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Learning from Tasmania

Guest Editors

Joseph Crawford
William Baker
Mitch Parsell

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Preface to *Learning from Tasmania*

Jürgen Rudolph[A]

[A] *Head of Research & Senior Lecturer, Kaplan Higher Education, Singapore; Editor-in-chief, Journal of Applied Learning & Teaching*

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I am absolutely delighted to write a brief preface to celebrate the occasion of a new special issue, entitled *Learning from Tasmania*. This is JALT's second special issue (and seventh issue in total). This special issue has its origins in last November's vibrant *Teaching Matters* conference at the University of Tasmania that I was honoured to attend. Our journal's co-operation with guest-editors Joey Crawford, Bill Baker and Mitch Parsell is an example of global networking and co-operation amongst like-minded educationists. It is in this context that we are pleased to have witnessed more than 100 contributions from around 140 contributors from 19 countries in the first two years of the journal.

To me, there are three angles why this is an important and indeed special issue of JALT. From a personal perspective, JALT's and my own connections with Tasmania are manifold. A few years ago, my dear old friend Ooi Can-Seng was appointed Professor in Cultural and Heritage Tourism at the University of Tasmania. This was a welcome excuse for my first visit to Tasmania, and my family enjoyed his unrivalled hospitality in late 2018. A tangible result of that visit was an excellent contribution on the Children's University to a previous issue of JALT (Shelley et al., 2019). We were also fortunate to interview John Biggs (of constructive alignment and SOLO taxonomy fame), yet another Tasmanian (Biggs et al., 2019). In May 2019, I met Bill Baker from the University of Tasmania at the EDU2019 conference in Athens, organised by our friends from the Communication Institute of Greece. Somehow, these publications and encounters put the journal on the mental map of the organisers of *Teaching Matters*. In the meantime, Joey Crawford and Kerryn Butler-Henderson (both from University of Tasmania) have collaborated with me and others on what was perhaps the first peer-reviewed article on Covid-19 and higher education (Crawford et al., 2020). Moreover, we are honoured to have four Editorial Board members from UTAS.

There is also a historical perspective to why I perceive this special issue as important. Tasmania has a cruel colonial history, especially in the early decades of the 19th century, characterised by penal colonies and the genocide of Aboriginal ethnic groups. It is also geographically peripheral. Today, Tasmania is a place of breath-taking natural beauty. UTAS, in particular, is a renowned public research and sandstone university, ranked in the top 10 of Australia's research universities and in the top two per cent of universities worldwide. The tides have turned, and it is now indeed time to learn from Tasmania.

Finally, the most important reason to read this special issue is of course its excellent 14 articles. The contents are expertly described in the guest editors' thoughtful Introduction, "Learning from Tasmania: Designing a distinctive student learning experience". I invite you to discover the contributions from a wide variety of academic disciplines within the three themes identified by the guest editors – learning design, digital learning, and student experience – and to learn from Tasmania.

Profuse thanks are due to the guest editors, whose consummate professionalism made them an absolute pleasure to work with, as well as to the hard-working peer reviewers. It is hoped that the Tasmanian connection of the Journal of Applied Learning & Teaching will lead to future collaborations and such international co-creations will continue to improve our understanding of how learning and teaching in higher education can be further improved.

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Learning from Tasmania: Designing a distinctive student learning experience

Joseph Crawford[A]

William Baker[B]

Mitch Parsell[C]

A Lecturer, Learning and Teaching, Academic Division, University of Tasmania, Australia

B Senior Lecturer, Faculty of Education, University of Tasmania, Australia

C Academic Executive Director, University of Tasmania

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Introduction

lutruwita / Tasmania, an island in the south of Australia, offers one of two popular gateways to Antarctica. Aside from having some of the best beaches in the world, it is the home to one of a handful of the sandstone universities of Australia, University of Tasmania. For the past eighteen years, our colleagues have been collaborating on an annual Teaching Matters conference to share our learning and teaching practice, and collaboratively grow as educators of the next generation of leaders.

The 2019 annual conference was focused on unpacking the strategic vision of our University to build a sense of place and acknowledge our deep history on palawa land, lutruwita / Tasmania. Our University has focused on understanding what makes our learning, teaching, and research experience distinctive: what about our experience is unique and valued by fellow Tasmanians and those we welcome from across the globe. We are among more than two hundred of our colleagues presenting or attending presentations in November 2019. We focus in this Special Issue on three key themes emerging from the 2019 conference surrounding learning design, digital learning, and student experience.

There are numerous examples throughout this paper of unique offerings that both draw on, and inform, best practice learning and teaching in the higher education sector. We sought to present a combination of practical and applied papers for the implementation of emerging best practice, with research-driven and evidence-based papers that can inform practice. Each manuscript to get to publication in this Special Issue underwent a rigorous multiphase blind peer reviewing process. Authors below have passed an internal double-blinded abstract peer review, a conference presentation, and at least one additional international-pooled double-blind peer review in line with the Journal's practices prior to being accepted. We are excited to present this collection of expertise to provoke thought on how each university experience can be distinctive to their student and staff communities, beginning with how learning can be designed.

Designing our learning

The human ability to learn provides us adaptability across a vast array of environments (Ormrod, 2016). Clearly, we share the ability to learn with much, if not all, of the animal kingdom. But some human learning is very different: formal, structured, and explicitly designed for specific purposes. Indeed, it is our ability to intentionally design and deliberately seek out structured learning that allows us to shape the world unlike any other animal (Kolb, 2015). And as we shape the world — producing rapid changes to our technical, political, social, and physical environments — the importance of learning dramatically increases. For Kuhn (2016) this makes learning itself the most important twenty-first century skill. By extension, the ability to effectively design learning, together with the sharing of innovations in the design of curriculum and pedagogy, has dramatically increased in value in the contemporary university (cf. Parsell & Chinchen, 2019). Of course, this is not to deny the importance of learning to humans for an incredibly long period of time. In lutruwita / Tasmania, the traditional owners, the palawa people, have been living and learning for 40,000 years[1].

In the present volume, Prehn et al. (2020) report on work to include palawa perspectives and epistemes in the curricula through a virtual touring of Country with Indigenous Elders and knowledge holders. This approach is a response to two

[1] Philosophical examinations of the importance and purpose of education also have a relatively long history in both Eastern and Western thought. In the Eastern tradition, Confucius is often portrayed as a teacher centrally concerned with moral education and the reciprocal obligations between people with different roles in society (see Csikszentmihalyi, 2020). Similar themes are found early in the Western tradition. Plato's account of education in The Republic is concerned with ensuring that each class of citizen has the necessary knowledge, skills, and commitments to allow the preservation of the just society from generation to generation. Aristotle extended the role of education beyond a just society, to include human flourishing. He asks how to structure education so that people have what they need to successfully pursue the good life.

competing pressures: a move to online learning, and a desire to be place-based. The study includes content analysis of an Indigenous lifeworlds unit delivered between 2017-2019. In an evaluation of the unit, students rated what was the most helpful aspect of their unit. Virtual Tours on Country were rated as helpful by 90% of students. One student commented "'The virtual tours of Country were fantastic, both as a learning tool, and a means of connecting students to Elders and Indigenous culture and knowledge" (p. 15).

The theme of being place-based, or at least connected to the environment, can also be seen in Smith and Watson (2020). They provide a philosophical critique of the separation between humans and their environment. They see this separation as a biproduct of the neoliberal agenda. In response, they argue for a movement away from technology-based sciences, to enable students to authentically reconnect with nature in a manner that provokes and supports their imagination. McLeod et al. (2020) also pursue a broadly philosophical argument. Their focus is the deconstruction of Eurocentric educational practices. The paper takes the form of a collaborative reflection of six academics teaching healthcare. They articulate several principles for embedding the teaching of multiple perspectives into the curricula. The authors report strong student support for this approach that "celebrate[s] the complexity of individual uniqueness in ways that flatten everything down to the level of the individual" (p. 33).

The two remaining papers on the design of learning are more concrete and practical. Khan (2020) provides a thoughtful and engaging empirical examination of applying contemporary teaching practices to a traditional short course. The paper describes a pilot study with seafarer students who are provided authentic and self-directed learning experiences. Although practical, the paper does not ignore theoretical issues. Indeed, Khan (2020) uses an explicitly social constructivist lens to design learning that aims to provide future seafarers with a range of critical thinking skills. Nash et al. (2020) is an empirical study by a University of Tasmania Community of Practice. They examine the 360-degree Quality Pursuit approach to assurance of learning (360QP). The study describes five active learning workshops (n = 82 participants) across Australia. The outcome of the workshops is a clearly articulated professional development agenda, that sits alongside a series of inhibitors to the effective pursuit of quality.

Our digital futures

It is almost remarkable that in the lead up to 2020, we had little awareness of what was right around the corner, the design of learning papers above were conducted and largely drafted before COVID-19 with an expectation that life would continue as it had before. The papers that made their way into the theme on digital learning in higher education were based on a world almost foreign to our writers during the coronavirus pandemic. Institutions globally have turned to digital pedagogy as a potential solution to their self-isolating students, and disconnected cohorts and student communities. Across 20 countries, initial responses from the higher education sector were characterised from responding to legal minimums (e.g. physical distancing and capacity restrictions), delayed commencement, and full digital delivery (Crawford et al., 2020). The latter appears to be far more successful as a response, but it is perhaps to early to be definitive on that matter.

The past two decades of evidence has shown rapid innovation in learning and teaching to include eLearning and its counterparts, yet for many there is still strong resistance (Findlow, 2008; Schneckenberg, 2009). To create sustained instructional innovation, it requires a positive organisational culture that values and embeds technology (Zhu, 2015) and positive forms of leadership, such as authentic leadership (Elrehail et al., 2018). It also, and rightly so, requires a beginning with the pedagogy and an understanding of the design of learning before an assessment of the technological capabilities is conducted. It is our technology that enables our learning design.

We conceptualised the importance of the digital component of learning as an essential enabler of learning and learners. Technology has the capability to support our students' journey, and to enable a positive experience in a variety of digital, distance, off-campus, online, flipped, and blended delivery methods. A foundational piece in the context of quality learning online is the first paper in this section. Eager and colleagues (2020) present a preliminary model, the tri-layered student online experience framework, with three lenses to viewing the online learning environment at unit, module, and assessment levels. The exemplar discusses the opportunity to create a warm and welcoming environment for students as they enter and immerse themselves in their own learning journey. The ability to support a positive learning journey for students is a multifaceted challenge and often includes a focus on authentic and collaborative learning, seeking to understand student motivations, as well as their own resilience compared with learning support structures (Walker et al., 2016).

The implementation of the tri-layered framework has seen strong growth in student satisfaction of their learning experience in end-of-semester evaluations. Kemp (2020) also discusses with some depth the preference of a group of third year psychology students in face-to-face versus online classes. Kemp's data provided support that there was general equivalence of student investment and effort across both modalities, but learned better in the former. The opportunity for synchronous interaction with their teacher and peers was important, as well as time to critically think independently.

Douglas et al. (2020) highlight a specific asynchronous communication resource for times where student engagement in the synchronous setting is not possible or pedagogically suitable. Through an effective series of iterations of a guide to developing digital engagement through facilitated discussion boards, an initial guide to facilitation was developed (see Douglas et al., 2015). Collective reflection from the researchers of usage data across the globe is summarised and extended during the paper included in this special issue. The value in enabling students learn through asynchronous learning environments can be early interactions and remain connected to those

interactions throughout their learning journey (Hammond, 2005). Likewise, these can be balanced carefully with opportunities for synchronous interactions. Like in the case of Kemp's (2020) work, there is considerable value in assessing the cohort and identifying a balanced platform of synchronous and asynchronous communication methods for online and on-campus learners.

The final paper presents a forward-thinking exposé for a digital learning environment enabled by authentic teacher leadership (Butler-Henderson & Crawford, 2020). Evidence from positive organisational scholars is drawn upon to examine the pedagogical power relationships that exist in conventional and contemporary learning environments. Leadership in this context is seen as a way of characterising relationships of influence between teacher and student in higher education. The leadership behaviours of an individual teacher will have significant influences on those around them, and this relationship is unpacked in the context of digital empowerment and fluency. That is, how can we develop our staff capability to support student access and skills in their digital learning environments? A question that is worth pondering on as we progress to the next section of this Special Issue on supporting a positive student experience.

Our student experience

Students and their wellbeing are at the forefront of a distinctive vision for Tasmanian education. The papers under the theme of student experience in higher education explore enablers of positive student experience, such as belonging, wellbeing, and engagement, from Associate Degrees to Doctoral studies across a range of disciplines.

Employability of doctoral program graduates in an increasingly competitive job market is more and more important, particularly considering COVID-19. Through employing a PRISMA approach, Young et al. (2020) conducted a systematic review of 20 articles in the area of doctoral employability. They present their findings with reference to the needs and expectations of all stakeholders, presenting three high-level concepts: policy and economics, the student experience, and expectations of the student (Young et al., 2020). The authors propose a novel approach, aligning the expectations and needs of programs, candidates, and industry, with practically improving doctoral programs and associate student experiences, focussing on "innovative solutions that address the general themes of preparedness and the industry-academic gap" (Young et al., 2020, p. 97). This approach posits the mapping of a broad stakeholder network that could "facilitate a clearer understanding of the true needs of flourishing for candidates during their experience, while meeting institutional requirements and future industry needs" (Young et al., 2020, p. 104). The ability to understand competing demands (e.g. Kinash et al., 2016) that effect the student experience is essential in enabling a response to creating an experience students love.

At the opposite end of the Academy, Knox et al. (2020) seek to better understand student experience in an Australian Associate Degree program through the relationships between the students' authentic leadership, wellbeing, belonging, and engagement. The authors used quantitative methods to explore changes in these relationships. Their results indicated that while students' self-reported authentic leadership scores were associated with gains in their psychological wellbeing, classroom belongingness and engagement, their informal influence was a more powerful positive factor. The authors suggest that "developing authentic leadership behaviours in students will have a positive effect on their sense of wellbeing, belonging, and engagement", hence improving their experience (p. 115). In an environment that is rapidly evolving, understanding how students can feel a sense of belonging to their campus is critical.

Contributing to scholarship in the critical space around student evaluation, Bartkowiak-Théron et al. (2020) challenge current approaches to practice in student feedback, arguing that student feedback practices "can become vibrant ways to embed students within curriculum improvement, unlocking new perspectives for teacher development as well as learning experience" (Bartkowiak-Théron et al., 2020, p. 119). They present the findings of a survey of teachers in a Police Studies program about their perceptions of the impact of an innovative approach to collecting and utilising student feedback. This approach to student feedback no longer used anonymous, quantitative evaluation tools; rather, they employed regular, identifiable, qualitative surveys thus making transparent what was previously opaque and providing more timely and relevant opportunities to improve curriculum and practice.

The impact of academic professional learning on student experience was explored in two of the articles in this theme: Canty et al. (2020) and Bridgman et al. (2020), perhaps reflecting the increasingly collaborative nature of contemporary research, both papers in this theme were completed by multidisciplinary teams. Furthering our understandings of issues informing student retention Canty et al. (2020) explore the professional learning of teaching staff through a Community of Practice. Student retention is a key strategic issue for many Australian universities as they seek to accommodate increasingly diverse and complex student populations. Canty et al. (2020) describe how members of a Community of Practice (CoP) focused on issues of student attrition in online courses have learned from one another, sharing ideas and approaches that has now begun "to inform change at the institution level" (p. 141). Through a series of cases the authors describe a CoP approach that identified four key challenges to student retention in online degree programs: "i) the importance of knowing your students, ii) the difficulty in getting reliable data, iii) the need for 'belonging' for online students and early, meaningful engagement, and iv) student access to 'known' academics" (Canty et al., 2020, p. 140).

Bridgman et al. (2020) also explore the impact of professional learning on student experience, investigating the role of an interprofessional learning (IPL) workshop, focused on "developing work-ready health graduates, and enhancing outcomes for people living with persistent pain" (p. 129). Pre-post surveys showed increased student confidence and self-efficacy, and these were reflected in qualitative

outcomes which "were mapped onto Adult Learning and Social Identity theory" (Bridgman et al., 2020, p. 129). The result was a conceptual framework informed by both theories. The authors' conceptual framework included three elements: workshop design, proposed student learning mechanisms, and learning outcomes.

Concluding remarks

We have enjoyed the opportunity to curate these manuscripts and watch their evolution from abstract in mid-2019 to final publication a year later. We thank the peer reviewers who gave up their time and expertise to promote the quality of these works, alongside those authors who did not make it to final publication, and those who supported conference presentation in November 2019. We hope your scholarly interest is peaked and that this curation will serve as a useful reference to your own practice.

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Virtual tours of Country: creating and embedding resource-appropriate Aboriginal pedagogy at Australian universities

Jacob Prehn[A] A *Lecturer, School of Social Sciences, University of Tasmania, Australia*

Huw Peacock[B] B *Digital Media Engagement Officer, Office of the Pro-Vice Chancellor of Aboriginal Leadership, University of Tasmania, Australia*

Michael Andre Guerzoni[C] C *Researcher, Aboriginal Leadership department, University of Tasmania, Australia*

Maggie Walter[D] D *Distinguished Professor of Sociology; Pro Vice-Chancellor-Aboriginal Research and Leadership, University of Tasmania, Australia*

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Abstract

At present, Western universities are undergoing structural and institutional change in response to the growing demands to provide additional on-line course and degree options, improve the recruitment, retention and support of Indigenous students, and undergo Indigenisation (of governance, the offered curricula, its faculty and campuses). In Australia, there have been increasing efforts to Indigenise curricula within law, humanities and the social sciences; prompting the formulation and execution of innovative pedagogical practices and online content. Efforts to harmonise these two emerging educational "frontiers" have been tried, one innovative measure trialled is the concept of virtual touring of Country alongside Indigenous Elders and knowledge holders, bringing together Indigenous epistemes and place-based learning. In analysing student unit evaluations, results indicate that students found the virtual tours of Country to be the most effective and meaningful aspect of the unit overall. We argue this demonstrates that what we call "digital place-based learning" is a useful method to engage undergraduate students in Indigenous epistemologies and ontologies, whilst offering a unique experience across three regions.

Introduction

It has been well-documented that Indigenous culture, history and knowledge have not been acknowledged, taught or prioritised within universities across the Western world. Rather than being preserved, cultivated and valued as a "gift" (see Kuokkanen, 2011), Indigenous knowledge has been belittled, dishonoured and dismissed as primitive, irrelevant and insignificant (Bodkin-Andrews & Carlson, 2016; Mihesuah & Wilson, 2004; Walter, 2014). At best, Indigenous ontologies and epistemes have been seen as something to learn about rather than from, included as periphery issues but not as integral components of the discipline (Hart et al., 2012). This absence of the Indigenous voice and perspective has not only been detrimental to Indigenous students on campus, but more broadly complicit in the neglect to challenge and correct racist perceptions and practices of our university-trained citizens, and curb the flow-on of these repugnant beliefs and behaviours into our society (Bodkin-Andrews & Carlson, 2016; Bierman & Townsend-Cross, 2008). The de-valuing of Indigenous culture, knowledge and people is known to carry-over into the conduct of personnel within the criminal justice system (Blagg, 2016), healthcare system (Dudgeon, Wright, Paradies, Garvey, & Walker, 2014) and, perhaps most importantly for cultural change, the education system (Behrendt et al., 2012).

Over the 21st century, there has been a collective effort and agreement across the Western world to rectify the inequalities of, and discriminatory practices against, Indigenous people within the university sector (Mihesuah & Wilson, 2004; Rigney, 2017; Riley et al., 2013). This movement, spurred by the advocacy of Indigenous persons across the preceding century, includes making available scholarships and bursaries, course pathways for disadvantaged or under-performing students, mentoring, employment (during and post studies), the provision of Indigenous-specific services and infrastructure, and most recently, the Indigenisation of the curricula. Changes to curricula are important for the reform of the educational (and more broadly, the cultural) landscape for Indigenous people, particularly in respect to shifting the habitus of non-Indigenous Australians (Bourdieu, 2013). The inclusion of Indigenous content across degree structures, or the creation of stand-alone Indigenous units within these degrees, have commenced across various Australian universities with favourable results reported (Gerard et al., 2018; Meyers, 2008; Nursey-Bray, 2019; Rigney, 2017). The success of such initiatives prompts consideration of how further content integration or specific course creation can be undertaken, as well as additional examination of initiatives which dare to utilise innovative means in their delivery; such as via online media (Nelson & Parchoma, 2018).

This paper examines what we argue is an innovative initiative from the University of Tasmania to harmonise the need to Indigenise the curricula and re-present Indigenous knowledge and an experience of Country through an online course equipped with high-definition lecture recordings on Country. Drawing on 41 anonymous student evaluations given between the years 2017-2019, we find that students believed the high-definition interactions (through virtual tours on Country) in an online course format to be engaging, challenging and stimulators in student worldviews. From this we recommend how virtual tours on Country may form a resource-appropriate means of learning and teaching in a tertiary higher education setting and help to Indigenise the curricula. We acknowledge that this is not about financial efficiency. Rather, it is a resource-appropriate means, recognising that 1.5 million tertiary education students cannot be simultaneously out on Country for cultural and environmental reasons.

The Australian tertiary education context: Indigenisation and online course options

In 2018, there were nearly 1.56 million students enrolled across Australia's 39 public universities, with 69.3 percent comprising of domestic students and 30.7 percent international students (Department of Education, 2019). As of 2018, there were 19,981 Aboriginal or Torres Strait Islander student enrolments, 1.3 percent of domestic total enrolments (Department of Education, 2019). There remains inequality for Aboriginal and Torres Strait Islander people in student numbers and employment. Specifically for Indigenous students, the enrolment percentage of 1.3 percent in 2018 is well below population parity of 3.1 percent (Department of Education, 2019). Further, completion rates of Indigenous students trail those of non-Indigenous Bachelor Degree completion rates over a nine-year completion period were 47 percent for Indigenous and 74 percent for non-Indigenous (Universities Australia, 2019).

In response to the lowered levels of Aboriginal and Torres Strait Islander representation within the Australian university sector, Universities Australia developed the Indigenous Strategy 2017-2020 (hereinafter 'The Strategy', see Universities Australia, 2017). The Strategy incorporates some of the recommendations from earlier works such as the 2011 National Best Practice Framework for Indigenous Cultural Competency in Australian Universities (Universities Australia, 2011), and the 2012 Review of Higher Education Access and Outcomes for Aboriginal and Torres Strait Islander People (Behrendt et al., 2012). These documents obligate party universities' (Australia's public universities) commitment to initiatives to facilitate greater equity, equality and success for Indigenous students. One of the aims of the Strategy is to increase the engagement of non-Indigenous people with Aboriginal and Torres Strait Islander knowledge, culture and educational approaches through curricula and graduate attribute re-development; which is part of the process of what is called curricula Indigenisation.

The concept of curricula Indigenisation emerged in the early 2000s to describe the efforts to transform universities to be more inclusive of Indigenous needs (viz. cultural safety), knowledge (epistemologies, ontologies), students and scholars (Mihesuah & Wilson, 2004). As such, it incorporates a reorganisation of the existing paradigms and practices in the governance, administration, services (e.g. bursaries, support, campus resources) and pedagogies of universities to no longer be solely Western-focused and marginalising of Indigenous people and perspectives (Kuokkanen, 2007). In the context of curricula specifically, Indigenisation entails the alteration of course content to incorporate and

teach Indigenous perspectives and knowledge alongside Western disciplinary norms, as appropriate to the subject area (Castellano, 2014). For example, a property law unit would incorporate an examination of traditional Australian Indigenous laws and customs pertaining to land and boundaries alongside the common law understandings, or Indigenous understandings of family and kinship being taught within a sociology course on family and socialisation (Gerard et al., 2018; Meyers, 2008; Mooney et al., 2017).

Australian universities commenced the curricula Indigenisation processes over the early 2000s, with institutions such as the Queensland University of Technology (in 2001), University of South Australia (in 2004) and Macquarie University (in 2012) executing audits of course curricula and the inclusion of Indigenous content (Mooney et al., 2017; Nursey-Bray, 2019). The move to Indigenise in Australia has been advanced by educational reviews such as the Bradley et al. (2008) review and the Behrendt et al. (2012) review, with all universities having expressed a commitment to this process as per the Universities Australia Indigenous Strategy 2017-2020 (2017). Although at present there is no consensus as to how Indigenisation is to occur and to what extent, we have seen a number of scholars suggest that institutions create an introductory-level unit exploring Indigenous history (including colonisation) and culture to provide students with an insight into the Indigenous world and develop empathy with, and appreciation for, Indigenous people and cultures (Collins-Gearing & Smith, 2016; Lewis & Prunuske, 2017; Nursey-Bray, 2019). Importantly, curricula Indigenisation is not merely enacting a 'bolt on' of Indigenous content or ideas into a course, nor having an "Aboriginal do all the work", but rather, intentionally including content as an essential course component to enable students to learn from Indigenous epistemologies, ontologies and axiologies, and integrate them into their own habitus (Bourdieu, 2013; Hart et al., 2012; Mooney et al., 2017).

In terms of online education, in recent years there has been an intensification of the demand for, and provision of, online course options for universities worldwide (Stone, 2017). Over the last several decades the student attendance profile has shifted towards a greater growth in part-time loadings and online loadings; with external enrolments having grown by over 100 percent from 2008-2017, and multi model enrolments increasing by an estimated 140 percent within the same period (Universities Australia, 2019). A number of factors have been identified as contributing to this development, including technological advancements (from audio cassettes to online lectures), an increasing demand for greater access to educational options, efforts for departments to cut costs, and the pressures to compete with other universities offering online course options (Helmi, 2001; Lai et al., 2016; O'Shea et al., 2015). Indeed, some argue that online course provision is an essential requirement for universities consequent to globalisation; universities can no longer monopolise geographical regions alone (Michael, 2012).

To date, there has been various Indigenisation and cultural safety initiatives which utilise technological and on-line media for content delivery (MacIntyre, 2016; Nursey-Bray, 2019; Page et al., 2019; University of Sydney, 2019). Research has documented the efficacy of the use of video as evoking understanding and empathy within students, as well as to incite critical engagement (Gay, 2018; Grogan et al., 2019). Importantly for the purpose of Indigenisation, the more tangible and interactive nature of these more visual modes of education have been shown to be conducive to a challenging reconstruction of epistemological and ontological paradigms of students; one of the core goals of curricula Indigenisation (Acton et al., 2017; Jackson et al., 2013; Nash et al., 2006; Nursey-Bray, 2019).

Methodology

This project involved the use of content analysis to examine the data collected from the institutional student evaluation comments for the unit 'XBR113 - Indigenous Lifeworlds: Local to the Global' collected between the years 2017-2019. The unit explores the lives of three Indigenous groups: the palawa (Tasmania), Noongar (Western Australia) and Navajo (Northern Arizona) (University of Tasmania, 2019b). It is based upon the theoretical concept of 'Lifeworlds', which incorporates a focus upon a person's subjective construction of reality and the intersubjective relations with others which contribute to the formation of this worldview (Husserl, 1970; Walter & Suina, 2019). Within this course, students are required to reflect on their own "lifeworld", its construction, and how it differs to that of the Indigenous peoples explored. This learning and reflexive practice is prompted via the provision of digital or visual tours of the country of the three aforementioned Indigenous groups, integrating authentic Indigenous perspectives and epistemes within lectures from Indigenous knowledge holders. These lectures, recorded in 2016, are delivered in high-definition and accessed by students via the unit's online portal (University of Tasmania, 2019b).

Content analysis is utilised in this paper to examine student responses within the end of semester unit feedback survey known as 'eVALUate' between 2017-2019. A total of 41 responses are examined, all of which are anonymous and non-identifiable, and are used by staff to assess teaching and curricula effectiveness and areas requiring further development (University of Tasmania, 2019a). As such, the relevant ethics committee advised formal ethical clearance is not required (NHMRC, 2018).

