores the opportunities and challenges of teaching diversity as a normative model of planning practice. Challenges for a 'pedagogy of the uncomfortable' are addressed using three examples: structural inequality, international study tours and case studies of public conflicts like the Bendigo mosque. This paper will explore the ways that topics of current politics and policy, context and broader conflict and context are discussed and understood by nascent planning professionals, and how matters of mechanics, pragmatics and justice enter the discourses of undergraduate planning.

The unseen and hidden life of the everyday

Claire Freeman (University of Otago)

Why is it that planning education and research so often fails to notice the everyday locale in which people spend most of their lives? The everyday locale comprises, the common, the taken for granted locations in which most of life happens, the central core of which is the home and its immediate surrounds. This assertion of the need to focus on the small scale of people's lives derives from two recent research projects. The first analysed how children in their increasingly dispersed, pressured and adult accompanied lives find spaces in which to connect with nature. The second study asked, 'how does aging impact on people's ability to connect with nature'? Both studies revealed the primary importance of the home, the green space around the home and spaces in the immediate vicinity of the home. In discussing the findings from these studies, we show how planners need to consider biodiversity provision for residents of all ages in their home environments.

In the second part of the paper, we propose ways planners can better address the needs of city inhabitants by focusing on this everyday scale of living and what the benefits and challenges may be in doing so. The location for this research was New Zealand cities but the trends identified and the constraints faced by both young and old in accessing biodiverse environments are reflective of trends present in cities internationally. Cities in New Zealand are intensifying which can result in a loss of nearby biodiverse spaces. We use examples of good practice from New Zealand and internationally to show how biophilic design can be incorporated into planning for everyday living environments, so that all ages from young to old can access the biodiversity necessary for happier, healthier lives.

Enabling managed retreat in New Zealand: a national review of resource management instruments

Christina Hanna (University of Waikato), Professor Iain White (University of Waikato) and Professor Bruce Glavovic (Massey University)

Severe natural hazard events, the projected impacts of climate change and development trends mean that more New Zealanders are exposed to natural hazard risks in the twenty-first century. Vulnerability to such threats can be mitigated for communities at risk, however long-term community resilience requires adaptation. Managed retreat is a potentially significant, adaptive approach to risk reduction, where people and assets at risk are strategically relocated from hazardous areas. In this paper, we examine the concept of managed retreat, reviewing national and international literature on implementation success and failure. Key enablers and barriers arise within the literature, highlighting the complex and contentious environment that managed retreat exists within. To determine the provision for managed retreat in New Zealand, a deliberative textual analysis of New Zealand planning documents is undertaken. The study analysed 127 regional, district and unitary plans and regional policy statements, providing an in-depth analysis of managed retreat provisions applied in resource management policy and regulation. Non-statutory and strategic planning documents were also analysed to determine the level of direction for managed retreat within broader planning frameworks. It was found that five key planning approaches dominate the statutory policy landscape and although some progressive provisions were discovered, the majority deliver a limited level of direction and clarity to plan users. Overall, managed retreat is gaining recognition within the New Zealand planning framework however, there is a lack of national consistency in defining and applying the approach, a dominant focus on coastal hazards and a general absence of long-term, strategic enablers.

How best to assess students taking work placements? An empirical investigation from Australian urban and regional planning

John Jackson (RMIT)

Work placements (or work-based learning)) are common in urban and regional planning education but until recently the relevant literature has largely overlooked their assessment and academic standards. To address this gap, the paper presents a study of this topic undertaken within the Australian context. The research involved systematic, desktop scoping of the status of work placements in planning education in Australia, and a qualitative study of the perspectives of participating educators, practitioners and students on appropriate assessment methods and academic standards. A Negotiated Learning Plan is an approach to assessment and standards that promotes a shared understanding across these key stakeholders.

Locating planning in Indigenous Australia: some implications for Australian planning history and practice

Louise Johnson (Deakin University), Libby Porter (RMIT) and Sue Jackson

Planning is always occurring on Indigenous lands in Australia yet even with major changes in Australian land laws, such as native title, few have regarded this fact as fundamental to the history and practice of planning. Indeed, the planning canon rarely positions Australian planning within the context of its continued role in the colonisation of Australian lands, with its consequences and implications for Aboriginal and Torres Strait Islander peoples. We present in this paper a new way of thinking about the history of Australian planning that better locates planning in Indigenous Australia. If planners are to build more just relationships with Indigenous peoples, they must transform the story that planning tells about itself, where it has come from, its impact and what it now does. The paper presents a new history of Australian planning to reveal the work of planning through distinct periods of Indigenous colonisation, segregation, assimilation, struggle for self-determination and land rights, and neoliberalism. This work reveals both the complicity of planning in ongoing projects of colonisation of Australian lands and waters, as well as the centrality of the agency and actions of Aboriginal and Torres Strait Islander peoples in Australia's planning story.

Accredited planning education and globally aware graduates: reflecting on student and faculty views of accredited planning education

Adrienne Keane and Nicole Gurran (University of Sydney)

University urban planning programs have evolved to reflect perceived professional needs for a globalised world (Goldstein et al., 2006; Peel at al., 2008). This has involved many different approaches - from incorporating international content and comparisons in curricula, to immersive field study experiences (Afshar, 2001; Hoey et al., 2016; Peel et al., 2008; Pezzoli & Howe, 2001). However, with many planning programs also accredited by domestic professional bodies, potential conflict arises between the demands of local practice versus the need for global awareness (Zinn et al., 1993). This is a particular challenge for planning schools with students who hold international ambitions. In this paper we seek to demonstrate how the "top" planning programs around the world enable global work ready graduates by drawing on an analysis of current accreditation policies of United States, Canada, United Kingdom, Hong Kong, India, Singapore, Australia and New Zealand to identify accreditation practices which support planning as an international profession. A review of these against the "top" postgraduate planning programs from those countries demonstrates a spectrum of emphasis or priority given to enabling global work ready graduates. Then to explore how the academy, through the design of curriculum, balances the aspirations of global work readiness and the expectations from local industry, we present semi-structured interviews with both students and faculty members of the University of Sydney, to discuss teaching and learning experiences which either contribute towards, or undermine, what we describe as global professional competency.