Content analysis can be understood as the examination of texts (e.g. newspaper articles, organisational reports) for the purpose of identifying and explaining patterns within texts (i.e. recurring words, phrases or ideologies within a political speech), evaluating and categorising collections of texts (e.g. policy written in advancement of a particular agenda, organising these according to theme), and identifying and analysing connexions between texts and the broader socio-cultural, socio-historical, and/or socio-political context (Churchill, 2019). Content analysis can be utilised in both a quantitative and qualitative manner; simply put the former involves the noting of occurrences of texts (words, phrases, documents) whilst the latter is interested in understanding the meaning behind these patterns and their interconnexion with other texts, and the broader context within which it exists (Churchill, 2019).

In this paper we specifically draw on responses to the question of 'what are the most helpful components of the unit?'. Using this variable, we analysed the data within for the occurrence of features that the students found beneficial (e.g. lecture content), which then formed the basis of our typologies (see Figure 1). Some student responses included more than one praise for the unit, and thus were thematically coded into more than one theme, with some responses included in up to four typologies. There is an average of 2.8 content units per response. All themes were thereafter quantified, tallying which appeared most frequently amongst all student responses, and then converted to percentages. In identifying that 'virtual tours of country' was the highest-scoring typology, we then re-analysed the data to further examine what aspects of this digital component were most beneficial for students. This process incorporated thematic coding and analysis to identify themes within the data (Mason, 2011; Saldaña, 2015).

Results

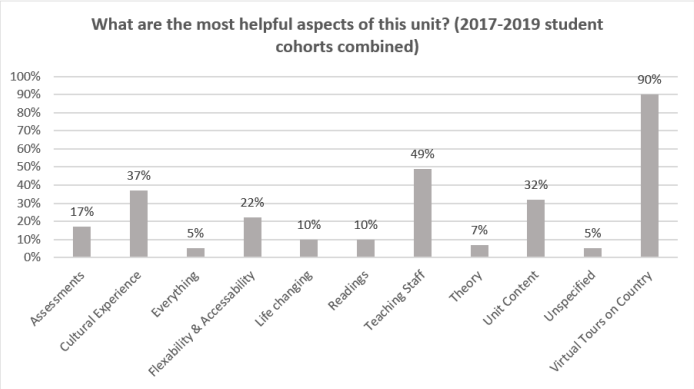

Figure 1: What are the most helpful aspect of this unit?

Thematic analysis produced nine unique themes: Assessments; Cultural Experience; Flexibility and Accessibility; Miscellaneous; Reading; Teaching Staff; Theory; Unit Content; and Virtual Tours of Country. Survey data found that the virtual tours of Country were identified by students as the most helpful aspect of the unit. Teaching staff, cultural experiences and unit content followed as recurring appreciated course components. Students also identified that assessments, course flexibility and accessibility (viz. online format), readings and theory were valuable components in the course.

Texts pertaining to virtual tours of country were then re-analysed and sorted according to three more specific sub-themes, as shown in Figure 2. We found that digital placed-based learning, that is the virtual tours of Country, was the most commonly provided positive feedback for the course (92% of students). This was followed by detailing the exploration of Indigenous perspectives and cultures by Indigenous knowledge holders (57% of students) and that the unit evoked a positive sentiment (22% of students).

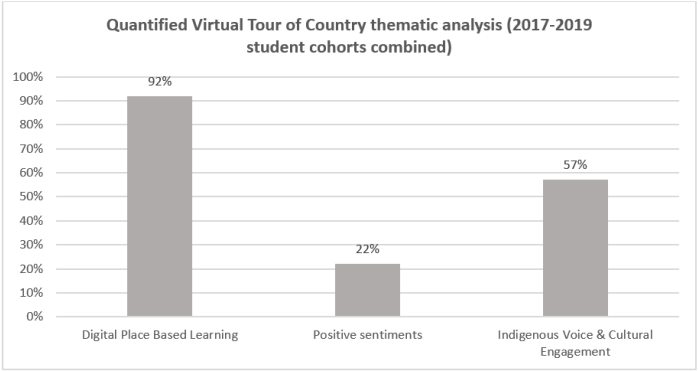

Figure 2: Quantified Virtual Tour of Country thematic analysis

Digital place-based learning

A total of 34 students (92%) expressed that digital place-based learning was an effective ('great') pedagogy through which they were able to readily engage ('useful learning platform'), and subsequently understand, Indigenous epistemes, ontologies and the sociological concept of Lifeworld. Students appreciated the overall construction of the unit, and found it conducive to their learning:

> *'The virtual tours were really interesting and a great way to learn'.*
> *'The virtual tours of Country were fantastic, both as a learning tool, and a means of connecting students to Elders and Indigenous culture and knowledge'.*

Students shared that the overall presentation of the unit content was thorough, and provided a unique departure from the traditional lecture format within the social sciences:

> *'The virtual tours around the three people groups was very well conducted, providing very deep and innovative learning experience'.*
> *'Learning platforms offered in a range of ways from lectures to online content to virtual tours' [sic].*

Most importantly, students appreciated the digital visits and presentations of country (three geographically unique locations in Tasmania, Western Australia and Northern Arizona), and the ability to acquire, notwithstanding remotely, a sense and feel for the land:

> *'I loved the structure of the lectures and online walking on country videos'.*
> *'The walking on country taped videos for each section were a highlight for me as they showed the land, environment and we heard from local Indigenous elders from each of the three Lifeworlds'.*

Indigenous perspectives and cultural engagement

The use of Indigenous perspectives was identified by students as central to virtual tours of Country becoming the most helpful aspects of the unit. Having Indigenous knowledge holders be the people to provide instruction in

Indigenous epistemes and perspectives, rather than non-Indigenous persons was well received as 'insightful':

> *'Lectures from Indigenous people'.*
> *'Having the country walk through. It was to get insight and learn from the elders of the communities'.*
> *'I enjoyed the virtual tours the most. [name] provide great insight, and learning about [location] was a first for me'.*
> *'The virtual tours on Country by Elders were instructive and gave insight into the course content'.*
> *'It opens up experiences that I would most probably never encounter'.*

Students found that they were able to partake in deep and meaningful cultural engagement, learning about Country (land/nature), cultural objects and tool and spirituality consequent to the virtual tour format and the instruction received:

> *'The virtual tours were great as they gave you a deeper understanding of the connections to land and the culture of Indigenous people'.*
> *'I really enjoyed this unit. It was a very unique learning experience to be able to hear the Elders of the various groups talk about their cultures and experiences. The content was sufficiently varied and interesting, and I loved the way the course combined so many different aspects, including history, spirituality/religion and social issues'.*

Positive sentiments

The virtual tours of Country were found to have evoked positive responses within students in their learning about Indigenous lifeworlds. Students reported experiencing a range of encouraging sentiments, from having 'loved' and 'really enjoyed' what was described as an 'excellent', 'informative' and 'very very moving' [sic] course. This range of favourable sentiments suggests an eagerness amongst students to engage with unit content, learn from Indigenous lifeworlds, and develop greater appreciation for learning about conceptually difficult topics such as epistemological and ontological differences:

> *'The virtual tours were very interesting. I enjoyed learning about the palawa Aboriginals. Would have like to hear more from Uncle [name] when he went to the Perth Hills to tell about Noongars. Loved the way MOOC was presented, very interesting and an excellent way to learn'.*
> *'I loved the structure of the lectures and online walking on country videos. This is my first sociology unit and I really enjoyed it'.*
> *'Firstly, definitely the experiences of the virtual On Country experiences with Indigenous Elders; they were informative and very, very moving'.*

Discussion: virtual tours of Country

The student evaluation qualitative survey data have shown that the virtual tours of Country in the unit XBR113: Indigenous Lifeworlds: Local to the Global provide an innovative and resources-sensitive means by which students may travel through (as it were) Indigenous country, epistemes, culture and perspectives, and experience cognitive and sentimental engagement. Figure 3 encapsulates the benefits or 'fruits' of the virtual tours of Country identified by the student evaluations, noting the relationship between the unit's structure, engagement and positive learning outcomes. Figure 4 adopts a more macro perspective of the course, identifying from the dataset the key influences from the course upon the lifeworlds of students as the product of cognitive and emotional engagement spurred by the presentation and structure of the unit and its content.

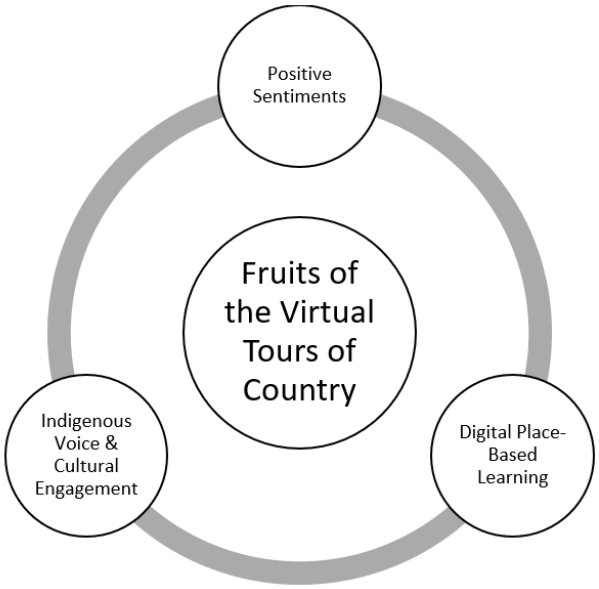

Figure 3: Key components of the virtual tours of Country

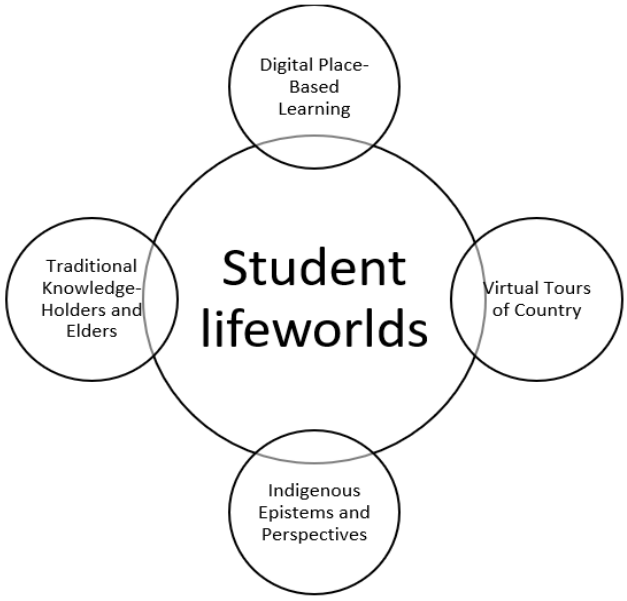

Figure 4: Key influencers of the unit shaping Student Lifeworlds

[1] Our attention here is primarily to Indigenous knowledge holders, Elders and community members, see below.

The data demonstrates that the incorporation of Country tours within an online delivery platform was well received. Students appreciated the ability to experience, albeit from a screen, tours of Country; enhanced by the high-definition quality of the video recordings. Similar to findings from Grogan et al. (2019), the invitation provided to students by Indigenous Elders and senior knowledge holders to virtually share their knowledges were welcomed as an engaging method of learning. This not only because of its visual appeal, but also insofar as knowledge was contextualised on and to country. This is vital given the importance of Country to Indigenous communities (Dudgeon, Wright, et al., 2014; Kingsley et al., 2013) and how it is interwoven with inherent cultural epistemes and knowledges.

This approach was shown to be fruitful in assisting in the cognitive and emotional engagement with Indigenous culture, perspectives and practices, with students expressing an appreciation of and for the Indigenous knowledge-holders and the information they shared in the digital lectures. This is a desired for result for the unit, that students would learn from the world's oldest living cultures (Dudgeon, Milroy, & Walker, 2014) and assist in developing greater cultural awareness and understanding, as well as greater degrees of reflexivity amongst students trained in Australian universities. More broadly, we observe indications of students holding their own lifeworld under the microscope, with some comparing their own epistemology, ontology and axiology to the Indigenous people groups within the unit (Husserl, 1970; Walter & Suina, 2019).

The sharing of history, contemporary stories, culture and knowledge by Indigenous Elders and senior people prompted favourable sentimental responses within students. Responses showed that being taught by these figures moved participants on an emotional and personal level, leading to admiration and empathy rather than the typical recoil and resistance seen within white fragility. 'White Fragility is a state in which even a minimum amount of racial stress becomes intolerable, triggering a range of defensive moves' (DiAngelo, 2011, p. 54). Rather than negative emotional reactions, disengaging behaviours and reactionary claims, students expressed appreciation for what was taught, a willingness to learn, and humility in reflexivity. We argue that such findings are encouraging in light of the troubling nature of race relations in Australia (Bodkin-Andrews & Carlson, 2016; Habibis et al., 2016).

Finally, we contend that given the student evaluations, the teaching methods of digital place-based learning provide an innovative model that ought to be considered by tertiary institutions in their curricula Indigenisation processes. Alongside the favourable responses detailed above, it should too be considered that the digital format assists Indigenous communities in easing the burden of what could be annual visits to country and/or requests to give lectures and workshops. In addition, the unit can be argued to serve as a time capsule in collating and preserving Indigenous knowledge, alongside filming of preserved country. With universities having committed to the Indigenisation process (Universities Australia, 2017, p. 14), the online option provides flexibility in its access and opportunities to be seconded and utilised in alternative forums (e.g. staff introduction days). The unit too demonstrates how other knowledge systems can be respectively prioritised (Connell, 2007) and how it can contribute towards the development of graduate cultural competency. Furthermore, it contributes to greater equity for Aboriginal and Torres Strait Islander people in areas such as health (Dudgeon, Milroy, et al., 2014) and education (Walter et al., 2017). Greater attention to these areas facilitates greater outcomes for Indigenous peoples, for example, in the training of physicians, course content on the interconnection between social disadvantage and health can assist doctors to better relate to, acquire rapport with, and thereby treat their Indigenous patients in rural and urban centres.

Limitations

While the unit is innovative and the testimonies given for it by students are favourable, we caution that this pedagogical model should be seen only as a concession to learning from Indigenous knowledge holders vis-à-vis and on Country in situ. Notwithstanding the aforementioned arguments for the unit, insofar as the assistance it provides to Indigenous communities (in terms of resources) and the preservation of land, we recognise the online format poses several risks including: isolation (students never meeting and talking with an Indigenous person); becoming a tick-a-box exercise ('I've speed-watched through the videos rather than interacting with the videos'), limited engagement (minimal participation on online discussion forums), and; selectivity as to course content (only completing the readings, rather than having to interact with Indigenous knowledge). We also recognise the risk that the online unit could lead some students to perceive Indigenous knowledge holders and knowledge as an artefact to be watched, rather than as living epistemological and ontological frameworks in everyday use amongst Indigenous communities worldwide (see Yunkaporta, 2019).

We too recognise the limitations of the 'eVALUate' student feedback survey. The researchers did not conceptualise survey questions, but rather they are a generic list developed by the University. Student participation in the survey is optional; a larger sample may diversify the findings as to the overall reception of the unit. Accordingly, further studies regarding the effectiveness of virtual tours of Country and digital placed-based pedagogy would benefit from developing more specific questions.

Conclusion

This paper has argued that virtual tours on Country are received positively by students, evoke encouraging emotional responses towards Indigenous lifeworlds, and are a resource-sensitive teaching tool to Indigenise curricula within tertiary education. These findings are important considering the wider direction of Australian universities towards curricula Indigenisation and further provision of online course options, and as such provide a case study for how Indigenous epistemes and perspectives may be taught in a manner students find stimulating, insightful and moving. However, we note that caution should be employed when

considering the usage of Indigenous digital place-based learnings. They should not replace authentic experiential learning on Country or in nature with Indigenous people. Rather, their usage needs to be thoughtfully weighed up with the practicality of transporting entire class cohorts onto Country; videlicet a university using a local community site to teach about Indigenous culture and Country may cause irrevocable cultural and environmental damage. This is particularly true when considering the nearly 1.6 million tertiary education enrolled students in Australian universities (Department of Education, 2019). Furthermore, it is important that there is a bona fide intention underpinning the creation and provision of such courses, and that there is an appropriate quid pro quo between the university and the Indigenous community (adequate financial payment for community members involved in course/content creation, that there is an honouring of and respect for persons, service and content) in line with the Australian Institute of Aboriginal and Torres Strait Islander Studies: Guidelines for Ethical Research in Australian Indigenous Studies (AIATSIS, 2012). This teaching method may also reduce risks associated with physical on Country trips.

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From Streams to streaming: A critique of the influence of STEM on students' imagination for a sustainable future

Caroline Janet Smith[A] A *Adjunct Senior Lecturer, University of Tasmania, Australia*

Jane Marie Watson[B] B *Professor Emerita, University of Tasmania, Australia*

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Abstract

This article provides a literature-based critical review of STEM (Science, Technology, Engineering and Mathematics) and STEM education. STEM is located in and contributes to a neoliberal view of economics and is narrowly focused on technological solutions to global problems. As such, it is unable to provide the kind of education students at all levels need for them to understand, imagine and prepare themselves for a sustainable future. The article calls for a reframing of science away from the technological focus of STEM, i.e. techno-science, towards a science of reconnection with nature and an opening of students' imagination, and considers some of the elements of university leadership that are needed to enable this.

Introduction

> Without the soaring birds, the great forests, the sounds and coloration of the insects, the free-flowing streams, the flowering fields, the sight of the clouds by day and the stars at night, we become impoverished in all that makes us human (Thomas Berry, 1999, p. 200).

Over the past decade, STEM (Science, Mathematics, Engineering and Technology) has been promoted as critical for Australia's prosperity into the future, and its spinoff, STEM education is promoted as the vehicle for increasing student literacy in these fields at all levels of education. A major concern to us is that the avid promotion of STEM education has resulted, intentionally or otherwise, in edging out of students' access to Education for Sustainability, which focused on the environment and sustainability (Smith & Watson, 2019). In this article we develop our thinking further to argue that the strong promotion of STEM education is contributing to the further distancing of students from the natural world, and hence is complicit in the narrowing of the imagination outside the confines of a narrow technologically-focused future. Accordingly, there are implications for leadership within Higher Education.

Situating STEM

STEM is firmly located within a techno-optimist future (Allen, 2006; McKeown, 2018) that requires technology to be central to the continued innovative potential of humanity in adapting to changing situations with new ideas, and translating those new ideas into practice. For many in positions of power, the dominant view is that technology alone is the engine that will continue to drive progress and finally overcome our myriad problems (Dean, 2016).

The Australian government and its Chief Scientists are particularly enthusiastic promoters of a STEM–mediated technological future. The former Chief Scientist, Ian Chubb, in arguing for a STEM strategy, noted that its key objective is "to utilise fully Australia's capacity in STEM to secure social, cultural and economic prosperity for all Australians while positioning Australia to advantage in a changing world" (Office of the Chief Scientist [OCS], 2013, p. 8). Chubb further argued that investing in mathematics, engineering and science is the key to productivity growth and higher living standards in order to position the Australian economy as a whole for the future (OCS, 2013).

The Australian Government's recent National Innovation and Science Agenda (2017), links directly into this position, asserting that, "[e]xtraordinary technological change is transforming how we live, work, communicate and pursue good ideas. We need to embrace new ideas in innovation and science, and harness new sources of growth to deliver the next age of economic prosperity in Australia" (para. 1). This has becomes the nation's "innovation obsession", as Carter (2017) describes it (p. 9).

The promotion of STEM as the vehicle for promoting neoliberal values is also clear from the many utterances of its current Chief Scientist, Alan Finkel. Finkel argues that because we exist in a competitive international environment, in order to compete effectively, business and science need each other (Lee & Hannam, 2015). As the former Prime Minister Malcom Turnbull, who appointed Dr. Finkel put it: "Dr Finkel is renowned for his outstanding research, industrial and entrepreneurial achievements in Australia and overseas ... His will be a vital role in shaping Australia's economic future and leading our national conversation on science, innovation and commercialisation across the research, industry and education sectors and with the wider community" (Prime Minister of Australia, 2015, paras. 5-9).

Translating these messages into professional learning for teachers, the Commonwealth Scientific and Industrial Research Organisation (CSIRO)'s program STEM Professionals in Schools (2019), claims that,

> [b]y connecting industry with schools, teachers and students are exposed to the relevance of STEM in everyday life. STEM Professionals in Schools increases teachers' confidence and encourages students to consider STEM as a future career path, which will be essential to meet Australia's future economic growth and productivity.

The rise of STEM

We argue that the largely uncritical positioning of STEM as the means to meeting our economic needs, not to mention dubious arguments about it liberating us from drudgery through the creation of large amounts of knowledge-based work, is essentially flawed (Smith & Watson, 2018). The avid promotion of STEM aligns with a shift towards a more fluid iteration of progress in the era of modernity — the turbocharged, digitally mediated successor of industrial culture known as 'hypermodernity' (Smith & Watson, 2019; Smith, Fraser, & Corbett, 2017). This version of progress is increasingly centred around and dependent on the power of science and technology, with STEM framed as the vehicle to supercharge it (Smith & Watson, 2016).

Hypermodernity is the latest incarnation in the evolution of deeply-held beliefs about human exceptionalism that can be traced back to the Western worldview arising from the European Enlightenment. Humanity is positioned as the pinnacle of creation, liberated by technology to manipulate and consume nature at will for its own needs and gratification. Through the harnessing of fossil fuels during the Industrial Revolution, this position has come to represent all that is good and worthy in human progress and success (Berry, 1990; Milbrath, 1989; Shafer, 2006). Milbrath terms this viewpoint the "Dominant Social Paradigm", within which increasingly large sections of humanity operate. This version of progress is increasingly dependent on the power of technology, which is represented as of central and vital importance. Beginning in the 1970s, further sharpening of hypermodernity became possible and dependent on the ideology of neoliberalism, which Carter (2016) contends is a direct result of deliberate government and corporate ideologically-based interventions to promote its values (Smith & Watson, 2019).

We argue that this positioning of STEM and STEM education is highly problematic in four key ways: in its uncritical faith in economic growth; in its potential to narrow young people's ability to imagine a range of futures, in an alienation and disconnection from nature, and in the cooption of science in the service of STEM.

Uncritical faith in economic growth

STEM places uncritical faith in economic growth arising from its unexamined neoliberal worldview and the internationalisation of economies that accompany globalisation. STEM proponents assume economic growth as a given good, in spite of the growing recognition of its ecological impacts on the world's ecosystems. As the climate crisis finally assumes a central position in global awareness, it has become very clear that continued growth, driven by development of the technologies and powered by fossil fuels, is unsustainable on a planet with finite material resources (Thiele, 2013), and we are forced to question the very notion of growth itself (Jackson, 2009; Washington & Twomey, 2016). Rethinking of the global economy towards concepts such as zero-growth, decoupling, de-growth, steady state, and ecological macro-economics necessary to halt the tide of continued ecological catastrophe is starting to take place. Examples are seen in the United States (Schlanger, 2019) and the United Kingdom (Jacobs, 2019), where political parties are putting forward Green New Deals. These economic systems are incompatible with current framings of STEM, hence are rarely mentioned or even understood within much of the STEM community. Even worse, they are often disparaged. As we write, we also see the impact of the COVID-19 virus compounding environmental concerns, as well as threatening the neoliberal economic ambitions (Hasan & Sachs, 2020). Can, in the end, it be a lesson in the importance of human survival over economic gain?

The narrowing of the imagination to envisage a sustainable future

Our second concern, and perhaps resulting in more fundamental damage to our young people, is that STEM is complicit in the narrowing of young people's ability to envisage a range of futures beyond the technological. For some years, research has shown that young people's views of the future focus on hi-tech or environmental dystopias (Gidley, Bateman, & Smith, 2004; Smith, 2007). We argue that while STEM dominates discourses and practices in schools, forms of environmental education such as Education for Sustainability (EfS) (Australian Government Department of the Environment Water Heritage and the Arts, 2009) and Education for Sustainable Development (ESD) (United Nations, 2002; UNESCO, 2018) that are critical of economic growth, are becoming marginalised (Davis, 2012; Smith & Watson, 2019).

It is through EfS/ESD that the imagination to envisage preferable futures can be nurtured, and it was not that long ago that EfS/ESD was an important part of school education, with whole programs built around it, such as the Australian Sustainable Schools Initiative (AuSSI) (Smith & Watson, 2019). By sidelining EfS/ESD, deep understandings of the workings of natural systems are at best marginalised and at worse, ignored and not understood at all within the now dominant discourse of STEM education (see Smith and Watson, 2019 for a full discussion of this issue).

It is indeed ironic that, at the very moment we recognise the onset of the Anthropocene, we seem to have lost any coherent sense of what it means for humans to live within the ecological limits of the planet (Krabbe & Smith, 2019). Further, we appear to be losing our sense of relationship to the more-than-human world. Nature has become merely the backdrop that provides for human needs and desires. We believe that this marginalisation, a result of human selfish action, is highly problematic. In its aligning with the ideology of radical neoliberal market-driven responses to local and global environmental problems, and climate change in particular, STEM reflects the narrowing of the environmental agenda to what are essentially technological futures. In Australia, this has been echoed in increasingly acrimonious and divisive debates within the country's political system, where a vocal minority of parliamentarians skillfully manipulate the need to maintain coal mining in order to protect jobs in their electorates. This culminated in the now notorious incident in 2017 of the then Treasurer (and now Prime Minister) Scott Morrison bringing a lump of coal into parliament and announcing "This is coal. Don't be afraid, don't be scared" (Murphy, 2017).

Even after the devastating and unprecedented bushfires of 2019-2020 and under enormous pressure, the Prime Minister reluctantly and grudgingly admitted that climate change may have been a factor in their magnitude. His response, however, was a push for market-driven technology as the solution. In his address to the Press Club, Morrison declared:

> So our climate action agenda is a practical one, it goes beyond targets and summits and it's driven by technology, not taxation… Our focus is also squarely on harnessing the power of new technology and allowing natural markets to operate, together with the desire and ingenuity of Australians to reduce emissions while keeping the economy strong …. Technology is key to driving down costs and identifying new economic opportunities for Australia, particularly for technologies providing storage and back-up to the electricity, industry and transport sectors… The answer is not more taxes and increased global bureaucracy, but practical change, driven by science and technology, that allows companies and economies to develop and commercialise new technologies that are accessible, affordable and scalable the world over (Morrison, 2020).

Recently, a new philosophy, Ecomodernism, has emerged. This is a bizarre and highly contested extreme extrapolation of the STEM agenda that purports to be aligned with a sustainable future (Asafu-Adjaye et al., 2015). Ecomodernists believe that we save nature by not using it and this is achieved by decoupling human society from the natural world by the processes of substitution and intensification. Substitution entails substituting the products of nature by moving up the "technology ladder" from wildlife

harvesting to increasing biomass for fuel to synthetic energy production. Intensification refers to increases in land efficiency such as intensifying agricultural yields and denser human settlement (Bliss, 2016). For Ecomodernists, decoupling does not just usher in an increase in material living standards while decreasing environmental impacts, but also physically disconnects humans from wild nature, which is to be left to revert to its pristine state.

There have been many critiques of ecomodernism; see for example, Bliss (2016), Fremaux (2018) and Hamilton (2015), who see it as a bizarre and wildly optimistic techno-fix view of the future. Others bemoan the Ecomodernist view of decoupling humanity from nature. These critiques arise from the view that humanity is an integral part of the web of life, and decoupling disrupts the very core of what it is to be human (Berry, 1999; Sideris, 2017; Smith, 2019). Were we to take the Ecomodernist path, we may leave ourselves with what Thomas Berry (1999) considers the only interpretation of our recent history: one of irony, where "our supposed progress towards an ever-improving human situation is bringing us to wasteworld instead of wonderworld" (p. 17).

Alienation and disconnection from nature

Through shaping of the curriculum towards the technological focus of STEM and positioning STEM as the saviour of an uncertain future, we risk further disconnecting students and indeed ourselves, from deep engagement with nature. Through disconnection, we are able to forget that we live in an ecological system and that our social and economic systems depend entirely on that ecological system; that is, until ecological events such as floods, fires and ecosystem collapses, and now a coronavirus, threaten to overwhelm us. Crawford et al. (2020) have discussed the ways higher education institutions in 20 countries have made initial responses to COVID-19.