Afshar, F. (2001). Preparing Planners for a Globalizing World: The Planning School at the University of Guelph. Journal of Planning Education and Research, 20(3), 339-352. doi:10.1177/0739456x0102000306
Goldstein, H. A., Bollens, S., Feser, E., & Silver, C. (2006). An Experiment in the Internationalization of Planning Education: The NEURUS Program. Journal of Planning Education and Research, 25(4), 349-363. doi:10.1177/0739456x05279277
Hoey, L., Rumbach, A., & Shake, J. D. (2016). Bringing Practice to the Classroom. Journal of Planning Education and Research, 0739456X16649030. doi:10.1177/0739456X16649030
Peel, D., Frank, A., Amborski, D., Boyle, R., Fubini, A., Oc, T., . . . Watson, V. (2008). Planning Education Forum: The internationalisation of planning education: issues, perceptions and priorities for action/Comment/Comment/Comment/Comment/Comment/Response. The Town Planning Review, 79(1), 87-123.
Pezzoli, K., & Howe, D. (2001). Planning Pedagogy and Globalization: A Content Analysis of Syllabi. Journal of Planning Education and Research, 20(3), 365-375. doi:10.1177/0739456x0102000308
Zinn, F. D., Lyons, T. S., & Hinojosa, R. C. (1993). Bringing a Global Approach to Education: The Case of Urban Planning. Environment and Planning B: Planning and Design, 20(5), 557-565. doi:10.1068/b200557

Getting visual! Building planning students' spatial skills through a sequential GIS-enabled curriculum

Yan Liu (University of Queensland), Lavinia Poruschi (University of Queensland), Derlie Mateo-Babiano (University of Melbourne), Sebastien Darchen (University of Queensland)

Spatial skills, including spatial thinking, spatial planning, spatial modelling and visualisation are a core skill set for students in the fields of geography, planning and other related fields. For planning students, such skill development is not imbedded in the current educational program. As such, students face the challenge of *thinking* or *visualising* an environment they would plan for or *assessing* the impact of new development prior to it being developed, or visually communicate a planning output with professionals and the general public.

This paper reports an intervention that aimed at developing students' spatial skills in an undergraduate Urban and Town Planning program. It innovatively transforms three core but discrete courses into a sequential GIS-enabled curriculum by developing a computer based 3D city model and using the 3D model as a virtual learning platform for students to build and hone their spatial skills. Built upon the real world case of a dynamically evolving suburb in Brisbane where active urban renewal and redevelopment is occurring, students learn to develop their own 3D city model and use their model to develop spatial awareness, design and evaluate new development options, and present their design outcome online for public consultation and visual communication.

After the first project implementation phase, students showed increased capacity to conceptualise 3D models. Preliminary perception data indicates students are enthusiastic about learning spatial skills, despite challenges encountered. Findings have implications for sequential learning strategy, spatial skills instruction and promoting the involvement of students as designers in their own learning process.

The value of student field trips for the city planning academic

Daniel O'Hare (Bond University)

The emphasis of the widespread literature about field trips in tertiary education is on the value to the student rather than to the educator. This paper shifts the focus by exploring the value of student field trips to academics in city planning and related disciplines. Several key values to the academic are identified, including gaining knowledge of professional practice and implementation aspects of planning; assembling and maintaining networks of contacts in the profession, industry, government and community; maintaining the profile of the lecturer, discipline and university academic unit (department, school, faculty); and the building of rapport with the students who will be future professional practitioners in the discipline. The planning academic gains from the preparation and execution of the field trip in many additional ways. There is the pedagogical benefit of bringing a coursework unit or whole degree to life for the student participants in the field trip, so that the other aspects of the unit/subject are then easier to convey due to students' improved contextual understanding and motivation. Field trips may assist the development of group cohesion, as well as improving rapport between the students and their lecturer. This potentially improves the chances of the students remaining in contact with their lecturer and the school following graduation, due to the greater personal affiliation. The paper draws on the author's experience in organising Planning field trips as well as multi-disciplinary field trips for students in Urban Design, Planning and Landscape Architecture. The paper concludes that the value to the Planning educator provides supportive arguments for the continuation of field trips in the education of Planners and other Built Environment professionals.

Keeping practice at heart: revitalising the planning curriculum at the University of New South Wales

Simon Pinnegar (University of New South Wales)

2016 marked the 50th year of planning education at UNSW. It also heralded the arrival of significantly restructured degrees at both the undergraduate and postgraduate level. As one of Australia's leading planning programs, transforming – without losing – its core defining features represented a significant challenge. At the heart of many competing demands to be negotiated was a commitment to retaining professional experience as a fundamental component of the Bachelor of Planning, despite parallel acknowledgment of the need to shorten the degree's length from 5 to 4 years. This paper focuses critically unpacks two crucial and interconnected factors which shaped the resultant design of the new Bachelor of City Planning (Hons). The first was the restructuring and mobilisation of an external reference panel comprising key government and industry stakeholders to offer professional weight and authority at pivotal times during the curriculum review process. The second – and the principal outcome of the first – was the negotiation and shared design with these partners of a restructured Practice Year which has replaced the traditional 'sandwich year' format. The result is a highly innovative work-integrated-learning year which sees students undertake fulltime employment in planning practice supported by an umbrella of 'Practice' Courses involving intensive instruction weeks at the start, midpoint and culmination of placements. The new curriculum commenced in 2016 and the first Practice Year is underway in 2017. Student experience and partner feedback of this inaugural year will reviewed, alongside significant uplifts in degree demand, first preferences stated, and enrolment in, the revitalised degree.

Gender gaps in Australian planning academia

Dorina Pojani (University of Queensland), Jaime Olvera-Garcia (University of Queensland), Neil Sipe (University of Queensland) and Jason Byrne (Griffith University)

Abstract

This study examines gender gaps in Australian planning academia. The authors found that wide gender gaps exist, and the "leaking pipeline phenomenon" is significant. Not only do the findings serve an academic purpose, but they may have significant implications related to matters of promotion or prestige within the profession. These findings may be of help to university administrators on matters of review of female planning academics, and serve as a point of comparison between Australian planning academia and the rest of the world.

State-wide wetlands and waterways planning overlay for Tasmania

Vishnu Prahalad (University of Tasmania), Adelina Latinovic (University of Tasmania) and Jason Whitehead (Derwent Estuary Program, Dept Primary Industries, Parks, Water & Environment)

Wetland and waterway environments are a critically important functional component of our landscapes, providing a range of well recognised ecosystem services. This presentation is a case study of the use of a desktop GIS-based approach to create Tasmania-wide planning overlays for these environments. The process involved applying two tests in creating the overlay, the first one involving environmental considerations, the other encompassing socio-political considerations in order to strike a 'sustainable balance'. The passing of these tests allowed for the overlay to be 'recognised' within the Tasmanian planning processes, giving it legitimacy and application. Overlays, as all maps, both reveal and conceal. We outline and discuss the aspects concealed and identify future action, including custodianship of the overlay, necessary to ensure ongoing validity and effectiveness.

Renewing for a decolonised curricula – scratching beneath the surface?

Dory Reeves and Lena Henry (University of Auckland)

Acknowledging the spirit of the conference, this paper will be located in the activities of the planning profession in NZ and in planning education. The key theme will be the decolonisation of the curricula and the preparation of professionals to work with Maori.

Aotearoa New Zealand has seen increasing legislation and policy recognition of Maori economic, politicial and cultural claims. The focus on legislation and policy has been on a) participation in decision making, b) recognition of Maori protocols and their inclusion in planning practice and c) taking into account the Treaty / Tiriti. This has led to renewed focus on the way planning curricula is taught and developed. This trend within NZ reflects global trends expressed through the Sustainable Development Goals (SDGs) and the New Urban Agenda which acknowledge the importance of indigenous rights. The aim in future is to ensure that increased engagement actually results in the materialisation of indigenous Maori aspirations toward a decolonised city.

The Te Whaihanga project is a co funded project with AKO Aotearoa to bring about sustainable long term change in the way professionals are taught and to better prepare professionals to work with and engage with Maori. The project is a collaborative project with architecture, engineering, landscape and has been instigated and led by the planning discipline. This paper will focus on the survey material collected during the first year of the project through a series of wananga or forum and face to face interviews. It examines how we can identify what professionals need to know and how to assess students' prior learning.

The bad, the ugly and the good: locating the consequences of the Canterbury earthquakes on the map of planning academia

Hamish G. Rennie and Jesse Forsyth (Lincoln University)

The effects of earthquakes on the economy, society and education at large have been well documented, but little attention has been paid to the effect on an academic discipline and its related academics. Commencing on 4th September 2010 the Canterbury region in New Zealand has suffered an ongoing sequence of seismic events. The most significant of these resulted in death and wide spread destruction of much of Christchurch city and the most recent, in Hurunui/Kaikoura in North Canterbury on 14th November 2016 has cut the main state highway and rail link between the South and North Islands. Located 23 km south from Christchurch's Cathedral Square is Lincoln University, home of Canterbury's professionally accredited planning programmes. Drawing on surveys, interviews and documentary analysis, this paper represents a first analysis of the impacts on planning academia in New Zealand with a particular focus on Lincoln University as a case study. While some of the consequences may be indicative of a wider range of issues, there have been significant changes in the nature of the planning programme focus and content, and the research orientation of researchers and institutional relationships at home and abroad. This paper attempts to make visible the often unmarked consequences (bad, good and ugly) of 'disasters' on the map of a discipline.

Reflexively teaching professional planning practice: using food systems planning to 'cater' for a diversity of learning needs

Joanna Ross (Massey University)

Post-graduate planning programmes attract students from multiple walks of life. For some of these students, the post-graduate planning degree offers a potential career change, for others it is an opportunity to attain a professionally accredited degree, adding gravitas to their current professional role. Informed by a reflexive autoethnographical approach, this paper explores why food systems planning (FSP) was used as part of a strategy to teach professional planning practice to a diverse group of post-graduate learners, and how it informed the delivery of the course so as to provide equitable learning experiences for a wide-spectrum of learners.

Despite its importance in meeting the current and future needs of communities, the food system is conspicuous by its absence in planning frameworks and pedagogy. Food systems planning was unfamiliar to most students. Its use as a lens through which to explore planning practice levelled the playing field in a class characterised by a diversity of educational backgrounds and students with varying levels of planning experience. The students were exposed to FSP through a process of experiential learning, where various planning tasks were undertaken and reflected upon. The learning experiences sought to challenge those who were advanced learners, at the same time as scaffolding those who were new to planning. Feedback from the students suggested that it was a useful approach to learn about planning practice, highlighting the benefit of reflexive teaching practice.

Entropy, honesty, sustainability: challenges for planning to 2050

David Wadley (University of Queensland)

Business and politics are arguably obsessed with economic growth, sought not by way of hard-won and wealth-creating technological innovation but by more louche means of demographic expansion and capital deepening. Even planners who can foresee the end-state of this fetish are bound by its high-entropy precepts. Others are locally distracted by variations to form, though form can no longer prevail over high-impact function. In a dynamic and contested milieu, the 'rational' method in planning appears a misnomer since practice, at large, is becoming increasingly irrational. This seminar discussion exposes several common manifestations of irrationality constructed to protect the status quo. Yet, planners are not generally well placed to challenge its proponents. In such circumstances, hope can only emerge from the effects, as observed by contrarian writers and commentators, of contradictions within the Ponzi model of late capitalism. It would be furthered if honest (and mainly academic) planners spotlighted the logical consequences of present paths of societal development and called for a re-think of the macro drivers behind the neoliberal model. This move is unlikely given the entrenchment and co-option of the national *Zeitgeist*.

Keeping pace with technology: drones, disturbance and policy deficiency

Pip Wallace, Ross Martin and Iain White (University of Waikato)

This paper analyses regulatory responses to rapid intensification of the use of drones/remotely piloted aircraft (RPA) in the context of wildlife protection. Benefits and disadvantages of the technology to wildlife are examined, before three key limitations in policy and law are identified: failure to address wildlife disturbance in RPA regulation; reliance upon insufficiently comprehensive existing wildlife protection legislation to manage disturbance effects; and limited species-specific research on disturbance. A New Zealand case study further reveals an inconsistent regulatory approach struggling to keep pace with innovation, inadequate regulatory capture of environmental effects due to exemption as "aircraft", and no recognition that specific geographical locations, such as coastal areas, distinguished by recreational pressures and high numbers of threatened species require special consideration. Recommendations include acknowledging the impact on wildlife in policy, gap analysis of legal arrangements for protection from disturbance (including airspace), and adoption of minimum approach distances to threatened species. On a broader basis, the need for greater attention to be given to planning for conservation of airspace is also identified.