By charting the narrow path of STEM, a range of other ways of understanding and engaging with sustainable futures are excluded and not available to fire students' imaginations. Possible futures that are associated with relocalisation, self-sufficiency, reducing consumption and most importantly, engaging with the natural world, are less likely to be addressed. With technology increasingly portrayed as our aspiration and role model, the ability to envisage and create a rich, flourishing and abundant future becomes shoehorned into technological visions and we further become disconnected and alienated. In the view of Slaughter (2019), we need to recover a clear perception of how extreme and "abnormal" our present situation in relation to Earth really is. We believe STEM in its current form, is unable to provide this.

Already, we see this occurring. Even the language of nature has been hijacked by technology. Googling "Apple", "Blackberry", and "Amazon" shows the first pages provide nothing but technological devices, brands, and marketing. The terms "tweet", "cloud", "stream", which once were descriptions of natural phenomena, are now synonymous with the world of technology. Although we acknowledge that language is always in the process of evolving and changing, these examples appear to be deliberate on the part of technology companies, rather than a natural evolution through usage.

A study by the UK National Trust (Love, 2019) found that just 1% of uses of the word "tweet" in conversation now refer to birdsong. While in the 1990s, 100% of mentions of "stream" meant "a small river", that has now fallen to 36%. Single-meaning natural words, such as "lawn", "twig", "blackbird", "fishing", "paddle", "sand", "paw" and "shell", also decreased in frequency among young people, and some, such as "bumblebee", have disappeared altogether. Love's study searched through two databases of language transcribed from conversations. The first, from the 1990s, comprised five million words and the second, from the 2010s, 12 million. He found that original uses of the word "cloud" dropped by nearly a quarter, with children's conversation moving away from the natural meanings of words in their vocabulary from about the age of 10.

Robert Macfarlane in his book *Landmarks* (2016) laments this narrowing of the language, which he describes as a moving towards a state of "un-knowing". For Macfarlane, the loss of nature language is more than just a loss of words. When something is no longer named, it ceases to have an identity, and accelerates the loss of our deep connections with the natural world and the leaching away from our experience of nature. Coupled with this change in language use, the amount of time our students spend online on electronic devices instead of out in nature, and the ever-present (and largely irrational) fear of being outside, has fueled alarming levels of disconnection and distancing from the natural world.

Our young increasingly inhabit hyperreal cyberworlds, where time and space are decoupled, and where speed and spectacle replace peace and stillness (Smith, 2007). *The child in the city* national research (2018) in the United Kingdom showed that children are playing outside for an average of just over four hours a week compared with 8.2 hours for their parents when they were children. Another study by the UK government study found that 10% of respondents have not been in a natural environment such as a park, forest or beach for at least a year. The conclusion is that although the importance of being in nature is well known, as discussed below, overall engagement with nature at least in the United Kingdom is low compared with previous generations. As the report puts it, we are "raising a generation of sedentary kids who would much rather sit on the couch with a game controller and Mario[1] than be outside armed only with a stick and their imagination." Recently, a number of studies have linked time spent on social media and the rise of mental health problems (e.g., Rhiem et al., 2019). There is now even a psychiatric measure of Facebook addiction: Facebook Addiction Disorder (FAD) (Brailovskaia, Margraf, & Köllner, 2019; Da Veiga et al., 2019).

The role of science as part of STEM

Our fourth concern with the rise of STEM is, as alluded to above, that STEM represents the latest incarnation

1. A character in Nintendo video game

of an epistemology derived from the domination and instrumentalisation of nature to serve the needs and desires of humanity. By being subsumed into STEM, science itself is at risk of becoming the mere instrumental handmaiden of hypermodern technology and engineering, in other words, "technoscience" (Latour, 1988). In our post-modern hyperreal world, there is a profound loss of a sense of enchantment with nature, the sense that the natural world with its beauty and mystery, is a magical place. The role of science should be to instill a sense of awe, wonder and engagement with the natural world and the universe beyond: the sky at night, the turning of the seasons, the beauty of a leaf and the majesty of a forest. These are lost to those who do not experience them, and the result is a narrowing of the richness of the human imagination. Ironically, there is hope to be found in the outpouring of grief and concern for the native forests and wildlife destroyed during the recent Australian bushfires, a profound demonstration of how deeply we are still connected to nature.

Something is not functioning properly if humanity has changed the conditions for life to thrive, where multitudes of species are dying out and the climate is rapidly changing. Something is very wrong if we are continuing to educate children to continue to "conquer" nature. O'Sullivan (2001) remarks that: "the story of the modern epic… will be a story of progressive *disenchantment* from the natural world and all that this entails" (p. 81, author's italics). For Thomas Berry (1990), our inner world is a response to the outer world. If our outer world is diminished of beauty, meaning, purpose, joy and relationship with the other-than-humans, we ourselves are diminished. We lose our imagination, we lose our intellectual development. Macfarlane (2016) agrees. He argues that "by instrumentalizing nature, linguistically and operationally, we have largely stunned the earth out of wonder" (pp. 25-26).

Berry is convinced that we cannot survive in our human order of being without the entire range of natural phenomena around us, and a number of writers believe that for recovery towards a sustainable and hopeful future to occur, modern humans need to frame a "New Story" (Berry, 1999; O'Sullivan, 2001; Eisenstein, 2018) of who we are in relation to nature. Berry's (1999) great contribution has been to reinterpret and reframe science as an integration of science and spirit, as manifested in his New Story as a new creation story. In this New Story, humanity is profoundly at home in the universe, seeing it not from outside as a disinterested observer or controller, but as an intimate part of its creation and evolution. In Berry's words, we are a communion of subjects, not a collection of objects. Interpreted and recast this way, science has the potential to reveal the human as deeply embedded within the magnificent story of a numinous, participatory, and interrelated universe. As he so aptly and evocatively puts it,

> We see quite clearly that what happens to the nonhuman happens to the human. What happens to the outer world happens to the inner world. If the outer world is diminished in its grandeur then the emotional, imaginative, intellectual, and spiritual life of the human is diminished or extinguished (1999, p. 200).

Science has given us great gifts such as cosmology, which has opened up a deep and profound understanding of the origin and evolution of the universe and humanity's place within it. The sciences of quantum physics, evolution, cosmology, systems theory, chaos and complexity have changed the way in which the organisational principles of the universe are understood. This view of the universe is one of an evolving, dynamic, ever-changing dance of destruction and creation: Teilhard de Chardin's "cosmogenesis" (2004). This understanding has the potential to radically reshape the human-Nature relationship towards an ecological worldview that sees humans as an intimate part of Nature, part of the narrative of cosmogenesis. Cast this way, the science of the New Story is very different from the science that services STEM.

Reconnecting - moves to a New Story

We have argued that STEM is potentially limiting and diminishing in its educational function. Hence it is heartening to read of moves towards saner, more grounded ways of educating young people in today's world that do not entirely depend on framing the future as technological. Berry (1999) believes that our connectedness to the lifeworld, as sad as it may make us, is the only source of the sanity we need to attempt to survive individually and collectively. Though it is well known that time spent in nature has significant health benefits, both physical and psychological (e.g., Catholic Education Melbourne (2015), Forest Schools), we are engaging less and less. As the UK National Trust's regional director, Andy Beer, quoted in Love (2019), puts it

> As a nation we are losing our connection with nature. Nature connection isn't just about playing outside, it means using all the senses - actively noticing nature, such as the way gorse growing wild by the coast can smell like coconut, how fog in the autumn can cling to your hair, how a spider web can sparkle on a dewy morning…

Through his book *The last child in the woods*, author Richard Louv (2013) has inspired the International Forest Schools movement to re-connect young children with nature. Indeed, a deeper connection to the planet and universe now appears to be the best antidote to the despair and confusion we feel in the face of mounting global crises. At first, connecting deeply to our ecological reality might these days seem to be a source of grief, given the conditions we face, but in reality, our connection to our immensely bigger context is the only sane place from which to observe the unfolding madness that surrounds us. Connection helps remind us of the sanity of physics, the vastness of the universe and time, the persistence of life and the resilience of evolution. Whether we survive or not (personally or collectively), our sanity in the present can only rely on our deep connectedness to life and the distance we can put between our perspective and the collective psychosis of our society culture and economy.

Children seem to be born with the ability to be connected, and one of the greatest gifts educators can give children is to build on this to help them learn to respect, to tread lightly, to be re-enchanted by the earth. As Berry puts it,

> A child awakens to the universe: the mind of a child to a world of wonder, the imagination of a child to a world of beauty, the emotions of a child to a world of intimacy. It takes a universe to make a child, to educate a child; it takes a universe to fulfil a child. Sometimes you see children in an open field—they're cooped up so much they get a chance and they just run. Where to? They run to the horizon. You have to go chase after them to keep them from running into the river or somewhere. So the universe calls us forth into ourselves. That's the attraction. The universe is the greater self of every being in the universe (quoted in Reason, 2001).

There are now numerous moves worldwide that have taken note of our disconnection from nature and which are developing new, more connected and positive ways to help young people image a positive future. For example, a well-known school in the United Kingdom is developing an A-level alternative to teach teenagers to farm, forage and manage land sustainably through a "Living with the Land" course to promote self-sufficiency (Hazell, 2020). Throughout the world, students themselves, through the global strikes inspired by Greta Thunberg, are challenging governments' seeming unwillingness to take real action on climate emergency and are insisting on a different future for themselves and the planet.

It may be that STEM is a short-lived fad, and other more grounded forms of education that are consistent with the New Story, will emerge. Smith and Watson (2018) discuss pedagogies from two educational fields that offer important ways for students to critiqueSTEM and enable them to consider deeper perspectives. First, the field of Futures Education provides ways for students to explore and think critically and creatively about probable and preferable futures (Hicks, 2017). Second, the principles of Education for Sustainability (EfS) (Australian Government Department of the Environment, Water, Heritage and the Arts, 2009) guide students to understand that while technology is important, it needs to be used in the service of the wider ecological understanding that the continued flourishing of life cannot be achieved by technology alone.

The Role of Higher Education in education for reconnection

We have argued that a reconfigured New Story is needed to move students' imaginations from the narrow confines of the STEM agenda and that this must include reconnecting with nature in authentic ways. It is imperative then, that the University plays a central role in forging a thriving future for the human species and the others with whom we share Earth (Trencher et al., 2014). Although the role of university leadership in sustainable futures represents a vast topic that goes well beyond the scope of this paper (e.g. Haddock-Fraser, Rand & Scoffham, 2018; O'Sullivan, 2001; The Talloires Declaration, 1990), a few pertinent points should be made.

Krabbe and Smith (2019) argue that living in the Anthropocene "presents an urgent and critical challenge to education systems in general and to universities in particular, and that the requirements, skills, needs, responses, mitigation and adaptation needed cannot be met by current models of education" (p.71). For Krabbe and Smith, a university responsive to the imperatives of the Anthropocene needs to be reconceptualised as a space where transformational education takes place. However, they believe that universities are better placed than most institutions to engage in the transformation to adapt to the Anthropocene. Education in the STEM subjects should be subject to critical examination of the role they are being asked to play, and overtly include an understanding of their ideological foundations. In particular, teacher education courses warrant consideration of their unexamined promotion of STEM, which then potentially carries over into school education and the narrowing of the imagination discussed above (Smith & Watson, 2019). Key to this will be the action and commitment of informed leadership to drive change, by challenging what is researched, what is taught and how (Eddy & Van Der Linden, 2006; Krabbe & Smith).

A conflict for universities is that they themselves are configured within a neoliberal ideology (Connell, 2013; Schulz, Sniedze-Gregory & Banfield, 2019; Smyth, 2017), so that fundamental ideological change is not likely to occur easily. But as Slaughter (2012) points out, in spite of their current configuration, universities still have inherent sympathy with their earlier traditions of social responsibility and knowledges outside the current tyranny of neoliberalism. They also retain a degree of semi-autonomy, and academics are generally globally-oriented, critical and post-conventional thinkers. At the faculty level, different perspectives can be considered.

Conclusions and recommendations

In this article we have attempted to argue that STEM and thus STEM education, are inherently linked to a neoliberal, growthist view that increasingly places technology as the centre of our world. We contend that the vigorous promotion of STEM, although clearly having some role to play in education, is taking us and the students we teach further down a road that leads to social and environmental disaster.

Towards this end we call for a review of the promotion of STEM in its portrayal of technology as the saviour of our future. We call for technology to be grounded, appropriate and placed at the service of the flourishing of humans and the more-than-human world. We call on STEM education at all levels to move from its technoscience focus to be centred in dimensions that engage our students with the wider human experience of connection with nature. We call for science be given its prominent place in the lives of our students as a means to re-enchant the world, rather than complicit in the narrowing of their imaginations. Our hope is that lessons may be learned, and new perspectives forged from the coronavirus pandemic towards refocusing the growthist economic imperative towards an economy aligned with a flourishing for all life on earth.

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Using the pluriverse concept to critique Eurocentrism in education

Kim McLeod[A] A *Lecturer in Sociology, School of Social Sciences, University of Tasmania, Australia*

Robyn Moore[B] B *Social researcher, University of Tasmania, Australia*

Duncan Robinson[C] C *Doctor of Philosophy (Sociology) candidate, University of Tasmania, Australia*

Derya Ozkul[D] D *Postdoctoral researcher, Refugee Studies Centre, University of Oxford, United Kingdom*

Sarah Ciftci[E] E *Research Associate, Research Centre for Children and Families, Sydney School of Education and Social Work, University of Sydney, Australia*

Kate Vincent[F] F *Social Researcher, University of Tasmania, Australia*

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Abstract

It is widely acknowledged that teachers need to interrogate and transform how Eurocentrism underpins educational practice. This paper argues that teachers can actively engage with decolonial frameworks and concepts to productively expose how Eurocentric categories of thought shape teaching practice and curriculum. We describe how six teachers "walked with" the decolonial concept of the pluriverse (a sense of multiple co-existing differences) during collaborative reflections about our diversity teaching of culturally safe healthcare. Our research processes drew on the principles of collaborative, reflective practice. We co-participated in conversations, which aimed to collectively explore how the pluriverse concept intersected with our teaching and undertook qualitative co-analysis of themes emerging across these dialogues. The paper outlines how employing the pluriverse concept as a companion to our reflective process enabled us to ask critical questions about Eurocentrism in our teaching practice and content. Our questioning, in turn, generated principles for embedding the pluriverse in the curriculum, pedagogical approaches, and teacher dispositions. The paper discusses what enables and hinders the pluriverse being embedded in curriculum materials and classroom activities and the limitations of our activities in relation to the broader project of decolonising pedagogy.

1. Introduction

Scholars and activists have exposed how education reproduces colonial power structures to the detriment of students (Connell, 2007; Nakata, 2007). In response, decolonising perspectives — which seek to unlearn and relearn in relation to dominant Western ways of knowing, doing and being (Walter & Baltra-Ulloa, 2016) — have increasingly been used to critique education paradigms. This paper is situated in this broader terrain and arises from a specific teaching context. During the research phase, all six authors taught about culturally safe healthcare to large cohorts of health profession students at four campuses across Tasmania and New South Wales, Australia. The aim of this teaching was to equip students with the ability to critically reflect on the assumptions embedded within their professional institution and prepare them to both work effectively with marginalised groups, including Aboriginal and Torres Strait Islander Australians, and become agents of change. This type of teaching has been increasingly prioritised in higher education settings as part of a significant shift towards advancing the cultural safety skills of university graduates (Riley et al., 2015). We are a group of teachers who identify with a range of diverse, intersectional social and cultural locations. We share commonalities in the ethos we bring to our work; we acknowledge we are socialised into the dominant Western paradigms in education (Krursz et al., 2020) and are committed to bringing a decolonising lens to our teaching practice.

This paper responds to an issue, which arose in our dialogues — our aspiration to interrogate how Western paradigms of thinking pervade our teaching. Although we bring an intersectional lens to our teaching, classroom discussions include references to marginalised groups. We discovered these discussions, and student essays, often created a dominant majority, and "diverse" minority; groups with the dominant majority group often being equated with "us", and the other groups attributed the status of "them". This illustrates the pervasiveness of the conventional Western conception of the world as a single, moral universe, with dominant groups and minority or "other" groups. Scholars have highlighted issues arising from this worldview. For example, Nakata et al. (2012) explain that sliding into "us" versus "them" content produces binarised, essentialised Indigenous and non-Indigenous identities. We found that when classroom conversation tipped into "us/them" formulations, it fed into homogenising perspectives about "diverse" cultural groups (Hollinsworth, 2016). This experiential evidence from both students and teachers points to how identities can be reified and populations generalised in diversity teaching in a way that is counter-productive to critical and reflective thinking. The team discussed strategies, which may be beneficial in this regard, such as committing to speaking to different identities in the room and ensuring the dominant Euro-Australian identity is just one of them. However, it was clear we needed to investigate further how Eurocentric thinking shapes our teaching and how students engage in the classroom.

The purpose of this collaborative exploration was to explore how decolonial theory — and in particular the "pluriverse" concept, that is the "decolonial political vision of a world in which many worlds would coexist" (Mignolo, 2018, p. ix) — might assist us in exposing how Eurocentric thinking shapes our teaching and enable us to bring more epistemic diversity to our teaching about culturally safe healthcare (Zembylas, 2017; Zondi, 2018). In this project, we specifically tried to achieve this by actively engaging with decolonial theory in our ongoing collaborative reflections about our shared teaching experiences.

2. Theoretical framework

The broad agenda of the contemporary tradition of decolonial theory includes: acting against the harms of colonisation; resisting the Eurocentrism of the West and the ways it subjugates peoples disempowered by colonialism, and interrogating how we relate to the universality of Western thought (Mbembe, 2016; Mignolo, 2006; Mignolo & Walsh, 2018; Wynter, 2003). Decolonial frameworks provide apt tools for interrogating how our teaching, and specifically our discussion of differences between people, are imbued by "Western, colonial and Eurocentric epistemological foundations" (Zembylas, 2017, p. 397) that in turn perpetuate the idea of one universal world composed of major/minor groups, featuring a "human" who is underpinned by colonial epistemological "Western Man" (Wynter, 2003).

This paper contributes to the significant and emerging work by scholars who explore what it means in practical terms for teaching practice to be informed by decolonised perspectives. Decolonising perspectives have been used to critique and expose how Eurocentric thought shapes education paradigms and pedagogy (Bhambra et al., 2018; De Lissovoy, 2010; Kester et al., 2019; Nyoni, 2013; Zembylas, 2018); expose the violence of modernity in higher education (de Oliverira Andreotti et al., 2015), and disrupt how teaching practices and curriculum reproduce settler realities and colonial power (Mackinlay & Barney, 2014). Importantly, the decolonisation agenda lends support to embedding Indigenous epistemologies in the educational curriculum as they serve as powerful counter-hegemonic action to dominant discourses and support Indigenous staff and students' wellbeing (Edwards & Hewitson, 2018; Walter & Baltra-Ulloa, 2016).

The pluriverse concept arises from decolonial scholarship (Escobar, 2016; Mignolo, 2018). It has particular utility for this project because it provides a fundamentally different concept to the idea of one universal world. Mignolo (2018) notes that Western Christian philosophers of the European Middle ages claimed superiority over other groups. This began searing Western epistemology with the imperial and colonial project. In contrast, "the pluriverse consists in seeing beyond this claim to superiority, and sensing the world as pluriversally constituted…[by] the entanglements of several cosmologies connected today in a power differential" (Mignolo, 2018, p. x). The pluriverse concept challenges the logic of universal modernity — which is promulgated by capitalist and colonial modernity — that there is only "the world" and "other" worlds exist in relation to "the world" or are rendered non-existent. The pluriverse is a world in which multiple worldviews, practices and livelihoods co-exist; a world where no one particular way of living shuts down

others (Escobar, 2001, 2012; Mignolo, 2006). The pluriverse interrupts the commitment to one common world. Rather, the focus shifts to the ongoing processes of making many worlds, to "heterogeneous worldlings coming together as a political ecology of practices, negotiating their difficulty being together in heterogeneity" (De la Cadena & Blaser, 2018, p.4).

The pluriverse concept has been used to think about pedagogic practice in a limited way. "Pluriversalising" education has predominantly been linked with the notion of epistemic diversity in which the Eurocentric story is decentred and dialogue among different epistemic traditions is privileged instead (Mbembe, 2016; Zembylas, 2017; Zondi, 2018). For example, Waite and Robbins (2017, p. 38) note how the pluriverse can inform a general pedagogical orientation of "teaching in relation to plural worlds, a never finishing project". In the Australian context, Nakata (2007) describes the related concept of the "cultural interface"—the space between Western and Indigenous domains where knowledges intersect; the place that Indigenous people are constantly actively negotiating. Nakata et al. (2012) propose bringing a pedagogic focus on the cultural interface to challenge the way that binaries such as Indigenous/Western and primitive/modern are perpetuated in learning environments.

3. Methodology

We are a small group of colleagues with a shared passion for challenging Eurocentrism and embedding decolonial theory into our teaching of culturally safe care to health profession students. In 2017, we were drawn together through collegial discussions about the emotional labour that inevitably arises in this teaching space. These discussions evolved into a community of practice (Wenger et al., 2002) and formalised our collective reflections about decolonising our teaching. This, in turn, developed into collaborative research that made a case for peer collaboration as an important way of supporting teachers who are bringing a decolonising lens to their teaching practices.

The methodology for this project involved a group of colleagues "walking with" the concept of the pluriverse and engaging in *collaborative* and *critical* reflective conversation about shared teaching experiences (Ng & Tan, 2009). While we acknowledge that reflective time can occur introspectively, in conversation with ourselves, we concur with Brookfield (1995, p. 140) that the full value of reflection "occurs only when others are involved". Collaborative thinking can uncover assumptions and enhance processes of inquiry through shared dialogue (Allard et al., 2007). Our reflections were intuitive, implicit and took a broad view. This enabled us to challenge assumptions and current thinking in "diversity" teaching and maintain a broad vision of our work as it relates to issues of social justice, in particular decolonising pedagogies and educational goals and values. The methodology was emergent, in the sense that we were open to the connections made and directions taken through the conversations (McLeod, 2014). Additional connections were also derived through the iterative movement between our reflections on previous and ongoing teaching experiences, reading, thinking, talking and curriculum review. This was, overall, a productive methodology for exploring our research question, aligning with what Mignolo and Walsh (2018, p. 19) describe as a "praxis of decoloniality": "a walking, asking, reflecting, analysing, theorizing and actioning — in continuous movement, contention, relation, and formation". The conversations generated insights into how educators can draw on the pluriverse concept to challenge Eurocentrism in education.

Our group conversations were enabled by the degree of trust in our group, which has developed through working together as teachers and co-researchers for the past three years. The group has the capacity to support and care for each other as we share multi-level responses to our teaching experiences and allow questions to arise (O'Dwyer et al., 2018). We share being invested in peer collaboration as a way of exploring how whiteness informs pedagogical practice (Andrew et al., 2008; Charbeneau, 2015; Jupp, 2017). Thus, we embarked on this project with an already-established, comfortable process of working with each other and a sense of the scholarly value of being in a shared process of reflection about our teaching processes.

The data collection for this project constituted six collaborative, reflective conversations by Skype, between the members of the project team. These conversations were approximately 60 minutes in length and were audio-recorded. The project lead, Kim McLeod, wrote summary notes of each conversation. The group undertook a meta-reflection process and discussed the detailed notes from the Skype conversations. Kim conducted a thematic analysis to identify patterns across all the project materials (Braun & Clarke, 2006). Initial themes that emerged from this process included: questions of power and privilege; how students shore up or resist normativity; presence and absence in students' navigation of their cultural locations; negotiating difference in an intercultural space; students' complex identities, and implications for us as teachers.

We engaged in group discussions about the initial themes and further meta-reflection. Kim then examined these materials to identify instances where the pluriverse concept propelled us to see how Eurocentric categories of thought were shaping the teaching and learning environment. The data was organised into categories based on the themes as well as instances of teaching strategies that demonstrated "walking with" the pluriverse concept.

4. Analysis and Discussion

Our active engagement with the pluriverse concept in our collaborative reflections enabled us to expose how Eurocentric categories of thought shape teaching practice and curriculum. In the first part of this section, we show how Eurocentrism informs how students learn about, and relate to, intersectionality, social and cultural locations, and difference. The following part of the analysis presents our response to these insights, and our desire to teach differently. We then outline some principles for embedding the pluriverse in the curriculum, pedagogical approaches and teacher dispositions. We highlight the productive

interplay between the pluriverse concept and our capacity to teach about culturally safe healthcare practice.

How Eurocentric categories of thought shape teaching and learning about our own differences

In this section, we outline how the pluriverse concept alerted us to the way students drew on Eurocentric categories of thought as they navigated the idea of intersectional identities. Intersectionality recognises that each individual belongs to multiple groups; the various "cultural locations" within each of us interact and intersect depending on the context and change over time. We use the concept of intersectionality to help students reflect on their social locations and to consider each patient as an individual with distinct experiences, histories and intersecting identities rather than as a member of a group, such as Muslim, Aboriginal and/or lesbian. Students are encouraged to consider how institutions, structures and systems discriminate against some identities and communities and afford privilege to others. Students gain insight into how some identities experience multiple forms of discrimination, which in turn shapes their experience in unique ways.

The Eurocentric idea of the human at the centre of one, universal world was at play in key tensions that arose in how students engaged with intersectionality. Students embraced the concept of intersectionality, as it resonated with their own lives. Some of our teachings focus on diversity in terms of race, religion, gender, sexuality and ability. We encountered an enduring tension in how students related power and privilege to their intersectional definition of self. On the one hand, some students had "light bulb" moments. They recognised that the parts of their identity they found difficult to identify was due to them belonging to dominant groups with associated invisible privileges. On the other hand, students could limit their engagement to aspects of diversity with which they felt comfortable while glossing over points of tension. We noticed that many students readily focused on aspects of their identity for which they experienced discrimination but seemed less able or willing to examine how some social locations afforded greater access to power and/or privilege at the structural level. As Kim reflected, students tended to use the intersectional framework to "*celebrate the complexity of individual uniqueness in ways that flatten everything down to the level of the individual*".

These students used this exercise to understand themselves as intersectional and complex, but in ways that reinforced, rather than challenged, norms associated with locating their identity at the "natural" centre of the world. Students actively selected "what representation is given and not given to the intersections of cultures, colonies, colonists, classes, races, gender, sexuality, age, ethnicities, power and privilege" (Baltra-Ulloa, 2018, p. 129). For example, students drew on discourses of victimhood (Nelson et al., 2018) to produce a "different but equal" narrative, which led to power being elided. Or, the disadvantages experienced by someone from a low socioeconomic (SES) background were equated with being an immigrant of colour. Students engaged with an exercise to explore how they might stereotype, and be stereotyped, by filling in the blanks: "I'm , but I'm not ". Sarah found a typical response was "*I'm white/Australian, but I'm not racist*", indicating how students used the activity to shore up unquestioned belonging to their chosen groups (and the groups' associated privileges). We recognised similarities between our students' responses and (white) students' resistance to the knowledge that threatens hegemonic understandings that have been documented in the literature (see Brookfield and Associates, 2019; Cabrera, 2014; Hollinsworth, 2016). Following Picower (2009), we recognise that students' strategies encompass not merely passive resistance but active protection of the status quo. Their reluctance to acknowledge racism suggests that it would be too discomforting for them, creating too many problems that they would have to deal with in their lives (Brookfield et al., 2019).