Risky spaces: creating, contesting and communicating lines on environmental hazard maps

Iain White (University of Waikato) and Graham Haughton (University of Manchester)

This paper examines the tensions involved in the production, presentation and revision of hazard maps, focusing on the controversies that have become increasingly common when they are used to change government policy. Our scope includes all the major environmental hazards currently being mapped in New Zealand, one of the most exposed and hazard-aware countries. Selecting one country also allowed a multi-hazard approach to be taken that helps provide messages for other countries. Drawing on interviews with 24 key informants, the paper identifies a range of reasons for explaining the recent growth in hazard mapping and why hazard maps sometimes resulted in high profile controversies. Two themes emerged out of this analysis: an inconsistency in modelling and mapping hazards that created opportunity for challenge; and the selective mobilisation of scientific uncertainty to dispute the legitimacy of official maps, particularly on developed land. The findings highlight the multiple roles of mapping, positioning maps as potentially instruments of both depoliticisation and repoliticisation. We emphasise how conflicts are most likely when maps are used as technocratic instruments of depoliticisation, and that creating maps in a more open way can generate valuable opportunities to engage with communities in more creative policy-making regarding the threats they face and how they may respond. Mapping processes that open up the space for critical debate can act as important debate-support tools as well as decision-support tools, particularly when used to give voice to those not normally heard or treated as equals.

PEER REVIEWED PAPER

The role of fieldtrips in fostering employability skills in planning students

Rachael Cole-Hawthorne[1], Aysin Dedekorkut-Howes[1,3,4], Jason Byrne[1,3], Deanna Tomerini[1], Alison Sammel[2]

Griffith University, [1]School of Environment [2]School of Education and Professional Studies

[3]Presenting authors

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ABSTRACT

Experiential learning, through fieldtrips and study tours, is widely recognised as an important component of education for natural and built environment disciplines. Problem-based and experiential learning within fieldtrips can promote skills development. Yet the design of the teaching and learning experience must align with learning outcomes and student expectations if fieldtrips are to be pedagogically effective. The teaching method, types of assessment, fieldtrip location and context, staff-student ratio and interactions, and post fieldtrip activities and feedback all potentially affect successful learning outcomes – especially deeper learning (e.g. comprehension and analysis). The planning literature on this topic is scant. We currently do not know which aspects of fieldtrips work best and why. Nor do we know which types of assessment and which fieldtrip components best contribute to the development of employability skills. Using an interdisciplinary evidence-based approach, this paper identifies best practices for effectively embedding fieldtrips into the planning curriculum to maximize skills development. The paper uses a systematic quantitative literature review of peer reviewed journal articles on fieldtrips in tertiary education in natural and built environment disciplines to identify best practice.

INTRODUCTION

Sector-wide changes in Australian tertiary education have highlighted the importance of student employability. Within tertiary learning, student engagement is critically important for developing employability skills and driving positive student learning outcomes (Fuller et al., 2006). In the social and environmental sciences (e.g. planning, geography, environmental science), fieldtrips provide a major opportunity for student engagement. Smith and Lewi (2014) suggest that the benefits of fieldtrips might translate to better student engagement and could foster the development of employability skills. Fieldtrips have been widely extolled for their capacity to ignite the imaginations of even the most withdrawn students because they provide a student-centred approach to teaching and learning (Yigitcanlar, 2013, Procter, 2012). Yet ongoing resource constraints mean that there is a risk of losing the types of 'hands-on', 'real-world' experiences that fieldtrips offer, likely impacting graduate employability. This begs the questions: what are the benefits of fieldtrips and are they still relevant in tertiary education in the twenty-first century? To answer these questions in this paper we investigate the skills that fieldtrips may develop (especially employability skills) and how this development occurs.

'Employability', while hard to measure and often articulated ambiguously, refers to a set of 'soft skills' that include: professionalism, reliability, coping with uncertainty, managing pressure, thinking critically and strategically, communicating and interacting with others, written and interpersonal communication competencies, and time management and problem solving capabilities (Andrews and Higson, 2008,). The Planning Institute of Australia (PIA) accreditation policy (PIA, 2016) identifies core and generic capabilities and competencies graduates of all accredited planning programs are expected

to demonstrate. Generic capabilities include critical analysis and synthesis; creative and strategic thinking; spatial analysis; written, verbal and graphic communication; team work; and understanding and the application of theory to practice. Core competencies include professional and ethical planning practice; plan making, land use allocation and management, and urban design; and governance, planning law, plan implementation and planning administration. A review of environmental planning literature (Bosman and Dedekorkut-Howes, 2014) identified a number of foundational knowledge topics and generic skills or implementation methods to apply these principles that are important for environmental planners. Important foundational knowledge topics include ecological concepts, environmental economics, environmental philosophy, environmental psychology, sustainability, environmental ethics, and environmental justice. Important skills and methods include environmental design; geographical information systems; environmental impact assessment; environmental policy and law; site planning; negotiation, arbitration and conflict resolution; and critical inquiry.

Fieldtrips are a traditional teaching tool that can involve a wide range of outside experiences such as fieldwork practice, immersion tours, site visits, group work and a variety of assessment types. The idea of introducing outside, real and virtual, learning experiences in higher education is not a new phenomenon and has been applied in a multitude of disciplines to enhance student learning (Moline 2009; Jacobson et al., 2009; Bauerle and Park, 2012). The term 'fieldtrip' means an outing or trip to the field, which is organised and operated by tertiary education staff for primarily discipline specific teaching and learning (Scarce, 1997; Golubchikov 2015). We utilise a broad term because this captures and reflects the diversity of fieldtrips implemented in tertiary education course curricula. Fieldtrips are similar, but not related to practical placements, which are managed by or in part by usually non-institutional bodies (e.g. an industry partner or student employer).

Assessing the effectiveness of fieldtrips in tertiary education to improve student learning outcomes is not consistent nor systematic (Gore and Nelson, 1984). One way of measuring the learning performance of fieldtrips is to compare different teaching strategies employed in the fieldtrip (Cotton 2009) or comparing attitudes before and after a fieldtrip (Boyle et al., 2007; Demirkaya and Atayeter 2011). Others, such as Gore and Nelson (1997) developed an evaluative framework to assess the learning objectives of course curricula. However, while there is evidence of improved cognitive and affective abilities of students who have participated in a fieldtrip, the overall skills benefit of incorporating fieldtrips in education is still unclear. In some cases, institutions still struggle to understand and see the purpose of fieldtrips in education (Hope, 2009; Herrick 2010). Instead, because of the difficulties of defining and measuring the worth of fieldtrips in education, institutions are moving away from this method of teaching, while online and blended learning techniques have increased (Matheys et al., 2012; Procter 2012). Information technology plays a clear role in education today, even for fieldtrip learning and education (Medzini et al., 2015). Nonetheless, experiential learning continues to be an important consideration for student skills development and has increased its worth recently with regard to real-world learning activities (Scarce, 1997). Growing concerns about student skills and their relevance to the real world of industry and work have increased interest in fieldtrips as a method to improve these learning outcomes (Rydant et al., 2010). To some extent, this interest to enhance student learning outcomes and performance has prompted the emergence of discussions on the need for new methods of teaching focused on the real world of work.

This indicates that the introduction of fieldtrips in education has benefits for the overall student skills for future application in the real world of work. The question to ask then is: do fieldtrips effectively benefit student employability and, if so, how do they improve employability? This paper addresses this question through a systematic quantitative literature review (Pickering and Byrne, 2014) to assess the breadth and, to an extent, the depth of academic literature on fieldtrip outcomes in tertiary education. The range of learning, teaching and institutional outcomes of fieldtrips is identified and analysed. This

is the first systematic literature review that provides a comprehensive overview of fieldtrips in tertiary education in natural and built environment disciplines collectively[1].

SYSTEMATIC QUANTITATIVE LITERATURE REVIEW METHOD

A systematic quantitative literature review maps the literature in a logical and reproducible way using methods developed by Pickering and Byrne (2014). It has been applied to a number of research topics including energy efficiency (Byrne and Portanger, 2014), urban trees in different climatic zones (Roy et al., 2012), evaluating ecological restoration methods (Wortley et al., 2013) and environmental sustainability policy implementation failures (Howes et al., 2017). The method is underpinned by two principles. First, a comprehensive and thorough search by way of electronic databases is used to identify all journal articles relating to fieldtrips. Second, categorization is used to review the literature in a transparent, well-articulated and reasoned way. The resulting assessment is an updated review of the literature and a methodological contribution to analyzing this body of literature.

Google Scholar, Pro Quest, and the ISI Web of Knowledge electronic databases were used to identify journal articles about fieldtrips in May 2016. Keywords used included 'fieldtrips' or 'field trips' and a combination of terms including: 'undergraduate' 'fieldwork' 'education' 'teaching' 'learning'. The identified articles were triangulated against a literature search on fieldtrips previously done in 2014.

The database search identified over 100 English publications. However, a review of the abstracts revealed that a large number of these articles focused mainly on primary education or other experiential teaching formats such as studio or similar. These as well as conference papers[2] and articles about learning or fieldwork not connected to outdoor fieldtrips were excluded[3] resulting in 48 peer reviewed journal articles that focused on fieldtrips in tertiary natural and built environment education.

The findings are presented in four main sections. The first section provides an overview of general trends including article information such as date of publication, journal discipline, and geographic location of authors. The second section overviews the type of data collected (qualitative and quantitative research), data collection methods (observation/reflection, interviews, focus groups, archival research, statistical and market analysis), source of information (e.g. authors or fieldtrip participants) and number of groups involved (students, stakeholders, community members). The third section summarises fieldtrip design features such as number and duration of fieldtrips; type of fieldtrip (real or virtual), geographic location (local, regional, international), place setting, pre and post fieldtrip activities, student and staff information (e.g. student cohort), education design (course/module topic, context to course, assessment type employed), as well as the overall effect of fieldtrips in higher education. The last section of the findings examines the skills gained in relation to student performance. Benefits were classed as either 'discussed' or 'demonstrated' based upon whether they were mentioned in previous literature and/or authors own thoughts, or if they were evidenced with data from primary research.

FINDINGS FROM THE FIELDTRIPS LITERATURE

Overview of Fieldtrips Research

Research on fieldtrips in tertiary education in natural and built environment disciplines show a generally increasing interest in the past decade and is geographically focused in particular parts of the world. The review identified articles on fieldtrips since 1984 however, almost half (43%) of the articles were published between 2000 and 2009. The research was predominately conducted by lead authors

[1] There are a number of reviews that have been conducted primarily focusing on the geography discipline (Fuller et al., 2000; 2006).

[2] Although linked to conference proceedings, the *Procedia Social and Behavioral Sciences Journal* is included in this review.

[3] Although one article included in this review, Forest and Rayne 2009 argued that a real fieldtrip can be recreated in the classroom.

from Europe and interestingly the UK made up 95% of all articles published in this continent. There was only one other country (Greece) that had a lead author from Europe. Studies in the USA and Australasia each constituted 25% of all articles published, as well as two publications from Turkey and two more publications from Israel. There were no articles from the continents of Africa or South America.

Table 1. Journal disciplines

DISCIPLINES	Journal Name	Spatial discipline? (Yes/No)	Number of Articles
GEOGRAPHY	Journal of Geography in Higher Education	Y	20
	Journal of Geography	Y	5
	New Zealand Geographer	Y	1
	AREA	Y	2
	Transactions of the Institute of British Geographers	Y	1
ENVIRONMENTAL	International Research in Geographical and Environmental Education	Y	1
GEOSCIENCE	Journal of Geoscience Education	Y	1
TOTAL ARTICLES IN SPATIAL DISCIPLINES			**31**
SOCIAL RESEARCH	Procedia Social and Behavioral Sciences	N	4
	SAGE Open	N	1
	Teaching Sociology	N	1
INFORMATION TECHNOLOGY	Journal of Computer Assisted Learning	N	1
	Computers and Education	N	1
OTHER DISCIPLINES	Journal of Biological Education	N	2
	Journal of Chemical Education	N	1
	Evaluation and Program Planning	N	1
	The Law Teacher	N	1
	Ps: Political Science and Politics	N	1
	Journal of Teaching in Travel and Tourism	N	1
TOTAL ARTICLES IN NON-SPATIAL DISCIPLINES			**15**
EDUCATION IN GENERAL	Teaching in Higher Education	N	1
	Educational Research	N	1
TOTAL ARTICLES IN EDUCATION RESEARCH			2
TOTAL ARTICLES OVERALL			**48**

In terms of the journal discipline, geography journals dominated the publications (62% of all articles reviewed). The *Journal of Geography in Higher Education* specifically published 42% of all the articles reviewed (Table 1). Only 17 articles were focused on a discipline(s) other than geography, such as sociology (6), information technology (2), and biology (2). The majority of the journals publishing fieldtrip research are specialized on education and teaching in science disciplines (45 articles) or higher education more generally (2 articles). This might explain why most of the articles reviewed were concerned about fieldtrips for discipline specific teaching and learning (44 articles).

Most of the articles focused on fieldtrips in geography education (26 articles) followed by other spatial disciplines including: earth sciences (4), environmental sciences (4), planning (3), and geology (1). All of the articles from the geography discipline specified traditional or/and external expectancies, such as institutional, as an issue for fieldtrips in geography education. This compares to just over half of all the articles in non-spatial disciplines (or non discipline-specific articles) specifying external expectancies and fieldtrip significance for undergraduate curricula in social science, teaching and research, law, biology, chemistry, politics and travel and tourism.