We identified another tension relating to students engaging with intersectionality. Students maintained and reinforced the dominant Eurocentric worldview by placing their identity at the centre in an unquestioned way. As Robyn reflected, thinking about intersectionality alone was comfortable for them, "*because they [could] choose what aspects of their intersectionality they [could] focus on*". However, engaging with the intersecting space was vital, as Robyn mentioned, "*so that they don't feel like they are outsiders in that space, and that they don't feel uncomfortable in that space*". In other words, an intersectional understanding of self can help students to feel they are relationally present, and relationally active in shaping their future health encounters. We were led to ask to what extent the students' "presence" had been enabled by students reifying their own positions through drawing on the dominant Eurocentric worldview, with "me at the centre" during their engagement with intersectionality. The pluriverse was a useful concept for bringing these issues into focus for us. In our discussions, we wondered if the concepts we introduced to disrupt normativity, such as intersectionality, were being used "creatively" to shore up normativity instead.

How Eurocentric categories of thought shape teaching and learning about others' differences

This section details how Eurocentric categories of thought shaped the ways students explored differences in other individuals and populations. Above we detailed how students selectively engaged with the "comfortable" aspects of their own identities. Sarah observed how this tendency extended to how students relate to the differences of "others": "*They do that thing, I'm going to allow that kind of difference, I'm OK with that because it fits with my way of thinking to a degree, but I'm a bit funny on that difference.*" Students construct difference as "other" to my/our common world of "non-difference". They enrol difference into the Eurocentric idea of one world, with all other worlds relegated as different. Kate mentioned that she often got "*feedback about students valuing learning about the 'other'*". In other words, students came to class, expecting to learn about "others". However, as Sarah identified, our aim was for students "to learn about themselves". We saw how students could inflect difference with Eurocentric thinking, thereby removing any connection to the idea of pluriversal differences between co-existing

worlds. In addition, students can remain in the centre, detached from "others", rather than navigating difference as a person who is located among and connected to other peoples.

To interrupt this, we needed to find ways of teaching students to see that what they do relationally is the key. This is what creates change, not the differences they see as embedded in the "other". We found the pluriverse concept a rich resource for us because it directs attention to the negotiations and contestations between multiple and intersecting worlds. The challenge in this is to think about groups as different from each other with some commonalities in-between—arguably, what the earlier debates about multiculturalism have offered. If we can locate the dialogues in this space that is "in-between", we can go beyond categorising different groups, and creating "us" and "them" dichotomies, and think instead about our connections as people sharing the same space.

We were provoked to ask whether it is possible to bring these students into a conversation about how difference is produced through intersecting relations at this early stage of their learning about cultural safety. Nakata et al. (2012) argue that privileging Aboriginal and Torres Strait Islander knowledge is a good starting point to understand how knowledge systems and societies that have been decimated through colonization. However, it is not a position to uncritically maintain. For example, in our teaching which focuses on culturally safe healthcare with Aboriginal and Torres Strait Islander patients, students need an initial grounding in the invasion, colonisation, and the rupture of kinship to understand the ongoing differences between Indigenous and non-Indigenous people's health outcomes. They also need an appreciation of self-determination as it relates to the distinct rights and responsibilities of Australia's Indigenous peoples. Moreover, students had been exposed to sociological health literature, which draws on the idea of majority/minority groups to aid thinking about power and how resources are distributed unevenly. In contrast, the pluriverse concept highlights how Eurocentric thinking informs knowledge generated about the broadly defined Indigenous ("minority" group) and non-Indigenous ("majority" group) in one universal world. As such, it propelled us to ask how we could engage students with these critical perspectives, without replicating what Nataka (2007, p. 10-11) describes as "the western order of things and its constitution of what an Indigenous opposition should be". We discussed whether it is possible to teach structural group differences alongside ongoing relationality. We explored whether our teaching could be underpinned by the cultural interface while still giving students an initial grounding in the social, cultural and historical determinants of health for Aboriginal peoples. A challenge for us was to reflect on this notion productively with students who are often only beginning a process of learning about structural discrimination and their own identities.

Two telling illustrations show how students relate to Aboriginal and non-Aboriginal people as binary groups and replicate the "taken for granted ways of thinking that are the foundations of cultural practices that reinforce epistemological and ontological superiority" (Baltra-Ulloa, 2018, p.130). This manifested in the students' learning as the simultaneous reinforcing of an unquestioned centre and the distancing of the "other". An eye-opening point for us was to see students' reflections to a case study of the preventable death of Ms Dhu. Ms Dhu was a 22-year-old woman of the Yamatji Nanda Nation and the Banjima People who died of septicaemia in police custody in South Headland, Western Australia in 2014 within 48 hours of being incarcerated for failing to pay fines. She was taken to the hospital twice after complaining of pain but was returned to her cell after medical professionals attributed her pain to "behavioural issues" or "drug withdrawals". The coroner's report found that both the police force and health and medical institution failed to deliver the duty of care owed to Ms Dhu and that the behaviour of responders was both unprofessional and inhumane (Western Australia Coroner's Court cited in Klippmark & Crawley, 2018). Referring to students as they discussed this case study, Kim reflected that it was:

> *shocking [to see] that they didn't relate to her demise like they couldn't relate to her, an air of inevitability of it. [It was] very easy for the students to position themselves as outside it.*

As Whitt (2016, p. 432) explains, distancing is problematic because it "prevents students [and others] from critically examining important aspects of their world, lives, and knowledge".

The second (even more) telling example saw students mobilise their recently gained insights into colonisation in Australia within their reflective essays. Many non-Aboriginal students absented themselves by enacting the identity of "white person with a handle on invasion" and by collectively not empathising with Aboriginal peoples' lived experiences. As Duncan observed:

> *It's that placement of racism in the past, it's that they get to push themselves away, they say that happened, and I'm acknowledging it now, and that's the only journey I can go on, I can't understand it's still relevant.*

We saw this response to a marked degree across our student cohort: students removing and distancing themselves from relations to peoples. This positioning contrasted starkly with how the students related as people (and locating themselves as people) in their learning in our teaching which focused more broadly on exploring race, religion, gender, sexuality and ability, where there was more leeway (as we described in the first section) to locate the self in desired and comfortable ways.

Overall, the pluriverse concept helped us to sustain our questioning about how identities can be reified and populations generalised in diversity teaching in a way that is counter-productive to critical and reflective thinking. In addition, the concept helped us to reveal how Eurocentric thinking shapes our teaching, and the students' learning, about difference.

Principles for "pluriversal" pedagogies, curriculum and teacher dispositions

In this section, we outline some principles for pedagogical approaches, curriculum development and teaching strategies, which are informed by the pluriverse concept.

Teaching to and from multiple positions

This principle entails taking as a *departure point* that we are teaching from multiple perspectives, with people of all different identities, all interacting and working through the content together. The principle supports always interrogating, as Robyn observed, "*to what extent our teaching and the materials [are] aimed at the dominant group, rather than a broader group*". This can be mediated by presenting multiple worldviews as the norm, and unpacking which worldview is dominant, and why. Kate noted how the pluriverse concept helped us resist acknowledging a dominant worldview, yet framing this worldview as one of many, by saying: "*yes, there is one dominant worldview… but it is just one*." In our teaching context, we impressed on students the many worldviews on health, and what makes the biomedical model central, due to its dominant power position. This means not just *avoiding* positioning white Western ways of doing, being and knowing as the norm, but highlighting how a worldview is centred.

This principle supports asking what it means in teaching *and* learning encounters if we understand teachers and students as relating to multiple, intersectional positions. This presents an effective strategy to avoid patterns in centring one group and othering other groups, in classroom conversation and in the content. We recognised, however, that this entails being attentive to how we are shaped by our own intersectional positions, as Robyn indicates:

> *With my training in whiteness and wanting white students to get it, I can speak to the white students. But if I'm doing that, I'm ignoring all the other students in the room. How [do I] make sure I'm not only speaking to the dominant groups and the position of non-dominance. The conversation needs to encompass everyone.*

This was crucial to reflect on because if we only focus on "white students", we would be ignoring all the other students in the classroom — or excluding or silencing some students who may be able to make connections and relate. We noticed a striking difference between some Anglo- or European-originated students and those with other backgrounds in terms of reflecting on their positionality and making connections with other peoples. As Kate reflected, "*my non-Euro students were already so aware of their racial selves*". Although it is important to enable voices and expression from a diverse range of intersectional positions, we are mindful of not reifying a student as representing their "group" by asking them to be the voice for the group. For that, Duncan pointed to the benefit of initiating classroom discussion by introducing multiple perspectives: "*…it's about how we start up the workshops…we can integrate the idea, that there are multiple voices here, there is a pluriverse of knowledges; you shouldn't have to look to that person to be that voice*".

Modelling working in-between

This principle emphasises being attentive to how difference is readily attributed to those who are positioned as "other" to the norm of "Human Western Man" (Wynter, 2003). Instead, attention needs to be sustained on how differences are relationally produced, rather than embedded in an "other". We made links between our own practice as teachers and the practice we discuss in the classroom. This led us to model working in-between in our teaching; linking what we were asking students to do in the future to the classroom environment. This approach was supported by Nakata's (2007) concept of the cultural interface as well as understandings of the pluriverse discussed by Dunford (2017), where the world is constituted through ongoing interrelationships. We remained cognisant of the fact that, similarly to healthcare spaces, workshops are relational spaces and what happens in those spaces is determined by who is in them. Sarah indicated how the pluriverse supports pedagogical approaches that enable us to:

> *debunk the idea that "there are groups who are different, this is how they are different, the specifics of their difference"…The pluriverse has weight in forcing students to learn about how others are different, but that everyone is different, and it is about their position of power, and it is about co-existence, and how do you do that without bringing an air of superiority.*

We discussed how teaching strategies, which enable students to explore what they do relationally, are key; activities that allow students to learn about how their own responses are at play in creating a "centre" and a "periphery", which position some people as acceptable and others to be "tolerated". This principle, then, suggests a focus on learning through our responses. These teaching and learning processes engage with students' and teachers' sense of identity, belonging, and community.

Vulnerabilities, emotions and affective responses feature in our classrooms and require attention, and care (Hollinsworth, 2016). This is supported by understanding everyone in the classroom as not distinct from the many contexts that matter outside the formal learning environment. In other words, being a student or a teacher is "not an identity binary, as we often try to enact, but an assemblage" (McLeod et al., 2020, p. 7). The principle connects with commitments of our earlier work together, of teaching orientations that include co-learning with the students — enacting that we too, as teachers, are part of, and accountable to, what is happening relationally in the teaching and learning space. Underpinning our teaching with the same ethos, we are asking students to consider that we are "always implicated in each other's lives" (Baltra-Ulloa, 2018 p. 135).

The potential of pluriversal, culturally safe practice

As the above section shows, the pluriverse concept enabled a productive emphasis on intersectional relatedness in terms of how the students and we engaged with difference. We found this thinking was generative in relation to our teaching about culturally safe practice. Cultural safety is a concept developed in Aotearoa/New Zealand in the 1980s by Irihape Ramsden, in response to the inappropriate healthcare practices being used with Maori peoples. The idea has now been adopted as a framework in many countries around the world, including Australia. Firstly, cultural safety involves awareness and appreciation of difference by the healthcare practitioner. Secondly, it also involves legitimising differences, as well as an exploration of the self and one's own beliefs, attitudes and values. Cultural safety occurs when the practitioner provides care that is focused on the cultural requirements of the client, where the two points mentioned above are applied (Phiri et al., 2010).

The pluriverse concept helped us to think into, and emphasise, the "doing" of cultural safety as informed by intersectional relationality and pluriversal, co-existent worlds. It is a shift to relational doing as culturally safe practice. As Robyn reflected, "*to actually engage with the idea of the pluriverse, it's not just about imagining how things are for someone who is different to you; it's about engaging in collaborative dialogue.*" A pluriversal perspective on cultural safety is underpinned by "a cultural politics founded on a belief that multiple ways of knowing, being, and doing can have equal value in understanding care" (Baltra-Ulloa, 2018, p. 130). This enables discussing our (including students') histories, spaces and positions as relational — that is being connected to each other — in all our teaching about cultural safety. In the classroom, we made a concerted effort to get students to think about intersecting, in-between spaces, highlighting that these are the kinds of spaces where they will navigate cultural safety in their future healthcare practice. In every interaction as a practitioner (or teacher), they/we need to approach interactions with an awareness of self, considering and legitimising intersecting differences (including within groups), negotiating power imbalances and being aware of the operationalisation of whiteness, while also ensuring that they/we work relationally and with respectful curiosity (Bansal, 2016; Phiri et al., 2010). This approach to practice is similar to that promoted by social worker Ann Joselynn Baltra-Ulloa (2018, p. 133), who argues that in an ideal world, there would be no right or wrong way to practice, it is about "learning in and through practice". She explains that it is through being in relationships and navigating such spaces together that we learn how to care for and be cared for.

The pluriverse concept highlights ongoing contestations between co-existent worlds. As a result of our discussions about the pluriverse and its relationship to our teaching, we also included activities, videos and case studies into the content that exposed students to a diversity of positionalities and explored how they might navigate them in practice. The students we teach are being taught to be health professionals within the Australian healthcare system where the biomedical model, a white Western approach to health, is dominant. As a result, this approach is positioned as the norm for them. A guest lecture by Aboriginal scholar, Jacob Prehn, specifically explored working between the biomedical and Aboriginal models of health. Robyn noted how Jacob modelled this by "*critiquing the biomedical model, but in some ways also utilising the biomedical model. There's no sharp line between Western ways and Aboriginal ways of health treatment. In lots of ways, there are, but there is lots of cross-over. So maybe in that cross-over, that's where you get away from that reification.*" This way of thinking enabled a productive focus on what it means to work between the biomedical and Aboriginal models of health.

We also found the pluriverse helped us explore in-depth how the Indigenous/non-Indigenous binary can reduce the complexity of culturally safe healthcare with Indigenous patients, to a simple model of a privileged white health professional interacting with a marginalised Indigenous person. Instead, we utilised and kept central the concept of intersectionality to highlight that there is a multitude of practice scenarios that can occur in the health sphere. For instance, a successful Aboriginal professional could be dealing with a white nurse from a low SES background. This also helped to challenge views of a static, one-dimensional Aboriginal identity. With this focus, we highlighted how a dialogue between different epistemic traditions is productive in healthcare encounters. As others have found, these exercises proved the usefulness of the "pluriverse" concept in decentring the Eurocentric narrative about patient-health professional relatedness and bringing more epistemic diversity to our teaching about culturally safe care (Zembylas, 2017; Zondi, 2018).

5. Conclusions and Recommendations

This paper highlights the need for decolonising pedagogies and teaching strategies that critique Eurocentric thinking. Integrating the pluriverse concept into our pedagogies has allowed us, as a teaching team, to become attentive to the impacts of Eurocentric thought and to rethink our pedagogy. We offer principles for embedding the pluriverse in the curriculum, pedagogical approaches and teacher dispositions, and in doing so, contribute to the existing literature about the pluriversalising of education through the incorporation of diverse epistemic knowledges (Mbembe 2016; Zondi 2018).

This paper indicates the importance of attending to how normativities can be reinforced in the pursuit of inclusive pedagogies. "Walking with" the concept of the pluriverse has allowed us to critically engage with and consider what would typically be deemed an "inclusive" teaching environment. When Eurocentric thinking underpins notions of inclusion, it means inclusion on the basis of sameness. The notion of "inclusive" teaching, which aims to provide the same learning opportunities regardless of students' backgrounds, enjoys widespread and institutional support (Commonwealth of Australia, 2015). Using the pluriverse as a platform for critical discourse towards what Eurocentric thought situates as "diverse" identities creates a dialogue into what we are asking those who are positioned as "diverse" to be included in. The creation of "diverse" identities lies within Eurocentric thought, and that difference is defined by those who are "including" (de Oliveira Andreotti et al., 2018), often

negating the opportunity to ask those who are positioned as "diverse" about their thoughts on inclusion. Working towards "inclusion" does not necessarily guarantee a safe space for all people as it requires certain conformities. Focusing on the need for people not being the same (Raghuram et al., 2009), along with the recognition that that can be for the betterment of everyone (Baltra-Ulloa, 2018), lies at the heart of a decolonised pluriverse praxis. We concur with Stentiford & Koutsorius' (2020) observation that discussion about inclusive pedagogies in higher education needs to take the time to acknowledge the complexity of pedagogic issues, such as those we have identified in this paper.

Integrating the pluriverse, and hence questioning dominant narratives, has allowed us as a teaching team to relate to the multiplicity of differences that co-exist alongside each other and work towards praxes that are about creating a sense of belonging. Part of this process has been learning through how we teach and the importance of maintaining a "co-learning stance". This has been critical for developing knowledge and pedagogies that create an understanding of both students' and teachers' needs. In this way, we respond to the literature about what it means in practical terms to decolonise teaching and learning, including engaging with students to critique the complexities around knowledge production and the limits of Eurocentric thought (Nakata et al., 2012). This breaks down the student/educator relationship in that we as educators respect and understand the knowledge that students bring, along with their own resistance to the dominant Eurocentric thinking (DiAngelo & Sensoy, 2009). As Kate identified in the first conversation: "*we need to ensure we don't assume students are part of the dominant group[s]*". Students who are considered "diverse" need to feel that that they are understood so that they are able to trust us as educators and negotiate their own terms of "inclusion" (Makhubela, 2018).

The process that this teaching team has undertaken contributes to emerging decolonisation literature concerning praxis (Mignolo & Walsh, 2018). We have shown how critical and collaborative, reflective conversations that engage with promising theory can be a productive way of developing practical tools for decolonising education. Due to student resistance and the integration of new knowledge, it is significant that a finding of this project is the beneficial nature of the connective group relationship, which allowed openness and vulnerability in our collaborative conversations. The reciprocity that was integral to these conversations necessitated the need to be able to not only "walk with" the pluriverse as a concept but also the need to be able to walk with each other as a team.

An identified limitation of this project is the question of how far decolonisation processes can be achieved within a predominantly non-Indigenous group. As a teaching team engaged with Aboriginal and Torres Strait Islander content, five of the team identify as non-Aboriginal and one as Aboriginal. Scholars of colour have identified the limits to how predominantly white teachers can engage with each other about whiteness and Eurocentrism (Ohito, 2019; Zembylas, 2018). This became a discussion point during the assemblage of this paper, in terms of how we could have been more purposefully engaged with this limitation during our collaborative conversations. This project could have also extended its methodology through bringing the research team into contact with scholarship in the space, including slow scholarship (Hartman & Darab, 2012); relational responsibility and care (McEwen & Goodman, 2010), and yarning methodologies (Shay, 2019).

A recommendation from this project is that redefining "inclusion" from non-Eurocentric thinking can contribute to a greater sense of students feeling safe and, from that a sense of belonging. The following quote from Kim speaks to how the pluriverse has helped this process, "*I feel overall it has been a useful lens for us to use, to think about how it is that we create groups of us and them, how different identities are enacted, I feel like it's helped us to ask critical questions about the extent to which we are able to get the students to think about what it means to navigate difference*." The development of this approach within our teaching praxes has helped us as a teaching team to identify practical means in which we can decolonise our teaching. Expanding on this recommendation is the identification of engaging with the breadth of the decolonial project as it sits not only inside teaching and curriculum but also outside the classroom and the dominant culture.

Our conclusions have shown that while this project has helped us to question Eurocentric thinking and worldview, it has also generated enduring questions and tensions, identifying the need for ongoing examination and experimentation. The pluriverse has allowed us to critique our teaching praxes and the complex nature of "us" and "them" dynamics in the classroom, thereby working towards creating spaces of belonging for all who sit within our classrooms.

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Developing critical thinking in student seafarers: An exploratory study

Umar Khan[A]

[A] *Associate Lecturer, Australian Maritime College, University of Tasmania, Australia*

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Abstract

Short course curricula for seafarers using a traditional, teacher-focused, instructional pedagogy has resulted in students demonstrating surface-level achievement of learning outcomes and limited development of their critical thinking skills. This paper reports on the introduction of a student-centric pedagogy aiming to develop self-directed learning and critical thinking. The elements included introducing authentic and collaborative learning activities, constructively aligned with the content delivery and assessment. The differences between the current 'traditional' approach and a 'student-centric' approach was evaluated. This included a pre- and post-test on student assessment, and a set of semi-structured interviews with the students. A thematic analysis identified three themes including: *authentic learning*, *constructivist learning* and *self-directed learning*. The evaluation demonstrated that a student-centric approach promotes critical thinking and active learning in students, improving learning outcomes.

Introduction

Fedila (2007) proposes that the weakness of traditional teaching methods to seafarer engineers is, that after graduating from their maritime engineering course, they do not have problem solving skills for an onboard working environment. They do not understand how they can apply their knowledge to real life engineering problems: what to do and how to do it. Active seafarers need to have critical thinking skills developed as part of their education. Seafarer's education needs to better enable critical thinking development. In the Australian Maritime College (AMC), students come for seafaring studies from different parts of the world, because there are a variety of courses in Bachelor and Master programs such as Maritime Business and International Logistics study, Marine Engineering and Hydrodynamics, Ocean Seafaring, Coastal Seafaring and a range of short courses. My experience is that students in the Certificate of Proficiency in Survival Craft (CPSC) and similar courses, do not have a habit of seeking an answer independently and do not scan research for knowledge. They go to the teacher directly to get the answer, even if an answer is available in books and the Internet. It has been observed especially international students in my CPSC class and other classes do not adopt critical thinking practices to search for answers by themselves. For example, in a chart work tutorial for cadets I observed, that of the questions students were asking, most of the answers were on the chart. They did not go through a search first to find the answer. Cossette (2013) states that students who use one method of understanding have less likelihood of developing critical thinking skills. An education system that allows students to just memorise information and not use their own thinking in understanding the subjects will not produce all-round students who can work effectively in the seafaring environment.

This research involved students who are seafarers with limited skills in independent analysis and evaluation (n = 24 students). This study explored the effects of adopting a student-focused pedagogy, to see if it would enhance student's ability to learn independently in solving problems and developing critical thinking in the students during a short course.

To evaluate the effectiveness of the changes, quantitative and qualitative methods were applied. Data were collected from participants in two similar short courses. There were ten students in the first short course in which a student-centric teaching method was applied. Fourteen students were in the second short course taught using the traditional teaching method. The first group of ten students were experienced in working on a ship. The second group of fourteen students were studying seafaring at the AMC and this was their first-time on-board a ship.

Background

Students enrolled in seafaring at AMC are from diverse backgrounds. Many methods of instruction are used to develop basic competencies and knowledge in seafaring units. While these do deliver on the competency-based knowledge required of a seafarer, there is a contemporary need to go beyond this to enable critical thinking above surface-level understandings of seafarer competencies surrounding hypothermia, hyperthermia, and lifeboat deployment.

The lecturers in the seafarer short courses currently use what I have termed the 'traditional' teaching method. Within this approach, students typically are subjected to didactic lectures followed by some practical sessions. The lecture is structured so that students are passive observers of the PowerPoint presentation. PowerPoint can be text-heavy with few images or it can be images and text together. The lecturer engages students through questions, showing available resources in the classroom such as real-life material or video relevant to the topic. Students engage with information through listening to the lecture, looking at the PowerPoint slides and taking part in discussion arising from questions asked by any student or from watching videos. During the lecture, there are scaffolded degrees of notetaking observed. Students rely on the lecture presentation as a primary form of instruction, with a limited orientation towards engaging in self-directed problem-solving (e.g. Internet searches, textbooks, or shared sense-making).

This paper identifies the importance of evaluating curriculum within the AMC short courses for the purposes of increasing quality, and eventually being able to assure quality (Carr et al., 2020).

Literature review

This literature review provides an overview of a series of pedagogical methods used within the context of the AMC seafarer short courses, within the overarching context of constructivism. According to Bada and Olusegun (2015), teachers applying constructivist learning pedagogy will encourage students to use large variety of sources which can include primary details, raw data and other interactive materials. The importance of constructivist learning in teaching is it allows students to construct knowledge through activities (Biggs & Tang, 2011). Such activities should be designed to help students achieve the desired learning outcomes. The purpose of instructional design for students should be enabling better processing of information which will be beneficial in their real-life (Halpern, 1998). Biggs and Tang (2011) emphasise structural aspects of design for quality teaching, and taking account of students' approaches to and resulting levels of learning (surface, strategic and deep). Surface learning uses learning activities with low-level cognitive engagement, such as memorising and identifying which produce low level learning outcomes. Strategic learning is intentionally aligned to summative assessment results. While for deep learning students use a full range of activities that involve higher-order cognition such as applying and reflecting, which results in achieving the high-level intended learning outcomes. To encourage deep learning, learning activities should be scheduled over several sessions rather than in a single session. Because learning happens by activating different modes of senses such as hearing, sight, smell, speech, touch and taste, effective learning will happen in students by activating these

different modes.

The review focuses on the following pedagogical approaches: lecture, self-directed learning, authentic learning and constructivist learning. Within the context of this literature review, application and comment is made regarding these within the current course context.

Lectures

Contemporary literature argues for the limited utility of didactic lectures for the twenty-first century student. The teacher should act as a facilitator and the learner should take more responsibility for their own learning by setting goals, identifying learning resources, reflection and evaluation (Collins, 2009). There is no active learning in traditional teaching. Wieman (2007) mentions that a traditional teaching format does not connect much with the students. Students are passive observers listening to the lecturer rather than involved in active learning.

It has been observed that in the current teaching method, the primary activity involved within the class time is selecting information from PowerPoint and making shorthand notes. Most of the students do not take steps to extend their knowledge beyond the presentation. In this method, there is not typically any group discussion, with limited independent searching about the topic information through books and the internet. After the lecture, some students take a copy of the PowerPoint slides. Students rely on the PowerPoint for the topic. This can lead to students interacting less with the content of their textbooks. Most of the students do not develop the habit of referring to their learning guide to read about the topics studied in class. Anderson, Mitchell and Osgood (2006) researched teaching introductory Biochemistry classes using traditional methods. They observed that students do not interact with the learning material. They rely on short term memorisation and are not well engaged with their course. According to Wilson (1996), there is a need to change the lecturing style, which typically presents students with a more passive learning environment. One example of this is through using problem-based learning, which has been demonstrated to be more effective than lectures alone (Tiwari et al., 2006).

Knight and Wood (2017) describe an experiment by comparing traditional teaching with a more interactive class. There was improved learning with the greater clarity of the concepts as compared with a traditional teaching method. In traditional teaching by the researcher, PowerPoint lectures are full of content that discourage student engagement. This passive approach can have a negative effect on facilitating student learning. Bligh (1998) suggested that the main issue in lecturing is that it does not create a deep understanding and truly critical thinking in the students which results in a negative attitude to learning. In the student-centric approached trialed in this research and in response to the literature, presentation PowerPoint in student-centred pedagogy are not full of contents. There is less duration of lecture and only important information is provided through the PowerPoint. Students are given more time in exploring the course contents through textbooks, internet and group discussion.

Self-directed learning

To foster critical thinking in students, the habit of independently solving an issue before going to peers and teachers is a necessary skill; particularly for seafarers who may be subject matter experts on board. Because students who undertake independent work, using a broad range of resources to find solutions demonstrate a greater ability to problem-solve and think critically. Kopzhassarova et al. (2016) describe critical thinking as one person individually solving a complicated problem in the refinement of their critical thinking skills. So, changing teaching methods to support problem-based and self-directed learning can create active learning and critical thinking skills.

In a student-centric teaching approach, there is less lecturing time and more opportunities for student engagement with the content of the topic. Rissanen (2018) reported in his research that engaging students in the class creates better thinking skills, greater motivation, more synthesizes and organising of ideas. Students get a chance to think into their content. This research focused on solving problems through the independent use of multiple resources. These resources are used to inform collective discussion in the class setting. This student-centred teaching method adopts a multi-sensory approach. Students learn through presentations with images, textbooks and authentic websites to answer research questions posed during class sessions, group discussion and finally through feedback by the lecturer. Self-directed learning creates critical thinking as the student faces challenges in solving the problem himself (Saltman, 2012).