Fuller et al. (2000) focused on the learning concerns of adding a pre-fieldtrip component for geography students to practice fieldwork skills before the beginning of their degree. Harland et al. (2006) focused on the value of fieldtrips in education from the perspective of teachers/lecturers from geography and other disciplines. Other less common educational concerns of all disciplines included: evaluating the types of assessment employed in fieldtrips, such as reflective diaries and multimedia assessments (5 articles). Only one article evaluated goals and objectives from multiple disciplines to understand how fieldtrip education is considered by course curriculum more generally in science (Gore and Nelson, 1984). Most articles also considered social and cultural concerns from both positive and negative perspectives (27 articles). However, only articles in the geography discipline focused on the negative concerns of fieldtrips in education, such as the exclusionary spaces for less able students (Hall et al., 2004) and group-work (Haigh and Gold, 1993). No articles focused primarily on practitioner/professional concerns of fieldtrips in education. There were however a number of articles concerned with connection with practice in other discipline topics, including chemistry, planning and law. For example, one article focused on chemistry education and the use of fieldtrips to improve real world applications in chemistry related industry (Forest and Rayne, 2009). Another considered how cultural and cross-cultural concerns such as the value of visiting international locations can improve future urban planners' understanding of cities and cultures (Yigitcanlar, 2011).

Methods Used in Fieldtrip Research

By a large majority, articles used qualitative data (31 articles)[4] or a mix of qualitative and quantitative data (12 articles) (Table 2). A variety of social science methods were used across all articles with the most popular being case studies (36 articles) to investigate the specific learning skills of fieldtrips. A number of articles also focused on statistical scale or mixed methods to analyse assessment material e.g. Likert-scale (Boyle et al., 2007) and textual discourse (Hall et al., 2004). Data included a mixture from both student cohorts and teaching staff reflections (20 articles). No information came from practitioners or the professional sectors. The remainder of articles (12 articles) considered the skills of fieldtrips in more general terms or global terms.

All articles noted positive benefits of fieldtrips to learning outcomes. For example, researchers from a variety of disciplines including political science, geography and urban planning discussed the positive contribution of place to improve student learning efficiency and outcomes (e.g. Box-Steffensmeier et al. 2000; Fuller et al., 2000; Yigitcanlar 2011; Fuller 2012; Yigitcanlar, 2013; Fuller and France, 2015) or specific skills by changing the nature of assessment or fieldtrip activities (e.g. Coe and Smyth, 2010; Mavroudi and Jöns, 2011).

[4] This includes two papers which had no primary and only scholarly literature data.

Table 2 Research Design and Methods

Research Design and Methods			Number of Articles
Data Type	Qualitative		31
	Mixed (Qualitative and Quantitative)		12
	Secondary (Literature Review)		5
Research Design	Case Study		36
	Other designs		12
Data Collection/ Analysis Methods	In case study research	Questionnaire	18
		Focus Groups	5
		Interviews	4
		Discourse Analysis	1
		Assessment material	6
		Curriculum Goals	1
		General overview	1
	In non-case study research	Interviews	2
		Survey and/or reflections	4
		Focus Group	1
		Review/Literature	4
		Assessment material	1

Fieldtrip Design and Characteristics

All articles noted the characteristics of fieldtrips studied including: the type of fieldtrips (real or virtual), student characteristics and trip location specifics. Most of the trips were to real places (41) with a small minority of virtual trips (7) (Table 3). Where virtual landscapes were employed, they were commonly used to work with real fieldtrips and assist the real experience (5 articles). A number of articles explored virtual fieldtrips as a stage prior to the real fieldtrip to improve preparation for the real fieldtrip (Warburton and Higgit, 1997; Cotton 2009).

Fieldtrip(s) in tertiary education were overwhelmingly organised by the teaching staff (97%). However, Skop (2009) noted the benefits of co-organising a fieldtrip with students, such as the sharing of knowledge and skills. Most of the case studies involved fieldtrips for first and second year undergraduates (21 articles). Nine articles reported on fieldtrips for third year students with only three articles focusing on fieldtrips for students in year four or beyond. Many of the fieldtrips studied included smaller cohorts, with 28 articles focusing on a cohort size below 50 students. Only a few articles focused on larger cohort sizes and this research was mainly demonstrating the potential of fieldtrip education for large cohort size learning (Boyle et al., 2007; Buckley et al., 2004; Leydon and Turner, 2013).

Most fieldtrips were connected to a science-based module or course (34 articles). A few articles (4) focused on field-courses, which require usually a significant amount of time in the field, such as a nine-week, 14,500 mile expeditionary fieldtrip (Elkins and Elkins, 2006). Including a real fieldtrip is still considered more beneficial than having a replacement (Spicer and Stratford, 2001). However, Proctor (2012) found similar pros and cons between real and virtual fieldtrips. Scott et al. (2006) suggest that fieldwork, although beneficial for understanding and contextualizing geography and environmental education, needs to be better integrated into teaching methods for it to be central to discipline teaching. Overall, 50% of the articles included more than one fieldtrip and in terms of duration, fieldtrips over 5 days long were the most popular (20 articles).

In the fieldtrip research literature study of international fieldtrips were popular. The fieldtrips examined were to a variety of locations but mainly to non-English speaking countries including: Cuba, China, Spain, Russia, Germany, Mexico, Greece, Kenya and Portugal. South Africa and the USA were

the English speaking locations for international fieldtrips. Rydant et al. (2010) discussed two international fieldtrips conducted jointly by a UK institution and a USA institution to mix student cohorts and work on team projects. Weeden et al. (2011) examined a cruise fieldtrip, which travelled to various different international locations. There was also some research on fieldtrips at either the local (16%) or regional (intra-state) scale (18%), and virtual fieldtrips (10%).

Table 3 Overview of Fieldtrip Case Study Characteristics (Total number of articles reviewed: 48)

Fieldtrip Characteristics		Number of Articles
Fieldtrip Type	Real	41
	Virtual	7
Geographical Breadth	Local	8
	Regional/State	7
	International	17
	Virtual Scale	7
	Multiple discussed and/or not specified	11
Fieldtrip Destination	Natural	11
	Urban (e.g. township, city, residential)	14
	Professional/Industry	2
	Multiple and mixed locations	6
	Digital/Virtual	6
	University Campus Based	2
Number of fieldtrips considered	Single Fieldtrip	18
	Multiple Fieldtrips	19
	Generally discussed/not specified	11
Fieldtrip Duration	1 day	4
	2-5 days	8
	5+ days	20
	Fieldtrips with various durations	5
	Not specified	11
Pre-fieldtrip activities	e.g. Briefing, workshops, lectures	22
Post-fieldtrip activities	e.g. Assessment, feedback session	27
Student Year Level	First	10
	Second	11
	Third	9
	Fourth	3
Student Numbers	0-50	28
	51-100	5
	100+	3

Skills Development in Fieldtrips

The reviewed literature has identified a diversity of skills developed through fieldtrip teaching, including: experiential, cognitive, affective, critical, cross-cultural and social skills (37 articles). Other key considerations of the reviewed literature were the teaching benefits for enabling skill development (30 articles).

The teaching or pedagogical benefits of fieldtrips are reported to arise from: assessment (12 articles), the use of virtual and technology in fieldtrip design (8), a framework for skill development (9) and

knowledge brokerage (13). For the purposes of this paper, pedagogical benefits can be defined as the underpinning methods of fieldtrips that enable student skills development.

Table 4 Fieldtrip benefits

Benefits of Fieldtrips		Number of Articles
Enabling skills through teaching	General	30
	Assessment	12
	Virtual learning and IT	8
	Skill framing	9
	Knowledge brokerage	13
Enhancing Skills through learning	General	37
	Experiential and Cognitive	27
	Affective and Critical	14
	Technical and applied	22
	Social	22
	Cultural	5
	Environmental	2
Institutional	General	18
	Governance	11
	Performance	11
	Cost effectiveness	1

This literature review suggests that fieldtrips improve various skills that enable learning including experiential and cognitive, affective and critical, technical and applied (practical), social, cultural, and environmental (Table 4). Boyle et al. (2007) consider *cognitive learning skills* as those that comprise the handling of information, problem solving and the development of meaning. Cognitive, in the example of fieldtrip teaching, is closely related to *experiential learning*, which is broadly understood when the learner is directly in touch with the realities being studied. *Affective learning* involves processes that are linked to values, beliefs, meanings and feelings. Or, more simply, 'those that influence learning perception and the preferred approach to learn' (Boyle et al., 2007, 301). Golubchikov (2007) considers *critical learning* activities as those that treat '…knowledge not as an object of consumption but rather as a matter of transformation by both teachers and students in a dialogue with the broader notions of justice, values, ethics and power' (2015, 143). *Active, practical and technical skills* are usually those techniques or knowledge specific to the discipline of the fieldtrip examined in the article. Other learning benefits, such as social, cultural and professional skills were also noted.

The institutional benefits gained from fieldtrip learning and performance was considered by a large number of articles (18 articles) including benefits that led to effective improvements in the governance of the institution, or outcomes of institutional performance. This can, for example, relate to the institutions' performance as international fieldtrips build reputation and advertisement to increase and improve student recruitment. Mavroudi and Jöns (2011) reported the benefit of cost effectiveness through the utilization of underused equipment.

DISCUSSION

The purpose of this systematic review is to illustrate what we know about fieldtrips as a teaching and learning pedagogy. The approach maps out where and why fieldtrips are considered in tertiary education, what skills they offer and how this might benefit student employability.

Pedagogical methods for skill development

Fieldtrip assessments in three broad categories were cited by 12 articles as an underlying teaching benefit. The first assessment benefit is the use of digital or technological tools, resulting in increased engagement in a variety of mediums. Çalişkan (2011), for example, argue that the use of virtual fieldtrips can enhance the student experience and can provide for more meaningful and deeper student-centred learning. Warburton and Higgit (1997) suggest that increased student engagement can be improved by using a combination of information technology and real fieldtrips. They also argue that preparation for fieldtrips using technology can provide a useful departmental and student resource for future learning and reference, even whilst on the fieldtrip itself.

The second most common assessment benefit of fieldtrips was the use of interactive or active assessments to improve higher order thinking or 'deep' learning, rather than only superficial or descriptive assessment. Mossa (1995) argued that the use of participatory field guides as an assessment tool was able to provide critical learning skills through the introduction of peer review and feedback. Sidaway (2002) found similar results when examining the use of photography on geography fieldwork. The authors argued that the use of active and interactive assessment with the fieldtrip was a benefit for more efficient and higher order student learning.

The last benefit of fieldtrip assessment was the skills development that fieldwork can provide to students, particularly in international locations (Rydant et al., 2010). As Rydant et al. (2010) point out fieldwork has an evaluative benefit that can be used to improve fieldtrips in course curricula due to the skills that fieldwork assessment can provide.

Fieldtrips as a tool to aid the skill development of students was identified in nine of the articles in the reviewed literature. Rydant et al. (2010, 221) suggest that 'there is merit in faculty viewing their field teaching within the framework of the whole subject curriculum such that field courses and sites are viewed as much for their contribution to the overall skill set as their support for the classroom topic'.

Various authors found the ability to value students' place knowledge to be a key benefit of fieldtrips (Moussa, 1995; Mathews et al., 2012). Lessening the barriers between students and teachers was also identified as a key aid for knowledge brokerage (9 articles). On the other hand, in a Moscow fieldtrip, Golubchikov (2015, 149) found that the teacher's position as a gatekeeper is increased in cross-cultural overseas trips, when students have language and cultural barriers to understanding, highlighting the risk of the authority of the teacher 'damaging the very idea of critical pedagogy'.

Types of learning to develop skills

Cognitive and experiential learning as a benefit of fieldtrips were identified by 27 articles. In some cases, student learning was much more efficient and effective when fieldwork was implemented in geography discipline learning (Dummer et al., 2008; Fuller et al., 2000; Demirkaya and Atayeter, 2011). Cotton (2009) found that a quicker transfer of knowledge was enabled when students were well-prepared and had a sound background of knowledge regarding the place that they were visiting. She argued that this also reduced the 'novelty' of space, which is something that can affect student experiential learning and efficiency when in new and unfamiliar places. In most articles, cognitive and experiential learning were better enabled when fieldtrips and fieldwork were well-organised and efficient, allowing for understanding and meaning to be constructed. For example, Elkins and Elkins (2006) improved student learning efficiency by playing audio during travel time and found that students found this beneficial for understanding and learning about the places that they were visiting.

Affective learning or the employment of more critical learning approaches is another learning benefit of fieldtrips noted in 14 articles reviewed. Some specific benefits were the empowerment of learning for the student (Fuller and France, 2015) and self-reflection skills (Higgins et al., 2012). Technology and virtual fieldtrips can also invoke emotion and feelings which can help with abilities to cope and adapt to stress (Procter, 2012).