Authentic learning

Authentic learning is used in the literature as a method of interpreting one pedagogical approach. Bean (2011) used the phrase 'engaging ideas' synonymously with authentic learning. Oblinger (2007) articulates that authentic learning helps in understanding the issues through different networks and engages learners through active learning rather than passively listening. In response to the literature, the student-centred teaching method facilitates students to use multiple resources such as textbooks, the internet and discussion, increasing their interest in authentic learning. According to Herrington (2006), authentic learning is a more student-centered, real-life focused, and productive learning environment.

In traditional teaching by the researcher, there is no authentic learning in the class. Students have the lecture presentation that includes only unimodal stimuli, e.g. visual (Vazquez & Chiang, 2014), and note-taking, recognising that many students do not take notes. In the student-centric pedagogy, the lecturer delivers the PowerPoint presentation which has plenty of images rather than relying on too much text. The lecturer provides basic information about the topic. After presentation, the lecturer comes up with a questionnaire about the topic. Then students do a planned

activity to find out information about the topic themselves. Students work independently searching for answers from the learning guide and writing down their answers. Students are better engaged with the course contents through a philosophy of teacher leadership to support student digital efficacy (Crawford & Butler-Henderson, 2020). Dayan (2013) provides further evidence of authentic learning and suggests that students should be provided with the opportunity for challenging exploration. This process will help students to dig deeper in the course content which will result in a high standard of authentic learning.

To create critical thinking in the students, it is important to design lessons by embedding authentic learning opportunities into the curricula. Learning activities that can foster the development of thinking skills in the students are critical. Bean (2011) says that student performance improves through writing and critical thinking activities. Students are well-prepared for discussion because the educator uses balanced processing for students through considering all the relevant information and make a decision on that information (Crawford et al., 2020). Writing tasks need to be linked with critical thinking in the students.

Constructivist learning

Constructivist learning creates habits of searching for answers and is drawn on within the context of improving the learning within the seafarer cohort. Bada and Olusegun (2015) addresses the benefits of constructivist learning that it is "mental construction" in which students learn new knowledge through their mental process by keeping in mind previous learning (p.66). Within seafarer traditional education, students see most of the information on PowerPoint slides during presentations. Students do not get a chance to analyze, explore, and search. Liu and Chen (2010, p. 65) define constructivism as a "theory about how we learn and the thinking process, rather than about how a student can memorize and recite a quantity of information". Students should be encouraged to analyse, explore, and search for the problem. In response to the literature, a student-centered approach to teaching, foregrounds student learning by facilitating that learning by students searching the internet and the textbooks for answers. Students are a more active learner and responsible for their learning. Neo (2003) notes that constructivist learning is more student-centered. When students are encouraged to take responsibility for their learning, it results in building their knowledge. To promote students' thinking and understanding process, constructivist learning plays an important role. This is because the focus is on the students actively working through a problem, not on the teacher as in traditional teaching. So, it tries to persuade the students to involve actively in learning process By adopting constructivist learning methods, education will work better for students in thinking and understanding as compared to on rote memorising (Bada and Olusegun, 2015). In the literature, constructivist learning is also referred to similarly as collaborative learning. In traditional teaching by the researcher, the focus is on didactic learning rather than collaboration through discussion. Only during the lecture, the lecturer engages students in asking questions. But there is often limited sharing of thoughts and group conversation. Webb (2010) confirms the importance of group conversation for students to develop their thinking skills. Students clarify their work, reflect, and can often self-identify their faults, which helps them in organising their knowledge and understanding. In the student-centric teaching approach, students engaged in discussion after finding the answers through their research to share and consolidate their thinking.

Knight and Wood (2017) demonstrated the importance of collaborative learning demonstrating shifts in collaborative learning markedly increased learning outcomes for students. Group discussion plays an important part for students involved in solving issues on a topic, and in enabling students to feel they belong in the class (Hawkins et al., 2019). Neo (2003) emphasises collaborative learning that encourages students to present their point and listen to other views. It encourages student social engagement and facilitates meaningful learning. Discussion also plays an important role in critical thinking and in the interaction of students more deeply with material.

It is expected that the student-centred teaching method will encourage students to take responsibility, improve decision-making, and have better engagement with the lecturer and fellow students. Students will be encouraged to investigate, finding meaningful information considering multiple points of views and reflect on their work. The effectiveness of a student-centred teaching method can be measured by students' grades and feedback at the end of a course. This approach also has the propensity to promote a higher level of thinking, following Biggs and Tang's (2011) argument that learning strategies activities should involve analysing and reflecting to promote higher level thinking and deep learning.

Method

This section reports on a mixed-methods approach similar to the mixed-methods for research on an art-gallery-based intervention for people with dementia and their carers (Camic, Tischler & Pearman 2014). It is an investigation of the efficacy of the student-centred teaching method against the traditional (teacher-centred) approach, as an opportunity to assess quality improvement (Carr et al., 2020). The research was approved by the Tasmanian Social Sciences Human Research Ethics Committee (reference number H0018188).

Student-centric versus traditional teaching methods

To test different approaches to supporting learning, a student-centred teaching pedagogy was adopted. The following section describes the two types of teaching methods (see Table 1). The two core lecture components of the short course are described for contextual awareness of the reader.

Table 1: Comparing student-centric teaching approach and traditional teaching method

Learning Resources	Student-centric Teaching Method	Traditional Teaching Method
PowerPoint	Include visual stimuli	Few visuals
	Multimodal	Unimodal
Textbook	Provided to search answer	Not using textbook
Website	Student decision on which resources to use	Not using internet
Group Collaboration	Opportunity for students to collaborate as a learning activity	No group work, only engaging students through questions in class by lecturer
Feedback	Formative feedback provided on the topic's questions in the end	No provision of feedback except answering any questions from students in the class

Applying a student-centric and traditional teaching approach, the research was conducted on students enrolled in a five-day short course, Certificate of Proficiency in Survival Craft (CPSC). The students were informed about the research at the beginning of the course in accordance with the ethics requirements. The student-centric teaching approach was only used in two of the lectures in the first five day course, while the next CPSC student group was taught using the prior (traditional) teaching method.

Lecture on lifeboat

On the first day before taking a pre-test, the students were shown a video of the launching and recovery of the lifeboat. Then the students visited the stowed lifeboat to get an understanding of the lifeboat's features. No explanation of the launching procedure was provided. A pre-test was undertaken after the students had read the consent form and information sheet. After the pre-test, students took part in the classroom activity. During this activity time, the lifeboat's picture in the stowed position was incorporated into the lectures. Questionnaires were then provided, and the students were directed to find the answers from the coursebook first, then using the internet. Students were allocated to groups for discussion of the questionnaires. After the discussion, the lecturer went through the questionnaires. After this teaching activity, the students were again asked to sign the consent form. All students then completed the post-test. This is compared to the second type of learning with traditional teaching approach of next CPSC group. The procedure before taking the pre-test which includes the video of lifeboat launching, recovery and understanding of lifeboat features was similar. Then students had a practical demonstration of lifeboat launch and recovery. The lecturer tried to keep to similar teaching timings as used for the student-centred teaching method.

Lecture on hypothermia and hyperthermia

On the second day of the CPSC course, there was a lecture and video on hypothermia and a lecture only on hyperthermia. Students completed a pre-test on hypothermia and hyperthermia questionnaires for 40 minutes. The questions related to hypothermia and hyperthermia in this pre-test.

Next the lecturer delivered the hypothermia presentation, using the student-centred teaching method. The PowerPoint included mostly images rather than relying on too much text. The lecturer provided basic information about the topic and then the students undertook a planned activity to find the information from their textbook and the internet about the topic themselves, completing questionnaires on hypothermia. Also, websites were provided to search for the answers. After this, the students had a group discussion and finally, the lecturer provided feedback on the questionnaires. Then students were shown a video of hypothermia. Another lecture on hyperthermia and an activity was conducted in a similar way to that for the hypothermia class. Then a post-test was conducted lasting 40 minutes.

The next CPSC group was taught using a traditional teaching method. The lecturer delivered curriculum content on hypothermia and hyperthermia using a traditional PowerPoint presentation. This approach consisted of a presentation without any written activity, group discussion or feedback session as for the student-centred teaching method. During the presentation, there was more text and fewer pictures on the PowerPoint slides. Also, there was a 20 minutes video on hypothermia. The lecturer kept the teaching delivery timing similar to the student-centred teaching method. The differences between the two methods are represented in Table 2.

Table 2. Curriculum and teaching method

CPSC Curriculum	Student-centred method	Traditional Method
Lifeboat	CPSC group 1 - range of activities	CPSC group 2-Practical demonstration only as traditional way
Hypothermia	CPSC group 1 - range of activities	CPSC group 2-lecture and video
Hyperthermia	CPSC group 1 - range of activities	CPSC group 2- lecture only

Quantitative method

The outcomes of the traditional teaching method are compared with the student-centred teaching method. This research spanned two short courses (Total n = 24 students). The first short course (n = 10 students) involved implementing the student-centric teaching approach. In this group, all students had some experience on board ship. Some were completing a deck officer course, and the remaining were completing an engineer officer course. As a working experience on the ship, some had almost one-year experience and some had more than one year. All participants were male, and their age ranged from 22 to 35 ($\bar{x}$ = 28.00, SD = 3.83) (see Table 3).

The second short course (n = 14 students) utilised the traditional teaching method. The second group were experiencing their first time at sea and had only basic knowledge of the shipping industry. Students were doing a Training Integrated Rating course (TIR). 21 percent were female and 79 percent male; their ages ranged from 21 to 51 ($\bar{x}$ = 36.64, SD = 8.66), see Table 4. To ensure ethical compliance, students who received the traditional instruction method, also received the new method after data collection. To collect data, quantitative and qualitative methods were

used (Bryman & Burgess, 2002; Crawford & Kelder, 2019). Pre- and post-tests were taken for both groups.

Qualitative method

Interviews

On the last three days of the first CPSC course, four semi-structured interviews were conducted. The consent form and information sheets were provided before conducting the interviews. The lecturer used a semi-structured interview protocol to guide questions during the interviews. These questions were prepared to keep in mind research aim and teaching practices (student-centred and traditional teaching methods) used in the class. Each interview lasted around twenty-five minutes. The interviews were transcribed verbatim and pseudonyms used for the interviewees (Miles et al., 2014).

Administration:

Before undertaking the interviews, the information sheet and consent form were provided to each interviewee. The following is list of prompting questions:

1. How did you find student-centred teaching method?
2. Did you find it useful in finding the answer by yourself through a book, internet and discussion?
3. Did you find looking answer through the book, internet and discussion create critical thinking in students? Can you explain a bit more, how?
4. Will the students learn more by this teaching method?
5. Do you think by this student-centred teaching method, students will remember their subject for a long time?
6. If in most lectures, lecturers use student-centred teaching method, will it create critical thinking in students and improve their learning.
7. Do you think traditional teaching, or this new method is better in creating critical thinking? Why?
8. Does traditional teaching create critical thinking in students? How?

Inductive thematic analysis

According to Braun and Clarke (2006), transcription of all interviews is important to conduct thematic analysis of the semi-structured interviews. Thorough understanding was developed during data transcription through listening to the audio recording of all interviews. To develop the themes, five phases of inductive thematic analysis were done, in line with the technique outlined by Braun and Clarke (2006).

Phase 1: *Familiarise yourself with the data*

Before starting the coding, immersive reading for all transcriptions was done to ensure familiarisation with the data.

Phase 2: *Generating codes*

Coding was done manually by identifying interesting aspects of data which can build themes later. Highlighter pens of different colors were used for visual identification of similar quotes. For example, three different quotes were identified from a question of one interviewee (learning by yourself, book and internet and discussion). These aligned to the research aim (build critical thinking in the students through providing different resources).

Phase 3: *Searching for themes*

A long list of references/quotes was highlighted on each interview transcript. Quotes whose concepts were embedded, were identified and named into subthemes. A total of nine subthemes were considered to identify a theme. These subthemes are discussed in more detail to tell the story. Pseudonyms are used for the interviewees rather than actual names.

Phase 4: *Reviewing themes*

After reviewing all sub-themes, three unique broad themes are found which are authentic learning, constructivist learning and self-directed learning.

Phase 5: *Defining and naming themes and sub-themes*

There were 25 references extracted from the transcripts, that were coded into nine subthemes and three themes.

Findings and interpretation

Quantitative Findings

Pre- and post-tests were undertaken by both student groups. T-tests were used to identify significant differences among variables for the sample groups. The research question and its corresponding hypothesis were addressed using statistical analysis. The mean score was used as the numeric representation of participants. Preliminary assumption tests indicated the scores for students in post-tests of student-centred and traditional teaching pedagogy used in the hypothermia and hyperthermia classes ($\bar{x}$ = 45.85, SD = 10.55) and ($\bar{x}$ = 49.71, SD = 11.21) respectively. Table 3 shows the result of the t-test and paired sample tests for the student-centred teaching method. Table 4 shows the result of t-test and paired sample test for the traditional teaching method. Table 5 shows the overall summary of pre-test and post-test and paired sample t-test of both groups together as one whole group (n=24). Finally, comparison of

pair sample t-tests of both teaching methods is presented in Table 6.

Table 3. Student-centred teaching method: x̄ (SD) and paired samples t-test

Group	Variable	Pre-test		Post-test		Paired samples *t*-test		
		n	x̄ (SD)	*n*	x̄ (SD)	*t*	*df*	*p*
Student-centred teaching	**Age**	10	28(3.83)	10	28(3.83)	22.23	9	0.00
	Gender	10	1(0.00)	10	1(0.00)	22.23	9	0.00
	Hypothermia & Hyperthermia	10	34.40 (11.10)	10	45.85 (10.55)	-4.84	9	0.001
	Lifeboat	10	11.50 (2.51)	10	13.85 (1.75)	-4.86	9	0.001

Table 4. Traditional teaching method: x̄ (SD) and paired samples t-test

Group	Variable	Pre-test		Post-test		Paired samples *t*-test		
		n	x̄ (SD)	*n*	x̄ (SD)	*t*	*df*	*p*
Traditional teaching	**Age**	14	36.64(8.66)	14	36.64 (8.66)	15.52	13	0.00
	Gender	14	0.79(0.42)	14	0.79 (0.42)	15.52	13	0.00
	Hypothermia& Hyperthermia	14	28.82 (9.98)	14	49.71 (11.21)	-7.02	13	0.00
	Lifeboat	14	10.14 (3.12)	14	11.86 (1.29)	-2.10	13	0.06

Table 5: Overall summary of both teaching methods: x̄ (SD) and paired sample t-tests

Both Groups	Variable	Pre-test		Post-test		Paired samples *t*-test		
		n	x̄ (SD)	*n*	x̄ (SD)	*t*	*df*	*p*
Student-centred & Traditional teaching	**Age**	24	33.04 (8.19)	24	33.04 (8.19)	19.13	23	0.00
	Gender	24	0.88 (0.34)	24	0.88(0.34)	19.13	23	0.00
	Hypothermia& Hyperthermia	24	31.15(10.60)	24	48.10 (10.88)	-7.76	23	0.00
	Lifeboat	24	10.71(2.90)	24	12.69(1.77)	-3.87	23	0.001

Table 5 shows the collective result of pre- and post-tests. Students performed well in hypothermia and hyperthermia post-tests as compared to lifeboat post-tests which is also significant from "p" and "t" values.

Table 6. Comparing student-centred and traditional teaching: x̄ (SD) and paired sample t-tests

Group	Learning activity	Pre-test		Post-test		Paired samples *t*-test			
		n	x̄ (SD)	*n*	x̄ (SD)	*t*	*df*	*p*	x̄ dif.
Student-centred teaching	Hypothermia & Hyperthermia	10	34.40 (11.10)	10	45.85 (10.55)	-4.84	9	*P*<0.01	*11.45*
Traditional teaching	Hypothermia & Hyperthermia	14	28.82 (9.98)	14	49.71 (11.21)	-7.02	13	*P*<0.001	*20.89*
Student-centred teaching	Lifeboat	10	11.50 (2.51)	10	13.85 (1.75)	-4.86	9	*P*<0.01	*2.35*
Traditional teaching	Lifeboat	14	10.14 (3.12)	14	11.86 (1.29)	-2.10	13	*P*=0.06	*1.72*

Table 6 shows the comparisons between the student-centred and traditional teaching methods in hypothermia and hyperthermia. The t-test was statistically significant for hypothermia and hyperthermia (t = -4.84, p <0.01; t = -7.02, p <0.001). There is a narrow difference in p value. But this value shows that performance of traditional teaching method is better than student-centred teaching method in hypothermia and hyperthermia post-test. Also, "t" is greater in traditional teaching pedagogy. So, these statistical results support the traditional teaching method for the hypothermia and hyperthermia lectures.

By comparing value of "p" for the lifeboat classes (t = -4.86, p < 0.01; t = -2.104, p =0.06), the performance of a student-centred teaching method was found to be better than the traditional teaching method. "T" value is also greater. In the means sample for the lifeboat post-test, the student-centred teaching method shows a slightly higher mean (x̄ = 13.85, SD = 1.75) than the traditional teaching method (x̄= 11.86, SD= 1.29), supporting the benefit of a student-centered teaching method in lifeboat lectures.

Cohen's d was used to find effect size as compared to others, indicating the standard difference between two means (Social Science Statistics, n.d.). Mean values, standard deviations and sample numbers are used to find effect sizes in both teaching pedagogies for hypothermia, hyperthermia and lifeboat curricula. The student-centred teaching method had a large effect size (d = 1.06) and the traditional teaching method also had a large effect size (d = 1.97) in hypothermia and hyperthermia classes. However, in the lifeboat curriculum, the student-centred teaching method had a large effect size (d = 1.09) and the traditional teaching method had a medium effect size (d = 0.72).

Summary

The traditional teaching method demonstrated a larger effect size (1.97) for the hypothermia and hyperthermia curriculum compared to the student-centred teaching method (1.06). The students who studied under the traditional teaching method were going to sea for the first time, whereas students using the student-centred teaching method had prior ship-based working experience. Also, the t-test shows that the students exposed to the traditional teaching method did well in the exams on hypothermia and hyperthermia. But in the lifeboat t- tests, the student-centred teaching method did show good results and demonstrated a large size effect (1.09) compared to the students exposed to the traditional teaching method (0.72). Means in the pre-tests of the lifeboat, hypothermia and hyperthermia result shows that the students under the student-centred teaching method did well (Table 6). This may be because these students knew more about their profession compared to the students exposed to the traditional teaching method, who were going to sea for the first time. Finally, the statistical results for the hypothermia and hyperthermia lectures show support for traditional teaching, while the lifeboat lecture results support the student-centred teaching method.

Qualitative Findings

Three unique broad themes were identified from the thematic analysis: authentic learning, constructivist learning and self-directed learning. Nine subthemes were identified: Deep learning, Multiple perspectives, Multimodal learning, Real-world application, Knowledge sharing behavior, Intrinsic motivation, Student awareness, Flexibility and Scaffolded learning activities (see Table 7).

Table 7. Themes, sub-themes and their definitions

Theme	Subtheme	Definition
Authentic learning	Deep learning	According to Biggs and Tang (2011), deep learning is a feeling which comes from engaging the task in a proper and meaningful way. It involves mental processes and finding the reason to find solution.
	Multiple perspectives	It is acquiring the ability to see problem in miscellaneous ways. In result, it will boost ability to generate multiple possible solutions (Wang, Rose & Chang, 2010)
	Multimodal learning	It gives to students more options in understanding when information is presented in different forms like visual. aural and written. It improves performance of students. (Chen & Fu, 2003; Moreno & Mayer, 2007; Zywno, 2003).
Constructivist learning	Real-world application	Conceiving knowledge of events, objects and view of external world, interoperate in mind and comprise knowledge according to real world experience and beliefs (Jonassen, 1991).
	Knowledge sharing behavior	Knowledge sharing behaviors by individuals in a group of people are evident when, in group discussion, knowledge is processed and refined till it becomes common knowledge in the group (Yang 2004).
Self-directed Learning	Intrinsic motivation	Motivation which is self-determined and creates sound interest by engaging in the activity (Ryan & Deci 2000 a, b).
	Student awareness	It is the understanding of connection between the subject studying and its practical relation in real life (Johnson, 2000).
	Flexibility	Flexibility can be built into the following learning dimensions: time, place, pace, learning style, content, assessment, or learning path (Chen, 2003).
	Scaffolded learning activities	Scaffolding is achieved through structured learning activities that support and guide learning while simultaneously configuring and disciplining learning (Orlikowski, 2006).

Authentic Learning

Deep learning

Students in the sample identified that the student-centered teaching method engages them through different activities such as answering quizzes on the topic and finding their answers through reading the learning guide and searching the Internet themselves. They referred to taking "the information in your own views" (Pat) and that this will "make [information] more longer lasting [in my mind]" (Sam). In traditional teaching, if only providing a PowerPoint presentation, the students write some notes using the same information as already provided in PowerPoint. Students thought that the student-centred teaching method would mean retaining "knowledge will be more" (Gerald). Because students use different modes of learning which include listening to lectures, looking at PowerPoint, using the learning guide and Internet, the information is "deeply" embedded in "our mind" (Doug).

Multiple perspectives

Students in the interview sample identified that access to multiple opportunities to learn meant they were better able to engage with the content and success. Access to multiple sources motivate the students to engage with the content and want to learn "even if the lecturer is not in the class … [because] … students can get [the] answer early from the books and [the] internet" (Sam). Students perceived that more personal effort is required when learning from student-centred teaching, because using "source of information yourself requires you to put more mental efforts" (Gerald).

Multimodal learning

Students in the sample noted there were more pictures in the PowerPoint presentation prepared for the student-centred teaching approach. However, they noted that some pictures were without explanatory text, and their graphics were not clear. For clear understanding and interpretation, students commented that "graphic approach should be clear like an actual person of a picture" (Doug) and that, for pictures, "critical information should be there" (Sam) to enable better understanding.

Constructivist learning

Real-world application

Students in the sample identified that critical thinking is more useful when students enter the practical life of their profession. Critical thinking skills mean students can "figure out on your own and why are they doing [a job] this way" (Pat). Constructivist learning facilitates students' learning to "think out of box and can give our own opinions? How is happening? What is the reason and what is theory behind [it]?" (Doug). Learning happens when students try to find out answers for themselves from multiple resources. "It leads to the new question [and] helps [students] to think new thinking" (Sam), and students "will remember [their] subject for a long time" (Gerald).

Knowledge sharing behaviors

Students in the sample identified that, in traditional teaching, there was no discussion and students hesitated to ask questions. While in a student-centred pedagogy, "it was good to discuss answers [and] come to alternative views that you may not [have] thought off" (Pat). Because "through discussion, you compare notes in order to double check and confirm what you have written and what you have missed" (Gerald). In traditional teaching, "some students are shy and do not like to ask questions" (Sam).

Self-directed Learning

Intrinsic motivation

Students in the sample found the activities in the student-centred teaching pedagogy "interesting and quite useful" (Sam). By searching for the answer to a question themselves, "critical thinking would improve, [also] retention [of] information [and] interest would improve" (Gerald). Because students are required to use multiple resources to find answers and are not limited to one source, "It is not like, you are framed in a box, it is good approach of learning" (Doug).

Student awareness

Students in the sample identified that in traditional teaching lectures, they did not have "full understanding of the reason behind the topic, [and] not actually sure why the lecturer do it that way" (Pat). Just listening to the lecture and looking

at the PowerPoint presentation means students "might just read it [PowerPoint] and memorise it" (Doug). So, students were aware they are less likely to remember the topic delivered by traditional teaching and "ultimately after one day, two days, three days or one week, you will forget it" (Sam).

Flexibility

Students in the sample identified that there is no activity involved in the traditional teaching as compared to student-centred teaching. Student-centred teaching requires "more time for [working on the] answer of questions given in classroom activity. Because people format their own answer" (Gerald). However, it was felt students should be given "a bit more time" (Doug) to complete the activities in student centric teaching.

Scaffolding learning activities

Students in the sample identified that building knowledge on the topic helps students to complete activity of finding answers through using multiple resources. Especially if students are learning a new subject and have "got some basic knowledge [they] can build critical thinking on it" (Pat). Initial knowledge is important for any subject "before starting research for the answer" (Gerald).

Summary

Figure 1 represents the three themes and nine subthemes.

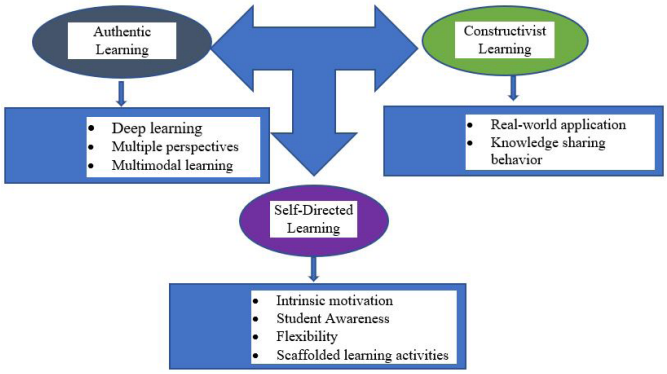

Figure 1: Three themes and nine subthemes

These three themes were developed using inductive thematic analysis from the transcription and analysis of all interviews. These themes relate to the research aim which supports a student-centred teaching method.

Discussion

Three curricula were presented to students: hypothermia, hyperthermia and lifeboat. They were presented in the student-centric approach in group 1 and traditional mode of teaching in group 2, all with student outcomes measured via pre-and post-test survey. The qualitative analysis supported the student-centric teaching approach, in line with the research aims. The quantitative data did not demonstrate a significant difference in the support of the student-centred teaching method in the hypothermia and hyperthermia lecture, but it did suggest a trend to improved learning in the lifeboat lecture.

The qualitative research has resulted in three themes that can be used as a lens to inform curriculum design that develops critical thinking and self-directed learning in students. When students try to find out answers for themselves from multiple resources then "it leads to the new question [and] helps [students] to think new thinking" (Sam). Also, critical thinking and self-directed learning happen when students can "figure out on your own and why are they doing [a job] this way" (Pat). Main themes which were identified are "authentic learning", "constructivist learning" and "self-directed learning" These outcomes support the research from different authors in teaching methods that promote critical thinking. According to Prideaux et al. (2013) and Wolf and Archer (2013), the purpose of reducing face-to-face time is that students can do more interactive learning. But lecturer's emphasis on traditional teaching only means no discussion in the class, no-problem solving and no thinking skills. It will affect the quality of learning and teaching.

The quantitative analysis indicated that, for hypothermia and hyperthermia lectures, the student-centric teaching method was not as successful for learning, but it was for the lifeboat curriculum. This may be because students in group 2 had basic knowledge and had not yet been at sea. While they could understand information about hypothermia and hyperthermia delivered by lecture, the lifeboat lecture when done in the traditional way did not produce as good outcomes as the student-centred approach. Student-centred teaching enabled higher growth in the lifeboat exercise but didn't have as large an impact for the hypothermia and hyperthermia lecture. The latter is possibly due to the different cohorts of students, with those exposed to the student-centred method having a higher baseline performance and potential apathy to the learning. The latter started with a far lower baseline and had a greater interest in learning. Retesting this data is critical to assess the value of the student-centred method in equivalent contexts. Additionally, the effect of student-centric learning approaches may be limited because students are doing short courses. Active learning takes more time, this may not work when students have a short time to learn specific information. Other reasons may be that inadequate feedback may have been given by the lecturer after group discussion in the activity. Is it important how the feedback is given? The lecturer should show and discuss answers for the class activity questions, referring to the learning guide and projector. Another reason may be that only one to two websites were provided to search for the answers. More websites would improve student ability to critically reflect on data contained therein and to synthesise this. If we implement these three themes from a qualitative analysis in our teaching, students will learn critical thinking and will learn to research by themselves. This result adds value to our current teaching system.

Conclusions

This research aimed to explore teaching pedagogy which can build critical thinking in students. So, seafarers can find answers themselves by going through different resources like using technology, through library books and then by discussion. In qualitative data analysis, three themes were developed which supported the student-centred teaching method. These themes are authentic learning, constructivist learning and self-directed learning. While the quantitative data demonstrated a difference in one of the two lectures. So, in one lecture quantitative analysis did not support the student-centric teaching approach.

While the research reported demonstrates promise, there were some limitations to this exploratory study. The first is a time issue in applying the student-centred teaching method, especially when covering all three themes. Lecturers need to design the courses for fostering critical thinking in their students, and in a short course, there are limited opportunities to alter the course structure in a controlled way to conduct pre- and post-tests.

Another limitation may be that the first group perhaps did not take the testing seriously. The second group may have taken it more seriously as they were going into the shipping industry for the first time. Further research should ensure that students across both sample groups have the equivalence of experience. This was a small study, with a small sample size, and the quantitative method did not support the aim in one lecture out of two. Further research is needed to understand if the student-centred teaching method can be successfully incorporated in AMC short courses, diploma and degree programs.

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Quality Pursuit: an academic informed, evidence-based approach to Assurance of Learning

Rose E. Nash[A] A *Lecturer in Public Health, University of Tasmania, Australia*

Jo-Anne Kelder[B] B *Senior Lecturer, Curriculum Innovation and Development, University of Tasmania, Australia*

Anne-Marie M. Williams[C] C *Associate Professor, Tasmanian School of Medicine, University of Tasmania, Australia*

Leonie Ellis[D] D *Acting Director, Learning and Teaching, University of Tasmania, Australia*

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Abstract

Higher education is governed by national quality standards with increasing expectations that teaching staff engage in quality assurance processes, including Assurance of Learning (AoL). AoL recommends a teaching team approach to measure student learning outcomes against specific course goals. Appropriate skills and allocated time are essential to support staff to ensure the curriculum is designed to comprehensively address student learning and develop knowledge, skills and desired graduate capabilities.

The 360 Quality Pursuit (360QP) approach to AoL is underpinned by a social constructivist approach to knowledge development, designed by a University of Tasmania Community of Practice that evolved into an inter-institutional action research team. 360QP is a six-segment, semi-formal quality enhancement program that can be applied to any educational activity or level of organisation (e.g. unit, course or college). Using a regulatory compliance lens for AoL can adversely constrain the focus of professional development (PD) and limit staff engagement. This paper combines the findings from our scoping review with data collected from five national workshops. Workshop participants were invited to explore the 360QP segments, share case studies and offer their top PD wish list items. This culminated in the identification of 15 conditions that academics believe are required to support AoL.

1. Introduction

The higher education sector is under scrutiny from government, industry, and students to ensure a quality product (Billot, 2010; Botham, 2018a, 2018b; Goldingay et al., 2012; Shaw, 2018). Assurance of Learning (AoL) provides one of many useful methods for determining if students are receiving a quality, fit for purpose product. AoL is described as the process by which student learning outcomes are measured against specific course goals (Hall & Kro, 2006).

Increasingly in higher education, the term quality enhancement is used in preference to the regulatory-oriented quality assurance. The definition of quality enhancement, taken from Macquarie University's Quality Enhancement Framework Policy, states that quality enhancement is "a systematic, future-directed, continuous cycle of goal setting, planning, managing and reviewing, within an appropriate governance framework... aimed at transformation" (Macquarie University, 2016).

Most academics would like to spend more time focused on their teaching, supporting AoL and quality enhancement strategies, but are often constrained by their workload, time pressures, skills, research commitments, and the weighting of their research performance indicators (Ball & Crawford, 2020; Billot, 2010; Martin-Sardesai et al., 2017; Nijhuis & Collis, 2005).

Recognising that this challenge was impacting on their values and practice, a group of University of Tasmania (UTAS) academics formed a Community of Practice (CoP) to investigate if their personal experiences were common amongst other academics, internationally and nationally. The CoP completed a scoping review to examine evidence of AoL strategies in the Scholarship of Teaching and Learning literature. These findings from the literature, along with the CoP members' experience, particularly in the area of requirements for professional accreditation, led to the design of a six-segment framework for ensuring AoL: 360 Quality Pursuit (360QP). 360QP is an adaptation of the 2012 Hunters and Gatherers project (Lawson et al., 2013), including: purpose, intended learning outcomes, curriculum mapping, collecting evidence, benchmarking and review, and closing the loop. This framework was designed to enable academics to select segments most relevant to their current quality enhancement needs and context so they might explore and apply the segments to identify an evidence-based solution capable of ensuring AoL with their students.

Informed by the scoping review findings, during 2016/2017 members of the CoP formed a research team and used 360QP to design and deliver five Action Learning Workshops across Australia. The purpose of the workshops was two-fold: to provide professional development for academics, while simultaneously gathering data and insight into Australian academics' experiences of engaging with AoL in their daily practice. Data shared in workshops included case studies, contextualised barriers and solutions to AoL and an academic derived 'top 10 Professional Development wishlist'. These findings usefully informed our design of a set of practical solutions to support AoL in the Higher Education sector, confirmed the value of supportive professional development opportunities and reinforced the usefulness of the 360QP framework as an academically-informed and evidence-based professional development tool to support AoL.

2. Literature review & theoretical framework

At the time the 360QP was under development, at least two Australian Higher Education institutions had developed broad learning and teaching quality frameworks: Deakin University's Learning Futures (Deakin University, 2013) and the University of Wollongong's Curriculum Transformation (University of Wollongong, 2014). Other institutions and Australian Government-funded projects (e.g., Krause et al., 2013; Lawson et al., 2013) made significant contributions to quality enhancement, but only to specific aspects such as benchmarking (Booth, 2013) and online quality management (Holt et al., 2013). The sector was rated as having an "undeveloped approach to Assurance of Learning" (Lawson et al., 2013, p. 58). A more holistic approach to quality enhancement in higher education was needed in Australia.

Meanwhile, internationally, quality enhancement systems were judged similarly and described as fragmented. The Ontario University's Council of Quality Assurance had adopted a formal accreditation approach (Ontario Universities Council on Quality Assurance, 2014), but the level of accreditation was low. In the USA, the American Association of Colleges and Universities (AAC&U) had programs like LEAP (Association of American Colleges & Universities, 2014), but provided resources to support quality enhancement, but the actual process of quality enhancement was left to individual institutions or institutional partnerships (e.g., California State University System). In Europe, the Tuning Project (University of Deusto and University of Groningen, 2020) and AHELO (European Association of Institutions in Higher Education., 2016) emerged in response to the Bologna process. Both aimed to address the European community's desire to harmonise courses to allow greater mobility within and between degree programs across Europe.

Systems based on a cyclical 'reflect, review and renew' process were well-established in the commercial world (e.g. SAI Global). In 2013, UTAS had recognised the importance of quality enhancement cycles and had incorporated a preliminary step of Objective to the Approach > Deployment > Results > Improvement to form the (O)ADRI quality framework (University of Tasmania, 2013).

The (O)ADRI framework provided the foundation, with the work of Lawson (2014) and the Association to Advance Collegiate Schools of Business White Paper 3 (AACSB International., 2013). Each were adapted and extended to form the 360QP quality enhancement learning and teaching framework. The six segments of 360QP (purpose, intended learning outcomes, curriculum mapping, collecting evidence, benchmarking and review, and closing the loop) were purposefully chosen to intuitively guide the process of quality enhancement for learning and teaching, offering a comprehensive approach to AoL. Recognised for its contribution, the 360QP framework was added to the website of Lawson's Assuring Learning national project

(Lawson, 2014).

360QP segments

360QP was designed to function within a complex and dynamic environment that has many stakeholders and sought to be consistent with an institution's policies and procedures.

Fullan and Scott (2009) recommended normalising quality practices in course design and review. To support the transition to being part of the routine business of the university, 360QP was designed so that it could be incorporated into an institution's course management system. UTAS uses the Project Management Methodology (PMM), which is based on the UK PRINCE2 system. An aspect of PMM is a four-step stakeholder management process comprising stakeholder identification, analysis of each stakeholder, execution of the plan, and monitoring the effectiveness of implementation (University of Tasmania, 2020). The CoP purposefully involved the central organisational units responsible for enhancing learning and teaching: the central learning and teaching unit, student data and reporting unit, and Information Technology Services. It should be highlighted, the CoP was organically formed, all members shared similar values and met to advocate for quality enhancement and for stewardship (McRoy & Gibbs, 2009). The six segments of the 360QP are now described:

Purpose. This is an explicit statement of the principal purpose of the quality enhancement activity. For example, improve learning and teaching, construct course learning outcomes, meet professional accreditation or Tertiary Education Quality Standards Agency (TEQSA) requirements.

Intended Learning Outcome. 360QP uses Intended Learning Outcomes to acknowledge that actual learning outcomes may differ from what was intended. Inclusion was motivated by The Learning Futures Programme (Deakin University, 2013) which provided their academics with templates and a process of alignment of course and unit learning outcomes with university policies, the Australian Qualification Framework, and professional registration requirements.

Curriculum Design and Mapping. 360QP recognised the importance of dedicating time to curriculum design and mapping. Curriculum mapping supports academics to understand the students' experience of the course and provides them with a helicopter view of their whole course (program). Lawson et al. (2013) nominated four key features of mapping tools as offering an inclusive and participatory process, providing a program-wide approach, allowing mapping by task, and to assist with raising student awareness of curriculum design/elements (p. 51). Of the three mapping tools favoured having these four features, the C2010 mapping tool is described elsewhere as being based on principles of an aligned curriculum with clear learning outcomes without gaps or needless repetition, carefully chosen learning experiences and directly linked assessment (Oliver et al., 2007). Lawson's Curriculum Design Workbench supersedes C2010, has been used by members of the CoP and has been designed to ensure constructive alignment of courses is upheld.

Collecting Evidence. The principal focus of 360QP is learning and teaching; consequently, evidence of learning must be systematically gathered, with an objective assessment of student learning against intended learning outcomes, whether that be mastery of content or retention of data or application of knowledge to an unfamiliar context. Much of collecting robust evidence is essentially good assessment practice, and the Learning Futures Programme (Deakin University, 2013) has proposed a Course Evidence Portfolio using a multitude of evidence gathering approaches that addresses many of these issues. Evidence-based teaching is widely promoted in the literature amid calls that academics "apply the same scholarly standards to their teaching as they would to research in their disciplines" (Quinnell et al., 2010, p. 21). Student feedback, such as through the University of Tasmania's student survey (eVALUate) system provides evidence of student sentiments, as does the Australian Graduate Survey. Academics may wish to collect other evidence or use e-portfolio to provide evidence against specific course learning outcomes (Chen, 2015; Chen et al., 2016).

Benchmarking / Review. Academics at UTAS have actively researched benchmarking (Booth, 2013) and in collaboration with other institutions, developed an electronic Benchmarking tool. At the unit-level, Krause et al. (2013), used a three-part blind peer review process that provides feedback on a unit, grading guidelines, and assessment tasks, that are extended to inter-institutional moderation. The process considers all systematically gathered evidence, including student feedback, learning analytics against intended learning outcomes, benchmarking, data from formal surveys, and feedback from employer and professional regulators and other stakeholders.

Closing the Loop is the documented process by which the actions arising from review processes are used for tangible improvement to units and courses. This is a broader definition of some higher education providers whose objective is to principally respond to student feedback. Lawson et al., (2013) identifies good practice principles as including stakeholders, fostering staff engagement, documenting the process, and keeping change manageable. The importance of authentic relationships amongst teaching staff who share a goal of delivering AoL in their courses should not be underestimated.

3. Methodology

This research is founded on a social constructivist approach to knowledge development (Adams, 2006; Prawat, 1996), designed by a UTAS Community of Practice that later evolved into an inter-institutional action research team.

Constructivism acknowledges that "reality" is socially constructed (Creswell, 2013; Liamputtong, 2013). In higher education, there are many factors and actors that influence this reality. It has been widely accepted that there are four social constructivist approaches that can be employed to support knowledge development or idea sharing amongst

actors (Adams, 2006; Prawat, 1996). Whilst symbolic interactionalist constructivism as outlined by Blumer (1969) could be one way of describing the individual's learning and the social dynamics of the community of practice, it is incomplete. Importantly, the authors wish to highlight the meaning assigned to the object (360QP framework) which was cultivated and affirmed through the social interactions each member had with their fellow CoP members. Members jointly produced language and actions which then became the basis for their shared meaning, they regularly came together with a common goal and shared their own expertise and views to develop a collective understanding through a joint activity. Developing knowledge whilst immersed within a community, allowed the actors to voice their reality which was used to develop a way forward (Pickard & Dixon, 2004). The creation of a safe learning space with authentic relationships was key to the success and sustainability of the CoP. Based on this, the approach is more consistent with an idea based (Dewayan) social constructivism. The advantage of this approach is that it assigns a prominent role to the social and to the individual, in the development of meaning (Prawat, 1996). This allows the community of practice to treat the individual, and the social equally and acknowledges how the actors share ideas to address their shared goal of enhancing the quality of higher education. The product is an object (360QP framework) which can be shared in future workshops with other academics who may possess the same values and goals. At each workshop the cultivation and affirmation process are repeated, the social constructivism approach is re-employed which supports individuals and groups to share their understanding.

The research followed a sequential mixed methods design, whereby phase one, the scoping review informed phase two, the action learning workshop content and delivery (Creswell, 2013). Ethics approval was granted by the University of Tasmania Social Sciences HREC (10/8/2014 - 8/8/2018), approval number H0014302.

The scoping review findings were used to critically answer the following two questions:

1. What resources, expertise, and practices related to quality enhancement of teaching and learning are in the public domain?
2. What barriers and enablers exist that would help inform strategies to implement a quality enhancement system?

The findings from the scoping review informed the development of the 360QP Framework as well as the associated AoL action learning workshop content and interactive and context responsive delivery methods. Recruitment of workshop participants is best described as convenience sampling (Liamputtong, 2013). The workshops provided an opportunity to test and refine the 360 Quality Pursuit framework (Bill et al., 2015; Nash et al., 2016); determine the barriers and enablers to AoL in the higher education sector and; identify what professional development is required to support educators working in the higher education sector so they may uphold AoL in their daily practice.

Data collection: Phase one. Scoping review

The scoping review was conducted in two stages. Stage one used a preliminary search to determine a practicable review scope and to identify themes for a targeted search. In stage two, a review template was developed based on stage one reading and discussion within the CoP and with academics working in quality improvement of learning and teaching at the time. Reviewers (members of the CoP) used the template to assess the resources against three criteria: the resource was sustainable, portable and provided objective measures of learning. Enablers and barriers were noted, along with advice or lessons learnt. The template is available at http://tinyurl.com/ovw2wl8. Emphasis was placed on the reports of Office for Learning and Teaching (OLT) projects and the current practices of other universities, where that information was publicly available.

Fifty-two papers or websites were reviewed. Each reviewer was allocated approximately five items. Each item was reviewed by a member of the review team and by the research assistant independently, and the reviews were recorded in a shared Google document.

Phase two. Action Learning workshops

The workshop facilitators purposefully blended didactic and interactive learning strategies in the development of the action learning workshops. Workshop details, participant numbers, and completed activities are provided in Table 1.

Table 1. Action learning workshop participants details

	Date	Conference/Event Institution	Location	Number of Participants	Case study	Barriers & Solutions	Wish List
1	4/7/2016	HERDSA	Fremantle, Perth	8			
2	29/8/2016	UTAS Research Week Conference	Hobart, Tasmania	7			
3	9/11/2016	TEQSA & HES	Melbourne, VIC	20*			
4	7/12/2016	UTAS (TSBE)	Hobart, Tasmania	30*			
5	20/7/2017	CAPHIA	Sydney, NSW	17			

*Estimated number of participants, grey shading – participant's completed templates were shared with facilitators and data is available, white shading – completed templates were not shared/ data unavailable. HERDSA – Higher Education Research and Development Society of Australasia, TEQSA & HES – Tertiary Education Quality Standards Agency and Higher Education Standards, UTAS – The University of Tasmania, TSBE - The School of Business and Economics, CAPHIA – Council of Academic Public Health Institutions Australasia.

Workshop participants were provided with an information sheet and a verbal explanation of the research prior to workshop commencement. Participants were invited to indicate their consent by leaving their completed templates in a box as they left the workshop session. At each workshop, participants were provided with pre-reading and an example case study, during the workshop they completed activities in pairs or small groups and then joined the larger group facilitated discussion for information exchange and sharing. Each activity encouraged participants to consider their own context. Participants were invited to document, using a

template, a real or imagined case study that either upheld or challenged AoL. This was shared in pairs. Participants were then invited to independently complete the 'barriers and solutions' template. This was to gain insight into the current 'barriers' that existed by adopting AoL practices amongst participating academics. At the same time, academics were encouraged to identify solutions to each barrier posed. Once completed, they were asked to share with a peer and discuss. The peer was also invited to offer additional solutions. Using the Quality Pursuit six-segment floor mat, participants were then invited to identify the segment that offered the best alignment for each barrier/solution. These were then placed on colour coded sticky notes and placed on the corresponding floor mat (Figure 1).

Figure 1. Action learning workshop activity: Quality pursuit floor mat with colour coded sticky notes.

Finally, following further discussion and exploration of AoL, participants were invited to document 10 professional development wish list items that would support them to uphold AoL in their daily practice. This list was collated and shared with participants after each workshop. The individual lists from all five national workshops were later combined to identify 15 conditions that academics believe are required to support AoL.

4. Analysis and discussion

Data analysis: Phase one. Scoping review

Five key themes were identified in the scoping review: (1) the higher education environment, (2) quality assurance systems, (3) enablers and barriers, (4) cataloguing quality resources, and (5) implementation strategies. These were further developed with key observations and recommendations from the literature (see Table 2). The findings were mapped to the six segments within the 360QP Framework, supporting its relevance and the need for providing professional development for academics in the higher education sector. The findings were used to inform the content and delivery of action learning workshops.

Table 2. Scoping review: Key observations and recommendations by theme

Theme	Key observations and recommendations	References
1. The Higher Education Environment	• Complex and dynamic regulatory environment • Many stakeholders: TEQSA, professional accrediting bodies, employers, institution • Institutional competition for prestige, students and funding	(Australian Government, 2014; Australian Pharmacy Council, 2012; International Pharmaceutical Federation Pharmacy Education Taskforce, 2012; Lawson et al., 2013, p. 29; Tertiary Education Quality and Standards Assurance, 2011)
2. Quality Assurance Systems	• Range from formal regulatory approach to informal provision of resources and tools • Quality systems fragmented • Many elements of quality assurance exist, e.g. benchmarking 360QP based on UTAS OADRI and AACSB International	(Booth, 2013; Deakin University, 2013; Holt et al., 2013; Krause et al., 2013; Lawson et al., 2013; University of Wollongong, 2014)
3. Enablers and Barriers	• Enablers: collegial approach, top-down, bottom-up, effective and efficient processes • Barriers: limited time, resources and buy-in, cultural change, reluctance to share	(AACSB International., 2013; Association of American Colleges & Universities, 2014; Bolden et al., 2009; Bryman, 2007; Jones, 2014; Lawson, 2014; Ontario Universities Council on Quality Assurance, 2014; University of Deusto and University of Groningen, 2020; University of Tasmania, 2013)
4. Cataloguing Quality Resources	• Vet resources through evidence-based processes and independent audit	(Booth, 2013; Deakin University, 2013; Krause et al., 2013; Lawson et al., 2013; Oliver et al., 2007; Quinnell et al., 2010)
5. Implementation Strategies	• Broad definition of stakeholder and purposeful stakeholder management • "Just-in-time, just for me" • Combined top-down, bottom-up approach	(Bryman, 2007; Fullan & Scott, 2009; Krause et al., 2013; Tertiary Education Quality and Standards Assurance, 2013; University of Tasmania, 2020)

Theme 1 (The Higher Education Environment) considered the complex environment in which Australian HE institutions and therefore 360QP operates. The Higher Education Standards Panel (HESP) and TEQSA set quality management standards and, if relevant, professional accreditation bodies may determine profession-specific requirements. Universities have developed policies and strategic plans that guide quality enhancement, but it does not follow that these have been comprehensively implemented or reviewed following implementation. TEQSA and other regulatory bodies, the university, academics, students and professional accreditation bodies and, by extension, employers are identified as key stakeholders.

Theme 2 (Quality Assurance Systems) considered the quality systems used elsewhere as a basis for the development of a quality enhancement framework. Internationally and in Australia, a variety of systems are used (including the regulatory-oriented Ontario system, a less formal approach from the USA of universities often acting in concert), but the quality assurance is fragmented. In Australia, Deakin University and the University of Wollongong had quality assurance systems, but neither provide the comprehensive approach designed to address the needs of the broad range of stakeholders envisaged by 360QP. 360QP adapts the UTAS OADRI process to create a six-element learning and teaching quality framework of Purpose, Intended

Learning Outcomes, Curriculum Mapping, Collecting Evidence, Benchmarking and Review, and Closing the Loop. 360QP is designed to enhance graduate capabilities through a systematic evidence-based approach to quality enhancement of learning and teaching.

Theme 3 (Enablers and Barriers) considered the enablers and barriers associated with quality enhancement in higher education, this highlighted the need for a quality enhancement system and as a shared repository of quality resources. The challenges of cultural change in higher education are substantial: steered engagement and developing leadership capacity are advocated. Innovation in higher education will be reliant on cultural change and appropriate styles of leadership. The distributed leadership model applied by the CoP for the Quality Pursuit project has been critically analysed for the context of higher education (Bolden et al., 2009; Jones, 2014) concluding that it has rhetorical value in influencing perceptions but fails to deal with the actual power dynamics operating (Bolden et al., 2009), and that, "for a distributed leadership approach to be applicable and effective in higher education it needs institutional commitment, support from formal institutional leaders, tailoring to the specific institutional context and culture, and underpinning by an action research process" (Jones, 2014, p. 139). Alternative leadership models need to be investigated that can respond to local contexts and culture, and critically, enact institutional leader support if the 360QP is to be successfully implemented in higher education contexts. In particular, we take note of a finding of Bryman's literature review on effective leadership in higher education: "leadership that undermines collegiality, autonomy and the opportunity to participate in decisions, that creates a sense of unfairness, that is not proactive on the department's behalf, and so on, is likely to be ineffective because it damages the commitment of academics" (Bryman, 2007, p. 707).

An effective leadership model will be necessary if innovative quality enhancement strategies are to be widely and successfully adopted across the sector. Innovation in higher education will be reliant on cultural change and distributive styles of leadership. An emergent distributive leadership model acknowledges that everyone is a powerful contributor (Bolden et al., 2009), this is essential if innovative quality enhancement strategies are to be widely and successfully adopted across the sector. Barriers to change raised by our participants include academics considering whether or not the cost of involvement outweighed the benefits, as well as the burden on their time, a sense of vulnerability and threat to their roles, and a lack of understanding of the process. Barriers to the use of a shared repository were found to be centred on the confidence associated with the value of the material and feelings of vulnerability in a highly competitive environment. Capable of responding to these concerns, Krause et al. (2014) and Lawson et al. (2013) previously advocated for a collegial approach to embedding AoL, they suggested that teaching staff be the principal change-agents and noted the pivotal role of program leaders. In addition, on multiple occasions Scott and colleagues challenged higher education to be change capable and build leadership capacity (Scott et al., 2008; Scott et al., 2012). Lawson (2013) recommended working actively with discipline scholars to include a "top-down" approach to ensure executive buy-in, and a "bottom-up" approach to ensure grass-roots support. Further, in 2016, Lawson boldly contextualised Kotter's 8-step change model (Kotter & Cohen, 2012) to support AoL in everyday academic practice. The AoL specific change model highlighted the need for: Executive Support, Vision, Communicate for Buy In, Empowerment, Reward and Recognition and Building a Guiding Team (Nash et al., 2016). Attention to all six elements will be essential to driving the cultural change required for sector wide adoption of AoL.

Theme 4 (Cataloguing Quality Resources) considered the resources to enact 360QP. Academics need access to a set of resources to support them to uphold AoL and participate in quality enhancement. Lawson et al. (2013) developed an evidence-based assessment of the resources that could be extended to all 360QP segments. Resources that are part of the repository are vetted and assessed before release. The suitability of a tool depends on its utility. The approach adopted here is the flexibility to choose separate resources; the suitability of a tool depends on its application.

Theme 5 (Implementation Strategies) considered the implementation of a quality enhancement system by adopting principles of cultural change in higher education, OLT projects that may provide a model, and the institutional structures and systems within which a project should be implemented. Two OLT projects from Lawson et al. (2013) and Krause et al. (2014) advocated a collegial approach of discussion, with a combined top-down approach of compliance encouraging accountability and a bottom-up CoP approach that encourages engagement. An approach consistent with TEQSA's 'light-touch' philosophy of self-regulation and a low administrative burden is adopted. Sustainability is promoted by building leadership capacity, normalising quality as an integral institutional activity, and providing a basis to incorporate 360QP into the institution's course management system.

The scoping review provided a broad context to inform developers and users of the 360QP quality enhancement framework. This is expressed along with five themes. The themes guide users of 360QP to consider environmental factors, the current status of quality assurance systems, enablers and barriers to engaging in quality enhancement, supporting resources, and strategies for implementing 360QP. It was important to determine the framework with academics.

Phase two. Action Learning workshops

There were three Action Learning workshop activities completed by participants: (1) Case studies, (2) Barriers and Solutions, (3) PD Wish List. While data from each of the three activities were derived from the participant engaging with each workshop activity in turn (and data exists for each), the focus of the analysis that follows is the participant-identified Barriers to AoL practices and the professional development wish list items (participant identified Solutions). Both can provide realistic and actionable recommendations to support the higher education sector to meaningfully engage with quality enhancement practices.

Thematic analysis (participant identified barriers)

The specific focus for the workshop data analysis was on theme three from the scoping review, 'Barriers'. Participants in the workshops were asked to identify the barriers to AoL. The first step in the thematic analysis was data reduction (Huberman & Miles, 2002). The process involved reviewing the comments from the participants and collapsing them into smaller phrases. For example, 'AoL requires a change of practice' – a comment from the case study – became 'change of practice'. The second step of the data analysis involved several iterations in producing open codes. For example, 'change of practice' became 'change required'. Each iteration allowed for the meaning behind the phrases to be retained through the process to produce the open code. The open codes were then clustered together to produce themes. For example, the theme 'change and conflicts' was derived from the open codes of 'change required, conflicts, resistance, and risk'. The final themes produced from the data analysis focused on 'Barriers' are:

A. change and conflicts,

B. curriculum and components,

C. feedback and review,

D. implementation,

E. strategic direction and fit.

These themes were then considered against Theme 3 (Barriers) findings from the scoping review, specifically: limited time, resources and buy-in, cultural change and reluctance to share.

Interpretation of results

The theme 'change and conflicts' (A) includes participants identifying that AoL required 'change' in a number of areas. Change in current practice is required would align well with the cultural change finding from the scoping review (phase one). Included in this theme is the realisation by participants that to focus on AoL requires a change from being focused just on content. It was also recognised that AoL requires structural change and the inclusion of digital pedagogy. Participants identified 'conflicts' in two ways, conflicting interests, and conflicting priorities. These conflicts both inhibit a focus on AoL.

'Resistance' in the themes relating to academic staff came in many forms, AoL gets in the way of the job of teaching, direct opposition to AoL. Interestingly the scoping review (phase one) provided no insight into the significance of resistance when trying to undertake AoL.

'Staff resistance' was a strong code for this theme. Participants identified angst, cynicism, non-attendance of staff at professional development, staff being risk-averse or siloed, current practice, uncertainty, and that AoL gets in the way. Also included here were staff resistance and opposition. Resistance was implied in phase one through 'buy-in and reluctance to share'. Theme 5 (Implementation) from the scoping review suggests the need to take a top-down bottom-up approach to AoL (engaging leaders as well as staff on the ground), therefore the literature may offer strategies that are useful to consider where resistance exists. Participant derived wish list items may also provide local and context specific solutions.

A minor aspect of this theme 'risk', came from a specific case study looking at minority groups and the ability to handle unique demographic 'risk' factors in consultation with minority groups, for whom the consideration of demographics may itself be offensive. Interestingly, this did not appear to align with findings from the scoping review.