Cultural learning was cited as a learning skill gained through fieldtrips in 5 articles. In some cases, international cultural experiences were considered crucial for well-rounded discipline learning, particularly for disciplines that have international dimensions, such as planning (Yigitcanlar, 2011; 2013). Mavroudi and Jöns (2011) demonstrated that video documentary assessments in human geography field courses can develop respect for different cultures, ways of knowing and seeing.

Social skills were identified as a learning benefit of fieldtrips in 22 articles. The majority of these articles cited fieldtrips as a way to improve the development of personal and social skills, specifically leadership and confidence (Mossa 1995; Boyle et al. 2007; Yigitcanlar 2013), work (9 articles) and informal interactions (13 articles). Fuller and France (2015), for example, found that informal interactions between peers were most pronounced when group work assessment was employed, resulting in the development of social skills and active learning during the course of fieldwork. Other articles such as Boyle et al. (2007) similarly found that affective learning through fieldwork has an enormous effect on student social learning and development.

Only two articles identified environmental learning skills of fieldtrips as a benefit. A respect for the environment was increased when fieldtrips were used to engage students across multiple campuses or across an 'unfamiliar' multi-campus teaching environment (Gill et al., 2012). Bukley et al. (2004) found that by integrating a fieldtrip component to their Environmental Geography module, students were able to better acknowledge the environmental impact of their actions. Significantly, this fieldtrip component was also campus-based and students were able to apply this to a familiar and commonly visited place.

Applied and technical knowledge was another benefit of fieldtrip learning identified by 22 articles. Fieldtrips can improve technical and analytical skills such as data collection (Gill et al., 2012), critical writing skills (Buckley et al., 2004) and practising with digital tools and techniques (Mavroudi and Jöns, 2011). Some studies discussed the benefits of outdoor learning, particularly those places, which are particularly important for physical geography fieldwork (Fuller, 2012).

Not all of the fieldtrip benefits claimed were demonstrated. For example, fieldtrip activities to improve application of theory were frequently mentioned in the literature but were only demonstrated in a few articles (Yigitcanlar 2013; Wheeden et al., 2011; Forest and Rayne, 2009). Forest and Rayne (2009) demonstrated how four half-day fieldtrips to various industries practicing chemistry, such as wineries, can be used as an alternative to a 3-hour laboratory session. This article also illustrated how the chemical processes of these industries can be integrated with chemistry statistical equations as an example of integration with curriculum theory. Social benefits, such as confidence building, networking and building relationships was another commonly discussed and demonstrated benefit across articles. Knowledge sharing and interacting with other groups such as teachers and community members were also commonly demonstrated benefits.

Institutional benefits

Institutional benefits of fieldtrips in tertiary education were discussed in disciplines that are more related to real life issues and research (McGuinness and Simm, 2005; Golubchikov, 2015; Gill et al., 2012; Fuller et al., 2000, 2006). Smith (2010) found that fieldtrips can help to unify concepts in the undergraduate science curriculum through the general application of practical skills. Fieldtrips bring the applied and the practical skills that universities and institutions are requiring for employable students (Medzini et al., 2015; Mossa, 1995; Çalişkan, 2011).

The benefits of fieldtrips for institutions identified in the articles reviewed varied. For example, a multi-campus fieldtrip was a benefit that opened the doors for regional campus learning and co-ordination between similar courses at different campuses (Gill et al., 2012). A number of articles specified engagement with industry as a benefit of fieldtrip learning. For example Weeden et al. (2011) focused on a fieldtrip that took place on a cruise ship for a tourism related study module. Connections with the cruise ship industry were highlighted as a major benefit for future employment prospects for future

graduates. International fieldtrips for planning courses were also specified as an important industry engagement benefit for students (Yigitcanlar, 2011).

Perhaps one of the biggest institutional benefits of fieldtrips mentioned by the articles reviewed was performance based, particularly around graduate success and outcomes (Yigitcanlar, 2011; Smith 2010; Scott et al., 2006; Moussa 1995; Fuller et al., 2006; Dalton 2001; Boyle et al., 2007). Dalton (2001) focused on the importance of pre-tertiary education fieldtrip skills to enhance and improve student success at university.

In summary, almost all articles (34) presented positive outcomes from the fieldtrips. Articles that reported both positive and negative outcomes were classified as mixed outcome (16 articles, e.g. Hall et al., 2006). Only two articles discussed mainly negative issues of fieldtrips in education (Hall et al., 2004; Haigh and Gold, 1993).

CONCLUSION

Fieldtrips are clearly a key component of undergraduate teaching to enhance learning outcomes. However, despite the long history of fieldtrips being an integral part of discipline teaching, the benefits of fieldtrip teaching are still unclear. Hence, fieldtrips may not be being utilised to their full potential for skills development and learning outcomes. This paper reviewed 48 different studies on fieldtrip teaching to improve learning outcomes from a range of disciplines. What is evident from this review is that the ability of fieldtrips to improve student learning is due to a number of benefits that arise from a complex set of teaching and learning approaches and institutional opportunities.

While the specific reasons for individual learning success are diverse, there are a number of key trends. First, there are ongoing affective benefits of fieldtrip activities to continue to enhance social and cognitive skills, with consideration of the associated benefit to student social and personal development. Second, most disciplines, even those not spatially oriented, benefit from including fieldtrips in their curricula. Third, meeting performance outcomes and ways of demonstrating student learning improvement has been evident in the fieldtrip literature. Together these points demonstrate that there are benefits of fieldtrips for learning performance in all disciplines and that experience of fieldtrips offer a way to deeper and affective learning skills.

Despite the demonstrated benefits there are significant challenges to integrating fieldtrip teaching in curricula and as a result the number of courses including fieldtrips, particularly in geography and spatial disciplines, are decreasing (Hope, 2009) or facing reduced funding, typically because of institutional or environmental limitations (Scott et al, 2006). This issue is especially pronounced in the UK institutions, where the majority of the reviewed fieldtrip literature originates from. With rising institutional and departmental resistance, fieldtrips have been fighting for their valid place in tertiary learning.

Fieldtrips research claims many employability skills are gained from this mode of teaching and argues for more or better use of them though most times these claims are not quantitatively evidenced. The literature identifies experiential, cognitive affective, critical, cross-cultural and social skills gained through field trips. This list of skills overlaps with soft employability skills as well as PIA's key competency requirements enforcing the utility of fieldtrips to deliver desired outcomes and supporting the view that in spite of organizational, budgetary, and procedural pressures educational institutions should seek to maintain fieldtrips in their curricula. Gathering evidence through research to demonstrate the benefits and designing the trips as well as assessment to maximize the skills gained are important points to consider in the future.

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