The theme 'curriculum and components' (B) relate to the need for 'consistency' – such as consistent terms and diversity of learning styles. While the code of 'resources' incorporates the need for expertise and support, literature, language and terms to be clearly aligned with the codes of 'time and money', all of which align to the 'resources and buy-in' theme from the scoping review (phase one). The code of 'quality' included content relevance, uncertainty of skills of staff, assessing recognition of prior learning (RPL) and staff questioning the what value their institution places on AoL. The code of 'training' identifies that generic training can also be a barrier. None of these themes were evident in phase one outcomes.

'Curriculum complexity' is a barrier to AoL that was not present in the literature; however, it was a barrier to AoL as identified by the participants. Complexity included issues such as the first-year curriculum trying to meet the conflicting needs of many disciplines and including service teaching. Curriculum may need to include graduate attributes or competencies while at the same time focusing on content knowledge, thereby increasing the complexity. Participants shared that working on curriculum can also be isolating. Participants identified that curriculum requires ownership to ensure governance and structural review to ensure content quality. Whilst the literature highlighted that the higher education environment itself is a complex and dynamic regulatory environment, the complexities of curriculum itself were not evident in the scoping review findings.

The theme 'feedback and review' (C) relates to managing the different perspectives of what is a strength and what is a weakness, lack of feedback from students and siloed feedback when industry is the only stakeholder providing that feedback. 'Review' was identified as a theme relating to the need for review after one year.

The theme 'implementation' (D) relates to one code, 'pilot'. Participants identified the need to pilot a new idea by identifying one course with a team that is willing to change before embarking on a whole of Faculty/University rollout. We can equate this theme with the theme of 'limited time' from phase one.

The final theme is 'strategic direction and fit' (E). The code of 'alignment' relates to the strategic alignment and alignment of unit intended learning outcomes (ILOs) to course learning outcomes (CLOs) or competencies. 'Context' relates to contextualisation of AoL to professional courses. 'Policies

and regulations' relate to university policies and regulations that may impede the practice of AoL. 'Strategy' both as having an agenda and no vision for a strategy are barriers to AoL. This theme was also not an outcome of phase one.

Bringing the findings from the two phases together

As shown, some of the findings from the scoping review were confirmed by the data collected from academic participants in the AoL action learning workshops. Examples include cultural change (phase 1) and change in practice (phase 2), limited time and resources (phase 1) consistent with time and money (phase 2). The final themes produced from the workshop data analysis that were not previously identified in the literature were (A) change and conflicts, (B) curriculum and components and (E) strategic direction and fit. Specifically, the individual codes within each of the themes that were derived from the participants that had not been raised previously by the literature in the scoping review phase included resistance, curriculum complexity, annual review and inconsistent use of terminology. Fortunately, academic staff were willing to generate and share solutions to each of the barriers posed. Logically, this led to the development of the wish lists items (generated by the end-user) to support the achievement of AoL in the higher education context.

Top 10 professional development wish list (participant identified solutions)

At each workshop (see Table 2), participants were invited to prepare a professional development wish list. At the conclusion of each workshop, each individual's professional development wish list items were collated and synthesised and shared with all the workshop participants. As the culminating activity in each action workshop, it provided a useful summary for workshop participants and some practical actions for the participants to take into their future practice or back to their institution. The records were kept from each of the five national action learning workshops and later combined to identify the essential elements that the academics from all five workshops most commonly shared and believed must be considered for AoL to be upheld. The final compiled list is provided below;

1. AoL Professional Development Workshops,
2. Clear/Shared understanding of AoL in teaching team,
3. Teaching Assistance,
4. Consistent ILOs,
5. Curriculum mapping & design support,
6. Peer review of ILOs and assessment,
7. Time,
8. Resources,
9. Clear information about the AoL process provided to ALL staff,
10. Technology to support Curriculum design,
11. Dedicated AoL support staff,
12. AoL online course in online platform/ learning management system,
13. Simple and systematic approach to AoL (who, when, what, how),
14. Include AoL associated tasks in workload models,
15. Include employability attributes into CLO.

NB: While not included as formal research (ethics was closed prior), the 15 wish list items (derived by workshop participants in 2015/2016) were tested for relevance with a group of academics at UTAS on 26 November 2019. At this workshop, the UTAS academics were able to confirm the relevance of the suggestions raised in 2016/2017 to the 2019/2020 higher education context.

A comparison of the observations and recommendations from the scoping review (phase 1) with the themes that emerged from the workshop participant barriers and their wish list items (both phase 2) shows there is repetition across all three data sources. Combined, they provide our university leaders and learning and teaching units with thoughtful insights and useful strategies for embedding quality enhancement practice in their institutions.

Limitations

Most academics who attended the AoL workshops may have already had an interest or valued the importance of upholding the quality of learning and teaching in higher education. Therefore, the workshop data may be representative of a group of academics who already place a higher value on AoL. The research should be repeated with more academics to confirm if the findings are relevant to the wider higher education sector. It would also be advisable to explore the AoL and quality enhancement professional development needs of individuals at different stages of their academic career.

5. Conclusions and recommendations

This paper describes how a scoping review, in conjunction with discussion and reflection between the members of a CoP and exploration with educators in action workshops, has informed 360QP's philosophical stance and evolution. The paper's significance is two-fold as it provides the 360QP tool, as well as a research method that can be utilised to recreate or strengthen the tool. At its heart, 360QP is a grassroots approach to quality enhancement aimed at improving learning and teaching at the critical intersection of learner and teacher. It originated from an organically formed CoP of academic teachers and professional staff with the mutual goal of improving their teaching practice through sharing quality enhancement tools and resources. A collegial approach of dialogue and discussion (stewardship), building leadership capacity and purposefully acting to support cultural change is emphasised by the data and supported by the literature. Workshop participants benefited from AoL professional development and shared 15 recommendations for upholding AoL in the higher

education sector. This research confirms that 360QP is an innovative, practical evidence-based systematic approach to AoL that may be applied from unit to course level. It could be refined, adapted and extended and ultimately incorporated into an institutions' course management system. As with all innovation, a focus on advocacy, cultural change and distributed leadership will assist with implementation efforts. Specifically, the professional development of academics to support implementation would be highly recommended.

Author Contributions

Conceptualisation, RN, JK, AMW; Methodology, RN, JK; formal analysis, RN, LE; data curation RN, LE; writing—original draft preparation, RN, AMW, JK, LE; writing—review and editing RN, AMW, JK, LE; project administration, RN; funding acquisition, RN, JK.

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Introducing the Tri-layered Student Online Experience Framework: Moving from file repository to narrative journey

Bronwyn Elizabeth Eager[A] A *Lecturer in Management, University of Tasmania, Australia*

Kim Lehman[B] B *Senior Lecturer in Marketing, University of Tasmania, Australia*

Jaine Maree Scollard[C] C *Senior Educational Technologist, University of Tasmania, Australia*

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Abstract

Online learning environments (OLE) play a vital role in delivering quality learning outcomes. However, despite calls for improved learning environments, the practice of translating traditional face-to-face delivery into quality online offerings remains patchy. OLEs have implications for student experience, and thus student retention. In this paper we examine three domains that shape student experience, 'relevance of online content', 'alignment of online content with student aspirations', and 'navigation with the online environment' and propose that students evaluate online materials based on what they find interesting, and what they deem a value-add investment in exchange for their time. Drawing from the literature, as well as our experience in the field, we present a conceptual framework, the Tri-layered Student Online Experience Framework (TSOEF), which aims to act as a practical resource for academic and education technologists for informing the design of online units. To illustrate how our Framework can be operationalised, we provide an implementation case study centred on a third-year undergraduate unit at the University of Tasmania in Australia. This paper offers a practical guide for providing students with value-driven offerings.

1. Introduction

Online learning environments (OLE) play a vital role in delivering quality learning outcomes (Czerkawski & Lyman, 2016). In effect, they are the interface between student and university and act as a potential moderator between student experience and student retention (Kang & Imt, 2013; Kasu & Demirkol, 2014; Kuo et al., 2013). The rapid rise in online education offerings (Gardner, 2012) raises unique challenges for educators who, for the most part, bear the responsibility for translating the content and quality of their face-to-face (i.e. traditional classroom) offerings into online units (Swan et al., 2013). According to Pye (2018), in both Australia and international contexts, the imperative to meet the needs of diverse student populations from geographically disparate locations through asynchronous online delivery represents a relatively new frontier for achieving competitive advantage. Despite calls for improved learning environments, the practice of translating traditional face-to-face delivery into quality online offerings is patchy at best (Harris & Fu, 2018).

The number of institutions offering online courses is rapidly growing and the competition for online students is fierce. At the very least, it is now the norm for universities to deliver a significant portion of their materials via an OLE. This learning landscape is complicated by the economic cost for higher education institutions which are associated with student attrition due to a poor online experience (Cameron, 2017). Interestingly, students' interaction with online content has been identified as a greater predictor of student satisfaction than learner-instructor satisfaction or a students' perception of the quality of interactions with peers (Alqurashi, 2019). Once students are enrolled in a university program, it is in higher education providers' economic interest to retain students rather than seek new ones. Thus universities have an imperative to ensure online environments meet students' needs. Student retention impacts an educational institution's ability to not only maintain, but to further invest in the courses they offer (Scarpin et al., 2018). For example, through a student's progression from undergraduate to postgraduate study.

Such economic imperatives have come to the fore in the current situation faced by the Australian higher education sector: many students being unable to attend face-to-face classes due to the government imposed travel bans in response to Coronovirus disease (COVID-19; Australian Government Department of Home Affairs, 2020). The travel ban brought into sharp relief the imperative to provide students (who could no longer attend face-to-face classes) with online options. Institutional responses across the globe were markedly varied (see Crawford et al., 2020). Australian universities rapidly deployed online units in order to retain the enrolment, and service the needs, of hundreds of thousands of international students who were restricted from attending face-to-face lectures, workshops and tutorials (Perrotta, 2020). Thus, where units had once been delivered face-to-face, or via a blended (face-to-face and online) modes, Australian universities were now tasked with providing fully-online offerings. Rather than taking a selective approach as to which units to integrate into online education (cf. Smart & Cappel, 2006), any unit in which students were enrolled was seemingly flagged for online delivery. In addition to the stress associated with the expediency this situation demanded, some academics who were tasked with this challenge were no doubt further strained by a lack of awareness as to what content should be included in an online unit, or how it could be designed, so as to maximise student engagement and deliver a quality learning experience.

In this paper, we firstly discuss the literature related to the student online learning experience. This discussion provides a context for the presentation of our conceptual framework, which aims to offer guidance and insight for online unit design. To illustrate how our Framework could be operationalised, we provide an implementation case study centred on a third-year undergraduate unit at the University of Tasmania in Australia.

2. Theoretical overview

2.1 Online learning and student experience

Drawing from the literature, as well as our extensive experience in the field, we postulate that students evaluate online materials based on what they find interesting, and what they deem as 'value-add investment' in exchange for their time (Biggs & Tang, 2011). When presented with materials, students will likely ask questions such as: "Why should I bother reading this article", and "Will watching this video help me complete upcoming assessments?" Specifically, though, we consider that there are three main domains that directly shape students' experience with the online learning world. These are: relevance of online content; alignment of online content with student aspirations; and navigation within the online environment. Each of the domains is discussed in the following sections.

2.2 Relevance of online content

Our first domain relates to the notion that highly relevant and engaging online learning materials are shown to improve student engagement, and hence retention, in online courses (Cameron, 2017; Fisher & Baird, 2005; Gaytan, 2015; Lemoine et al., 2019). "Relevance" refers to both the accuracy of the information being offered to students, as well as it having an obvious role to play in students' achieving course objectives or learning outcomes. Cameron (2017, p. 12) acknowledges this importance, stating that in addition to considerations around assessment methods, "courses with high student satisfaction ratings tend to be those in which their lecturers emphasise outcomes, other than a requirement to simply learn facts or concepts". Students' perceptions of "lack of interestingness/relevance" of online materials is identified as a major barrier to online course participation and continued engagement (Rabin et al., 2019, p. 1) – a finding that is echoed across reviews (see for example Sun & Chen, 2016). Recent pedagogical interventions aimed at enhancing course completion in distance education have seen changes to online learning environments leading to a decline in attrition of online student numbers – in line with face-to-face attrition (Thistoll & Yates, 2016). While much of the literature on online course delivery tends to focus on intervention (van

Amijede et al., 2018), there is a small but growing body of research that explores the role of initial unit design and the availability of templates articulating best practice for online unit structure. For instance, in an investigation of whether generic learning templates were useful for academic staff at the University of Sydney (in Australia), Cameron (2017) found that academic staff responded positively to templates as a tool for potentially enhancing the ability to engage students.

It is pertinent for academics and educational designers to consider the relevance and quality of online learning materials and how these materials might be best presented to improve student engagement, which in tern may lead to enhanced retention rates.

2.3 Alignment of online content with student aspirations

Our next domain concerns the unit design and our contention that educators should ensure that the learning materials and activities are aligned with students' educational aspirations (van Amijede et al., 2018). Van Amijede et al. (2018, p. 46) advocate for unit design to include "constructive alignment between learning outcomes, assessment and learning activities and materials where each element clearly links to and builds on the other elements".

One issue frequently pushed to the background of quality unit design is the need for online units to be mindful of issues relating to inclusion and diversity. Asynchronous environments lend themselves to addressing challenges for students from low socioeconomic status backgrounds who may be unable to attend face-to-face classes due to paid employment obligations (Canty et al., 2020; Devlin et al., 2012; Snowball, 2014). Online environments further aid students who may be unable to attend face-to-face classes due to family care or health-related reasons. Educators should recognise that student aspirations can be driven by a variety of inputs. The online environment can play an important role in bridging the gaps that exist in the traditional classroom approach, where opportunites to address an individual student's needs might not be possible (Snowball, 2014). OLEs give the academic or designer a variety of choices in how content can be presented and taught – video, articles, discussion boards, or interactive activities. This allows the student to engage with a variety of activities that may cater to their individual learning styles.

2.4 Navigation within the online environment

Our final domain focuses on the processes students must engage with to access learning materials. A study evaluating the relationships between factors of acceptance of technology and the retention of students in online courses (Scarpin et al., 2018) highlights the need to consider 'good design' in OLEs. Scarpin et al. (2018) found that students perceive technology as a gateway to a) improving learning performance, b) their speed of understanding, and c) increasing productivity. Their research further showed the need for higher education institutions to enhance the efficiency of online learning through eliminating distractions (e.g. 'unnecessary and untimely information'; p. 59) to reduce browsing time and thus increase time available for (relevant) content engagement. Lastly, Scarpin et al. (2018) found a positive relationship to exist between the quality of online learning information and a student's intention to further engage with the online unit (i.e. retention). They recommend that information should be 'easy to understand, relevant to learning, updated, accurate and error free'.

In keeping with concerns raised by Kirschner and Merringboar (2013), the design of online units should be mindful of myths surrounding students as digital natives, and thus the design of OLEs should aim to limit cognitive load in relation to navigation, accessing content, and, ergo, understanding which and why materials should be accessed. Hovarth et al. (2019) assert that online learners navigate their learnings on a 'need to know' basis; students are reactive rather than pro-active in their approach to content engagement.

As can be seen by our discussion above of the three main domains that we believe shape students' experience of their online materials, the factors keeping students engaged in an OLE are multi-layered, with design-based factors found to be equally as important as intervention opportunities for keeping students engaged in a unit (van Ameijde et al., 2018).

In the following section we present our conceptual framework to inform the design of online units. We then demonstrate how the framework could be operationalised by discussing its implementation in a third-year undergraduate unit at the University of Tasmania.

3. A Tri-layered Framework For Online Unit Design

In this section we introduce our Tri-layered Student Online Experience Framework (TSOEF) (see Figure 1) for online learning units (and materials). We envisage our Framework as a tool to guide academics in their design decision-making, with the aim of ultimately enhancing students' online learning experiences.

Before introducing the Framework and its three levels, we ask you to consider a scenario in which you are a student who, for the first time, logs onto an online unit via a learning management system. What do you see?

In times gone by (and in some cases, currently), as a student you would be viewing a skeleton-type file structure comprising of hyperlinked headings and text. Typically, higher-order links would each be named after the unit's 'modules', i.e. the collection of materials for the week or topic theme. Lower-order links would probably be labelled with the names of articles or videos, i.e. course content items. When clicking on one of the hyperlinks you would be directed to a reading or video and expected to engage with that material. If, in fact, you were the student, you would perhaps be wondering, albeit, subconsciously: "What is the point of clicking on this link and investing my time in engaging with this content?"

Our aim with the TSOEF is to guide the design of the information a student views in an online unit in such a way as to reduce the students' cognitive load and enhance the possibility that the student will engage with the presented materials. Importantly, students are typically navigating multiple online units, with each unit being designed by different member of staff with their unique design sensibilities. A consistent approach to design, based around our Framework, could serve to benefit this situation and help communicate the value proposition of content engagement to time-poor students.

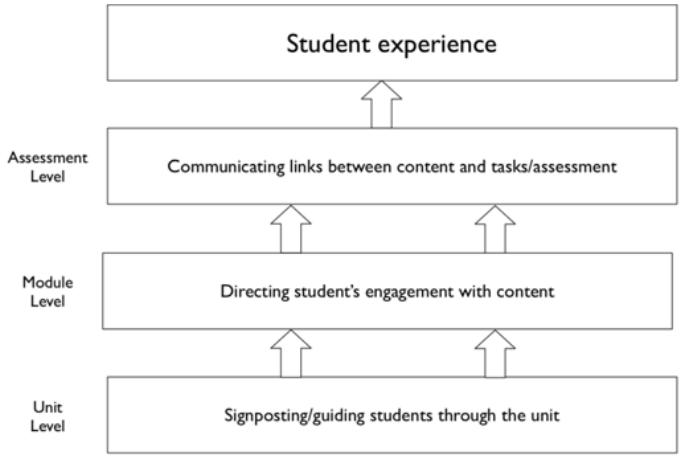

Figure 1. Tri-layered Student Online Experience Framework

At the heart of our conceptualisation of an OLE interface is the three layers: unit level, module level, and assessment level. The characteristics of each layer are detailed below in the context of an implementation case study: a third-year undergraduate Bachelor of Business unit, BMA357 Small Business Management. This unit was delivered to both on-campus (i.e. face-to-face enrollment) and online (only) student cohorts at the University of Tasmania in 2019. The unit comprised 13 weekly modules and three assessment tasks.

3.1 Unit level narrative

The unit level narrative focuses on student experience in relation to orientation and navigation. Thus, the unit-level narrative works to signpost and guide students through the unit, including: an introduction to the module and explanation of how completing the materials will assist the student in achieving the unit's intended learning outcomes. Students are provided with a self-monitoring checklist of materials and assessment deadlines, and a weekly summary. We propose that each module should include the information outlined in Table 1.

We recommend the structure of each weekly module to remain consistent throughout the wider unit design.

3.2 Module level narrative

Within each module, it is necessary to provide a narrative to students that addresses the question "What is the point in engaging with the presented materials?" Doing so provides

Table 1: Information to support the Unit level narrative

Narrative component	Included information
A welcome message	A brief introduction to the materials and the lecturer's expectations for student engagement levels
Intended Learning Outcomes (ILOs)	Explanation of how engaging with the module content helps students move towards aquiring the unit's ILOs
Required learning materials	Refer to 'Module Level Narrative' details, outlined in Table 2
Additional learning materials	Materials offered to students, not required but optional, that may be of interest to students who wish to know more
Discussion board	A place for students to discuss the learning materials, ask questions, clarify understanding, and foster community with the unit cohort
Progress tracker	A checklist for students to monitor their progress in the unit. Checklist to include: the required learning materials and (if applicable) assessment tasks for the corresponding weekly/topic module
Module summary	Details of what the student should have accomplished by the end of the module

justification to the student as to the value proposition of content engagement. As presented in Table 2, within a module, we propose that every learning material (e.g. reading, video) should be accompanied by an explanation of why the student is being asked to engage with the material, as well as an explanation of how engaging with the materials will help the student to aquire the unit's Intended Learning Objectives (ILOs) and achieve success with regard to completing their assessment (see Assessment level narrative section below).

Should students wish to learn more about a particular topic, we recommend including a list of additional materials to guide future learning. Additional materials should be clearly indicated so as to distinguish them from "required" learning materials, and may include a brief description to inform the student as to the nature of the content (e.g. academic article, video, magazine article).

Table 2: Information to support the Module level narrative

Narrative component	Included information
Required learning materials	Each content item (e.g. reading, video) to be accompanied by a justification statement of how engaging with the content will advance the student's progress (e.g. complete an assessment task)
Intended Learning Outcomes (ILOs)	Explanation of how engagement with the presented materials help students move towards achieving the unit's ILOs
Additional learning materials	Provide additional learning materials to direct deeper learning. Explanation of the nature of the content (i.e. academic or popular-culture / reading or video)

3.3 Assessment level narrative

The assessment level narrative is mindful that many students engage in learning materials for the sole purpose of

completing assessments, rather than the pursuit of interest or knowledge (see for example Lawrence, 2013). As such, we propose that all required learning materials should be accompanied by an explanation of how engaging with the material will assist the student in successfully completing one (or more) assessments. A checklist for assessment level narrative for inclusion in online unit design is outlined in Table 3.

As an example, in one of the weekly modules in BMA357 Small Business Management, students were required to read an article about the stages of business growth. Rather than simply providing a hyperlink to the article and expecting the student to read it, the OLE featuring the article included a preamble to the article link which gave a brief explanation as to what the article was about and how reading the article was linked to, and would be valuable for, a specific assessment task e.g. "For your upcoming group assignment you are asked to choose a small business and recommend strategies for growth. By reading this article you'll learn about the challenges of achieving growth for businesses of different sizes and therefore have evidence to back up your recommendations for growth relevant to the size of your chosen business". Additionally, students were provided with questions to consider when engaging with the reading, such as "How does the role of the business owner change as the business grows?" and "Can you think of an example of a business that doesn't fit this model of growth?" The inclusion of prompting questions aimed to deepen a student's engagement with the materials – the student is encouraged to approach the material with a mission (i.e. answering the questions). Additionally, prompting questions may help the student to realise what the lecturer is hoping they will 'take away' from engaging with the content.

Table 3: Information to support the Assessment level narrative

Narrative component	Included information
Required learning materials	Learning materials accompanied by explanation of how content advances assessment completion
Prompting questions	Students provided with questions to consider when engaging with the content item (e.g. reading, video)

Importantly, the three narrative levels (unit, module, assessment) interlink and work together to encourage student engagement with the unit and the materials therein.

3.4 Preliminary outcome of Framework implementation

As noted above, our Tri-layered Student Online Experience Framework was implemented in a third-year undergraduate Bachelor of Business unit in 2019. A comparison of results from student satisfaction feedback surveys (administered at the end of the unit, in 2018 and 2019) showed that student satisfaction increased by ~30% to 99.2% for face-to-face students (i.e. flipped learning environment) and increased ~40% to 90.9% for the online cohort (fully asynchronous delivery, with no face-to-face classes).

While acknowledging that these findings do not take into account additional variables, and cannot be deemed causal, they do point to higher satisfaction among learners after the TSOEF was implemented.

4. Conclusions and recommendations

Clearly, online learning platforms and education models are key components in all domestic and international education markets. In a post COVID-19 environment, whether or not the displacement of physical classrooms to online spaces is a temporary or long-term proposition (for comment see Crawford et al., 2020; Jones & Sharma, 2020), the increasing move towards digital-based educational experiences will likely hold and persist. Within these online experiences, students' perceptions of quality will no doubt moderate enrolment figures. Thus, even if traditional face-to-face delivery methods remain important in the higher education sector, OLEs will be central to any method of learning. It is therefore important for higher education institutions and their academic staff to continually strive to improve online unit design. As we demonstrated in our discussion above, three main domains shape students' experience with online learning: 'relevance of online content'; 'alignment of online content with student aspirations'; and 'navigation within the online environment'. Our conclusion is that the factors keeping students engaged in an OLE are multi-layered, with design-based factors found to be equally as important as intervention opportunities. It was in this context that we presented our conceptual framework, the Tri-layered Student Online Experience Framework.

Through the lens of our TSOEF, to be successful in delivering online learning offerings it is necessary for an online unit to articulate to students the value proposition of content engagement. It is further necessary for academics, who may have limited instructional design experience, to have access to templates to guide online unit design.

As students likely study multiple units at the same time, and lecturers are relatively free to adopt their own design within their units, it is not unreasonable to expect students to have an increased cognitive load when attempting to navigate the different styles/logic of information presentation. Implementing a framework, such as the TSOEF, while still allowing flexibility in content curation, moves towards providing students a somewhat cohesive journey across the multiple units they navigate simultaneously throughout a semester. We acknowledge that educators do not subscribe to an homogenous design sensibility. Thus, it is important to note that our Framework's is heavily weighted towards prescribing the functionality (yet not the nuanced form) of how information is presented in an online unit. In this context, the TSOEF thus represents a practical tool which offers guidance in relation to design decisions. The ultimate goal of the Framework is to enhance students' online learning experience. Further research is required to gain feedback on the TSOEF from academic staff and education technologists, and to determine the impact of its implementation on students' online experience.

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University students' perceived effort and learning in face-to-face and online classes

Nenagh Kemp[A]

[A] *Associate Professor, School of Psychological Sciences, University of Tasmania, Australia*

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Abstract

For many students today, 'going to uni' requires attending classes, but also juggling work and family commitments. In response to these changing needs, and the increasing importance of digital interaction, most universities now offer blended learning, supplementing face-to-face classes with online learning. The present study examined student perceptions of what they put into, and gain from, blended classes. Third-year psychology undergraduates (n = 130) at an Australian university rated their experience of tutor-directed, face-to-face practical classes, and self-directed, online practical classes, in the one academic unit. In quantitative terms, students reported that they invested similar amounts of effort into the two class modalities, but learned slightly more from face-to-face than online classes. In qualitative terms, students gave contrasting reasons for their perceived learning in the two modalities. They appreciated the classroom experience for the chance to ask questions and revise content, and the online experience for its need for independent thought, although they also missed personal discussion. Responses also showed that different students experienced the two modalities in quite different ways. Judiciously combining in-class and online learning activities, with student choice where possible, seems a relatively efficient way to help enhance the university experience of today's busy students.

Introduction

The university experience, for many of today's students, means more than just living a student lifestyle. As well as attending classes and completing assignments, many students are juggling part-time work commitments, and often caring for their children and/or ageing parents. At the same time, the rapid rise of digital technology has meant that most people's lives are interwoven with online interaction. The distinction between the online and offline world is becoming increasingly blurred (Borland et al., 2019). Australia, where this study was conducted, has some of the highest internet usage in the world. Nearly all (98%) of Australian school students have access to the internet (Australian Bureau of Statistics, 2017; Thomson, 2015), and although similar statistics are not published for tertiary students, the number is likely to be at 100%. Faced with this combination of multi-tasking students and an internet-connected populace, over the past quarter-century there has been a growing trend for universities worldwide to supplement or even replace their face-to-face teaching with online content (Borland et al., 2019; Clark & Post, 2019). Thus, in many institutions, the majority of undergraduates now experience online learning as part of their degree (Tucker et al., 2013). The aim of this study was to examine the perceived effort and perceived learning that students experienced in the face-to-face and online components of blended-learning practical classes, using a combined quantitative/qualitative approach. The results are being used to help improve the student learning experiences in these classes, and a similar approach could be used by other researchers seeking to improve their own classes.

Literature review

Student-centred and teacher-centred approaches

When universities offer online options, these are increasingly attractive to students who are looking for more flexible ways to study (Brown et al., 2018). Being able to complete a degree completely online allows students to more easily integrate their studies with the responsibilities of work and family, but also to organise the timing and location of their studies (Fleck, 2012; Hratinski, 2008). This increased focus on online content delivery is in line with an increased emphasis on a student-centred view of learning. In a student-centred approach, there is more focus on students taking responsibility for their learning, and less on the material to be mastered or the teaching style used (Cannon & Newble, 2000; Gosling, 2006). This contrasts with the more traditional teacher-centred model, in which a teacher transmits information to a largely passive class of students, who provide little input and who all perform the same tasks (Harden & Crosby, 2000; Kember, 1997). However, many commentators have also expressed concern about maintaining the quality of both teaching and learning when the experience is completely online (e.g., Parsons-Pollard et al., 2008).

Face-to-face versus online learning

Numerous individual studies have been designed to compare the relative merits of traditional face-to-face classes with self-directed, online learning, with mixed results. Some researchers have found that interactive online learning results in greater student performance and satisfaction than traditional face-to-face learning (e.g., Zhang, 2005). In contrast, others have observed slightly higher student achievement (e.g., Zacharis, 2010) and satisfaction (but not academic marks, Kemp & Grieve, 2014) in face-to-face groups. However, it seems more common to find no obvious difference in students' achievement or satisfaction levels between online and in-class approaches (e.g., Dell et al., 2010; McFarland & Hamilton, 2006).

Meta-analyses have confirmed that there seems to be no clear advantage to either teaching approach. For example, Bernard et al. (2004) gained mixed results when comparing classes provided face-to-face compared to via distance education (including online). In overall terms, there was virtually no effect of teaching modality on student achievement, attitude, or retention. A meta-analysis by Sitzmann and colleagues (2006) found that classroom and web-based delivery were equally beneficial in terms of student satisfaction and the teaching of procedural knowledge. However, web-based delivery had the advantage for teaching declarative knowledge, especially when students had control over their learning and received feedback when they practised. Finally, a slightly later meta-analysis (Means et al., 2009) revealed that students engaged in online learning performed modestly better than those in face-to-face classes. All three of these research teams concluded that it is not the modality that is so important. Rather, it is the quality and nature of the way that material is provided to students that is crucial, and online learning has the greatest benefits when students actively manage their learning (e.g., Means et al., 2009).

Blended learning

Although the contrast so far has been between purely online and purely face-to-face modalities, many institutions are now adopting an instructional approach known as blended learning, in which face-to-face classes are complemented with online activities (Anthonysamy et al., 2019; Owston, et al., 2013). This approach is designed to be student-centred, self-paced, and flexible (Tang & Chaw, 2016), and has been found to result in better student achievement and satisfaction than learning that is either fully online or fully face-to-face (e.g., Cavanagh, 2011; Dowling et al., 2003). The time in-class provides students with the unique sense of 'being there' and the opportunity for spontaneous interaction and discussion (Osguthorpe & Graham, 2003; Sanders, 2006). The time devoted to working online allows students the time and scope to engage with the material (Skylar, 2009) and develop their responses as well as their cognitive skills (Alexander et al., 2014; Hratinski, 2008).

Unsurprisingly, however, the benefits of blended learning seem to vary with the characteristics of individual students. It appears that those who do best in the online aspect of

blended learning are students who feel engaged in their course, motivated to achieve, and have a strong ability to self-regulate (Owston et al., 2013; Zhu, Au, & Yates, 2016). Without the direct guidance of an instructor, students with low motivation and a generally low record of achievement might find it difficult to organise their own time and efforts to complete the tasks required. Further, students' success in a blended learning course, like any other course, will depend not so much on the modality itself, but on the quality of the teaching materials and delivery. Some instructors may simply transfer their face-to-face teaching materials to an online platform, whereas others may develop innovative ways to create and present online activities in an engaging fashion for students (Holley & Oliver, 2010; Ituma, 2011).

The current study

The present research was conducted in a mid-sized regional Australian university (approximately 35,000 students, 83 per cent domestic, 40 per cent aged over 25 years), in a state with the country's lowest proportion of university graduates, approximately 51 per cent. Teaching at this university is typically face-to-face, but with online resources an integral part of learning (for course content, recordings, resources, assessment submissions, questions for staff). Further, there is a growing requirement to replace many face-to-face classes with self-directed, online activities. This trend is motivated mainly by financial concerns: students who are completing activities in their own time have no need for a paid tutor, and lecturing staff are not paid extra for developing online tasks to replace part of their usual face-to-face teaching. However, the move towards online learning is also part of a worldwide trend in higher education. It assumes that students prefer the flexibility and independence afforded by self-directed activities. As reviewed earlier in this section, there is ample evidence that many students benefit from these positive aspects of online learning. However, the mixed set of results gained from the several meta-analyses in this area (e.g., Means et al., 2009) means that the findings of others' studies cannot be easily generalised to individual classes or courses, especially in terms of students' own perceived experience, rather than simply their academic outcomes. Similarly, conclusions drawn from the current study should be interpreted within its context. The findings might not be reliably generalisable to universities, courses, and cohorts of a different nature, nor beyond the higher education sector, as people have different reasons for engaging in learning within and outside of academic institutions.

The aim of the current study, then, was to assess two aspects of the student experience – perceived effort, and perceived learning – in a third-year undergraduate unit that employed blended learning in its practical class program. The introduction of some self-directed, online practical classes, to replace some of the previous traditional face-to-face classes, came about without student consultation or feedback. The responses gathered here were intended to provide data, from a student perspective, on how the two class types were experienced. Based on the previous literature, no substantial differences were expected between face-to-face and online classes in terms of students' quantitative responses. However, qualitative analysis of open-ended answers was also included to gain a broader picture of the range of reasons that students provided for their responses, and to inform future iterations of this and similar classes. The ultimate goal of this work was thus to use the participants' responses to improve the learning experience of students in this particular educational context, going forward. Further, the method used here could act as a model for other instructors interested in improving the educational experiences and outcomes of their own teaching.

Method

Participants

Participants were 130 third-year developmental psychology students at an Australian university ($\bar{X}$ = 22.4 years, SD = 3.73), nearly all domestic students. There were 102 females, 26 males, and two other, reflecting the common gender imbalance in undergraduate Psychology courses. The participants came from two consecutive-year cohorts (n = 53, n = 77, respectively). However, as the two cohorts did not differ significantly in terms of mean age or gender ratio, and had the same class material and teaching staff, the data were combined for analysis. Students took part as a class requirement, but also provided informed consent for their (anonymous) data to be used beyond the class, as approved by the Tasmanian Social Science Human Research Ethics Committee (Reference No. H0013082).

Procedure

Students completed an anonymous online questionnaire (using Psychstudio, 2019) in self-directed practical class time, in which they answered several questions about their experience and opinions on face-to-face versus self-directed online practical classes. This lifespan developmental psychology unit was taught using a blended learning pedagogy. Weekly lectures were delivered live ($\bar{X}$ = ~30% attendance) and recorded ($\bar{X}$ = ~70% attendance). Of the ten weekly practical classes, seven were delivered face-to-face and three online, with self-directed activities to be completed within a one-week window . The in-class and online learning activities had equivalency in learning opportunities. In both cases, students displayed their understanding through observing, reading, or hearing about an issue and then discussing, writing, or graphically presenting (e.g., through a genogram (family tree) or table) their response. In-class discussion was encouraged, but the online activities did not include a discussion board, in response to previous findings that students did not enjoy or benefit much from online discussion (Kemp & Grieve, 2014).

Participants were asked to respond to four questions that could be analysed quantitively. They were invited to indicate how much effort they normally put into face-to-face and into online practical classes, and how much they felt that they usually learned from face-to-face and from online classes, on a 7-point Likert scale (from 1 = hardly at all to 7 = a large amount). They were also asked to respond why they gave these answers. In terms of perceived effort, participants were

given the choice of four given reasons (own expectations, tutor expectations, peer expectations, engagingness of task) or other. In terms of perceived learning, they were asked to provide their own brief written answer as to why, which was then subject to qualitative analysis.

Results

Figure 1 shows ratings of the amount of effort that students felt they invested, and the amount of learning they thought they gained, from face-to-face versus self-directed practical classes. The differences were slight, but in favour of face-to-face classes. This was confirmed in two paired-samples t-tests: students' perceived effort did not differ significantly between the two class types, t (129) = 1.85, p = .066, Cohen's d = 0.163, but their perceived learning was significantly greater for face-to-face than for self-directed practical classes, t (129) = 3.68, p < .001, Cohen's d = 0.322.

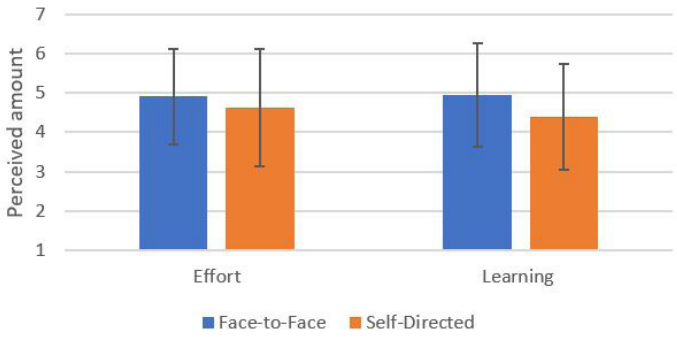

Figure 1. Mean perceived effort and learning for face-to-face versus self-directed practical classes, with standard error bars

Participants' written reasons for their perceived learning were examined at the broad level of whether they were exclusively positive (e.g., "I can work on my own and read through again and again until I actually understand"), exclusively negative (e.g., "less is learned because the option to have discussion and ask questions is not there"), or acknowledged both positive and negative aspects (e.g., "Allows for my own research, but not much opportunity for explanation if I get stuck"). As shown in Table 1, participants were overall more positive in their comments about face-to-face classes, and more negative and mixed in their comments about self-directed classes. A chi-square test showed this difference to be significant , $\chi 2$ (2, 3) = 13.46, p < .001.

Table 1: Number and percentage of positive and negative comments for both class types

Comment type	Face-to-face		Self-directed	
	n	%	*n*	%
Exclusively positive	90	72.6	63	50.0
Exclusively negative	25	20.2	45	35.7
Mix of positive and negative	9	7.3	18	14.3

Participants' reasons for their perceived extent of effort in face-to-face and self-directed practical classes are shown in Table 2. Students chose from four possible options, or selected other. As seen in the table, the responses were remarkably similar between the two class types, and a chi-square test confirmed that there was no significant difference in the pattern of responses , $\chi 2$ (2, 5) = 0.63, p = .96. For both face-to-face and online practical classes, half or more of the students cited their main reason for investing the effort they did was to live up to their expectations, with a further 20 percent or so putting in effort because they felt that the class was engaging. Expectations of tutors and peers were less common reasons for effort in both class types. A few students selected other, with some answers informative (e.g., "I don't like talking in front of people") and some less so (e.g., "I don't know ").

Table 2. Number and percentage of reasons for effort invested in both class types

Reason for effort invested	Face-to-face classes		Self-directed classes	
	n	%	*n*	%
Own expectations	64	50.0	68	52.3
Class is engaging	25	19.5	28	21.5
Tutor expectations	18	14.1	16	12.3
Peer expectations	13	10.2	11	8.5
Other	8	6.3	7	5.3

Participants provided written responses to the question of why they felt they had learned as much as they had learned in the two types of class. Thematic analysis was employed to analyse their responses. The chosen form of thematic analysis was the one explicated in detail by Braun and Clarke (2006), which has become an extremely popular method for analysing qualitative data in a reputable and respected way (Terry et al., 2017). In line with Braun and Clarke's recommendations, six phases were used to identify the themes as they emerged from the analysis. To this end, the author 1) familiarised herself with the data by reading and making notes about the entire list of comments, 2) systematically developed initial codes (each response was allocated to a single code that reflected its core meaning), and 3) collated these codes, and their associated data, into possible themes. The themes were then 4) reviewed and refined until they were satisfactory for the entire dataset, and five) finalised as a complete set, including specific theme names and definitions. The final step, 6), was to produce a narrative about the data, with examples, explained further below.

This qualitative section of the study also satisfied Tracy's (2010) eight criteria for excellent qualitative research. The topic is worthy of research, with its theoretical and practical implications, and the study was conducted ethically and with rich rigour, from the underlying constructs examined to the appropriateness of the data collection and analysis. The author has striven for sincerity in terms of awareness of potential bias, and transparency about the methods and potential limitations of the work. The detail and

description, and the inclusion of example responses from a range of participants contribute to the study's credibility, and an awareness of the extent and the limits of the data's generalisability means the conclusions can be transferred as appropriate, allowing adequate resonance. An important aim has been to achieve coherence across the multiple parts of the study, and ultimately to make a significant contribution to the field.

The careful application of Braun and Clarke's (2006) six phases of thematic analysis yielded two sets of themes (with a small amount of overlap) from the responses about the face-to-face and self-directed practical class activities. The themes are described below, and further below, Table 3 shows the number and percentage of responses (with examples) that were assigned to each theme, for both class types.

Themes from face-to-face classes

In terms of face-to-face classes, six major themes emerged, as well as a handful of other answers, not otherwise classified.

Allow questions and clarifications. Nearly one-third of responses mentioned the benefit of being able to ask questions or seek clarification when explaining the learning they had experienced in face-to-face classes. Students valued the in-class opportunity to gain further information from the tutor as the need arose, often commenting that this improved their understanding of the material.

Revise course content. Equally popular as the theme above, nearly one-third of responses focused on what they saw as the helpful opportunity to go over course content that had been introduced in lectures.

Are engaging. A substantial proportion of students commented that they found the face-to-face practical classes to be engaging, often in comparison to the lectures, or to self-directed classes. Students felt that this greater engagement led to greater understanding of the course material.

Promote discussion. In this theme, students noted that having in-class discussions helped them hear and learn from others' opinions, often improving their own learning.

Cover repetitive content. Some of the smaller themes reflected more negative views of the face-to-face classes, and reasons for expending effort on them. Some participants felt that the revision of material was a nuisance rather than a help.

Cover irrelevant content. Another relatively infrequent and negative set of comments reflected the view that the face-to-face classes covered material that was not relevant to the course.

Other. Finally, a small proportion of responses were too diverse to fit into any of the themes above, or simply unclear.

Themes from online classes

A mainly different set of themes emerged when students explained the reasons for how much they felt they learned during self-directed online practical classes.

Require independent thought. More than a quarter of responses noted that self-directed classes had the benefit of forcing students to come up with their own ideas in response to questions, rather than just listening to their peers or waiting for the tutor to provide an answer.

No chance for discussion. The same number of responses had a negative theme, with students bemoaning the lack of verbal interaction that came with doing practical classes online and alone. Given the positive comments on the discussions facilitated in the face-to-face classes, this is not a surprising finding, but underscores the continued importance of synchronous, real-life discussion for many students.

Are engaging. A smaller proportion of students found that doing the self-directed classes on their own, online, engaged their attention and encouraged them to complete the work, for example, However, as seen further below, another group of participants had the opposite response.

Less pressure. Although there was little mention of the potential stresses of personal interaction, timed tasks, and tutor expectations in the face-to-face practical classes, these concerns were alluded to by responses that noted that the self-directed tasks did not exert so much social/time pressure.

Are not engaging. Another group of students found the self-directed, online nature of these activities to be difficult to interact with. The mixture of comments provided about the self-directed classes suggests that one group of students appreciated the quietness and independence provided by self-directed activities, while the other found it frustrating and unengaging to be working on their own without social interaction.

Cover repetitive content. Another more negative theme, as for face-to-face classes, was that some respondents were unhappy with the coverage of what they perceived as repetitive content.

Can rush through. A similar number of students noted that their (presumably more limited) learning from self-directed classes resulted from the fact that they could get the activities completed in a hurry, without outside scrutiny to check they were being done properly.

Revise course content. A small but more positive theme was that the self-directed classes allowed the revision of some course content. It is interesting that the repetition of content was perceived as a negative experience for some students, and a positive one for others. It would be worth exploring in future research whether these perceptions were related to students' abilities (better students might see the value in revision, or conversely, might become bored more easily with perceived repetition of content).

Puts knowledge into practice. The final theme concerned the applied focus of the self-directed practical classes, commenting on how the activities showed how the lecture material made sense in the real world.

Table 3: Numbers and percentages of responses fitting the themes that emerged about the learning experienced in both class types, with example responses

Theme	*n*	%	Example Response
			Face-to-face classes
Allow questions/ clarification	30	24.2	"Because the tutor makes the pracs interactive, and I am able to ask questions and seek clarification on aspects of the content."
Revise course content	30	24.2	"It's another way to reinforce the information on top of watching lectures and reading notes."
Are engaging	20	16.1	"Because the activities allow us to actively engage in theories/ideas in a way that encourages us to ask questions and be involved [*sic*] in our learning process."
Promote discussion	17	13.7	"Experiencing tasks and discussing with peers helps me to think deeper, and sparks new trains of thought."
Cover repetitive content	12	9.7	"Sometimes the content is similar to lectures' content, gets boring."
Cover irrelevant content	7	5.6	"I feel like the face to face pracs have been informative however sometimes it has felt like we have spent time doing irrelevant tasks."
Other	8	6.4	"Because it's rude not to pay attention in class", "I don't know", "Some of the face to face content seems"
			Self-directed classes
Require independent thought	27	21.4	"Because you are taken from class and asked to work on your own without guidance therefor [*sic*] relying on yourself to learn."
No chance for discussion	19	15.1	"I spend less time on them. I often do the required bits, and then glaze [*sic*] over the rest. There isn't anyone to talk to about your ideas."
Are engaging	17	13.5	"More engaging/interactive – easier to be motivated."
Less pressure	15	11.9	"They allow me to work at my own pace, and Able to focus more, without having to focus on class interactions."
Are not engaging	12	9.5	"I struggle to engage."
Cover repetitive content	11	8.7	"Content was somewhat repetitive from the lecture slides."
Can rush through	10	7.9	"I mostly try to get them out of the way as quickly as possible."
Revise course content	8	6.3	"Goes back over key points and make me revise."
Apply knowledge	7	5.6	"The lecture teaches the information and the pracs apply it."

Discussion

The aim of this study was to examine the extent of, and reasons for, undergraduates' perceived effort and perceived learning in two learning modalities: tutor-directed face-to-face practical classes, and self-directed online practical classes. Previous research has relied largely on the quantitative comparison of student outcomes. This study also included qualitative analysis of student responses, to gain a more detailed understanding of their reasons for (not) preferring each modality. In terms of overall preferences, the differences in between face-to-face and online classes were modest. Specifically, there was no significant difference between class types for perceived effort invested, a small but significant advantage for face-to-face classes in terms of perceived learning, and a significantly greater proportion of exclusively positive comments for face-to-face than online classes. The relatively minor differences observed here are in line with those of decades of previous studies (e.g., Means et al., 2009; Sitzmann et al., 2006), although it is less usual to find an advantage for face-to-face over online learning (e.g., Zacharis, 2010). The main conclusion on the question of modality, then, is consistent with that of many other authors: it is not the modality of teaching that determines student outcomes, but the quality of teaching (e.g., Bernard et al., 2004).

In terms of the effort that students felt they had put into their classes, the reasons chosen were very similar for face-to-face and online learning. In both modalities, students indicated that their effort depended mainly on the expectations that they had of themselves, and the extent to which they found the classes engaging, rather than what anyone else (tutor or peers) thought about their contribution. This pattern of responses is a reassuring one, in that it suggests that most students are engaging in these classes because of their intrinsic self-motivation, rather than simply to fulfil the perceived expectations of others.

However, in terms of the extent to which students thought that they had learned the class material, two rather different sets of reasons were given for how much was learned from each class type. In face-to-face classes, students valued most the chance to ask questions and seek clarifications in class, to go over course content, and the engaging nature of these classes. Together, these three themes accounted for 80% of responses. Unsurprisingly, having access to tutor responses and input is frequently identified as an important determinant of student learning and satisfaction (e.g., Martinez-Caro & Campuzano-Bolarin, 2011; Paechter et al., 2010), regardless of the modality of teaching. In the current study, the fact that so many students found the face-to-face classes engaging might help to explain why the revision of course material was generally seen positively: it provided an interactive and interesting way of revising for later assessment.

In contrast, for online classes, it was most often noted that these self-directed activities had the advantage of obliging students to think for themselves, rather than to rely on others' answers. This was an unanticipated first response, but fits with previous findings that completing tasks online in their own time allows students the scope to consider the tasks more carefully and to develop their responses more thoughtfully (Alexander et al., 2014; Skylar, 2009). The second most common response about learning in an online context was a negative one, focusing on the lack of discussion afforded by the online activities. It is true that by design, these self-directed activities did not include an online discussion component (as discussion was included instead in the face-to-face classes). However, even when students are provided with internet-based discussion forums, this modality is often perceived as inferior (Kemp & Grieve, 2014), and often does not encourage such cohesive or critical points to be made (Bliuc et al., 2011). In the current study, some students enjoyed the perceived lack of time pressure or social pressure from the online

practical classes, feeling that they could work through the activities at their own pace, without judgement from peers or tutors. Previous researchers have also noted this as a benefit of online learning for some students: those who feel apprehensive about joining in face-to-face discussions or answering questions on the spot in front of others, can feel less intimidated when supplying their responses more slowly and thoughtfully online (e.g., Hobbs, 2002; Warshauer, 1997). In contrast, other students in the current study liked being able to "rush through" the self-directed activities and get on to other tasks.

The main impression that emerges from this wide range of themes is that different students engage in, and experience, learning in very different ways, whether that learning is in a classroom or via a computer screen. Some students specifically noted that they found the online classes engaging; others indicated that they found them unengaging. Having the opportunity to revise course content was seen in a positive light (as useful revision) by nearly one-quarter of students in their face-to-face responses about learning, but the type of revision was seen negatively (as a repetitive nuisance) by another 9-10% of students in both the face-to-face and the online responses. Taken together, this pattern of themes in student responses serves as a reminder that it can be quite misleading to draw broad conclusions about what students (dis)like about tutor-directed, face-to-face learning versus self-directed, online learning. It does seem that undergraduates generally benefit from the flexibility afforded by self-directed, online tasks (e.g., Brown et al., 2018; Hratinski, 2008). However, as noted by previous researchers (e.g., Anthonysamy et al., 2020; Owston et al., 2013), those with high levels of self-motivation and self-regulation appear best able to apply themselves and gain the most from these activities.

The findings from this small study are generally consistent with those from much larger studies, as well as meta-analyses. However, their importance lies in the contribution that they can make within their context. Specifically, the perceptions that these students reported about their own learning and effort are now being used by the class co-ordinator to improve the content and structure of these and similar future classes. For example, more focus will go into helping students to understand and learn the material presented in online practical classes, given that students felt they learned slightly less online than face-to-face. It is also important to provide more scope for discussion and for questions in online classes, and to require more students to contribute their ideas in face-to-face classes, to avoid the discussion being dominated by those who are more engaged, knowledgeable, or confident. The present results could also make a contribution beyond a specific set of classes. Asking students for their anonymous responses to these types of simple yet focused questions could help other educators to identify the strengths and weaknesses of their own class structures and teaching. This kind of method could thus serve as a starting point for other educators who are eager to identify students' perceptions about their learning experiences, and to use similar methods to improve their teaching in their particular context.

This study is not without its limitations. One is the imbalance in the level of detail invited from participants in explaining the 'why' of their perceived effort (for which they chose from a set of answers) and of their perceived learning (for which they provided a written response which could then be analysed thematically). It would have been preferable to ask for open-ended responses for both question types, to allow richer analysis of the reasons for students' effort, as well as for their learning. Another limitation is the restricted scope of the questions asked. Future, larger studies would do well also to collect data on individual student characteristics, and their academic performance.

Conclusions and recommendations

The results of this small-scale study are in line with those from decades of previous research: any differences in student experience and outcome between face-to-face and online learning seem to depend more on the quality than the modality of instruction. However, this study also provides insights into some of the reasons why students give to, and gain from, their in-class and on-screen studies. Overall, different students have quite different experiences of the two class modalities: a fast-paced classroom discussion might be perceived by one student as engaging and full of opportunities for gaining new knowledge, but by another student as intimidating and with little scope for developing a thoughtful response. It is not practical to suggest that every university instructor take student-centred learning to the lengths of developing a personalised learning plan for every student, based on their individual work/family commitments and personal characteristics. Nevertheless, a blended learning approach allows instructors to provide students with a range of in-class and online tasks. The current results suggest that giving students some choice about how they complete some task types might provide an efficient way for more students to feel in control of their own learning, and to fit that learning in more easily amongst their other work and family roles.

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Supporting digital engagement: An evaluation of the use of a Guide for effective development and facilitation of online discussion boards

Tracy Anne Douglas[A] A *Associate Head in Learning and Teaching, First year coordinator and Senior Lecturer, School of Health Sciences, University of Tasmania, Australia*

Carey Ann Mather[B] B *Senior Lecturer, School of Nursing, Fellow of the Higher Education Academy, Foundation fellow, Australasian Institute of Digital Health, University of Tasmania, Australia*

Louise Annette Earwaker[C] C *Research Services Librarian, University of Tasmania, Australia*

Allison Jane James[D] D *Lecturer, University of Tasmania, Australia, Australian Maritime College*

Sandra Lea Murray[E] E *Lecturer, School of Health Science, University of Tasmania, Australia*

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Abstract

The growth of blended and online learning within the higher education sector has required academic staff to develop new skills and confidence in delivering online pedagogy that successfully engages students. Previous research indicated it would be beneficial for staff to develop a common understanding of best practice in learning and teaching using asynchronous discussion boards. The aim of this research was to investigate use of the online Guide by facilitators, who are responsible for developing and facilitating online discussion boards and supporting students' digital engagement. Findings of previous research was used to inform development of the Guide. Additionally, a review of peer-reviewed and grey literature was undertaken. The researchers collaborated during a series of production workshops to plan, develop and write the Guide. Two members of the team assisted with conversion of the product into an open access online tool hosted by the University of Tasmania learning and teaching website. Feedback regarding the structure and content was embedded on the website to enable users to suggest improvements. Google Analytics data was collected monthly and ePrint data was also monitored. Findings over a 12-month period indicated the Guide was predominantly accessed by Australian users, although there has been growth in downloads of chapters from other English speaking countries. Reports indicate a high proportion of new sessions each month, peaking with the need to 'super speed' learning and teaching online due to COVID-19 health and well-being restrictions within the higher education sector, indicating that the Guide is appealing to a growing global audience.

Introduction

Facilitating student involvement is integral to successful student engagement when using digital technologies. Academic staff need to be confident in offering an online pedagogy that enables peer-to-peer learning, whilst using a networked approach to learning and teaching. However, learning and teaching in an online environment is challenging, particularly when endeavouring to engage students in active discussion. Communicating online is often asynchronous and can pose frustrations for all users. The main tool, utilised in learning management system (LMS), to provide communication between staff and students and between students, is the online discussion board (Andresen, 2009). Online discussion boards are utilised for multiple purposes in LMS including question and answer, social interactions and active discussion about the course or unit content, and general and assessment information. Online discussion boards may or may not be facilitated by academic staff. Facilitated asynchronous online discussion (AOD) boards are known to provide a flexible, constructive form of professional learning to support student learning (Thomas & Thorpe, 2019) and enable currency of unit content. AOD boards are known to support active learning and higher-order thinking, yet active engagement in online discussions by students is commonly not observed (Hew et al., 2010).

At the University of Tasmania (UTAS), online discussion boards are integrated into the blended learning framework of most units of study in a course (degree) within each unit's LMS site, known at UTAS as My Learning Online, or MyLO. Discussion boards are usually asynchronous and these forums within the MyLO tool are designed in a variety of ways determined by each unit coordinator. Recognising a lack of information or resources to support students and staff in the design and use of online discussion boards, particularly in relation to facilitation of discussions, a guide was developed for supporting the effective use of this tool. The ebook titled *Teaching and learning: Guide to online discussion boards* (hereafter known as 'the Guide') was released in 2018 and can be publicly accessed <http://www.teaching-learning.utas.edu.au/communication/online-discussions>. The Guide was initially advertised to staff at UTAS within staff professional development activities, UTAS staff news announcements, and new staff onboarding activities. The Guide is published with a permanent link in the University's open access repository <https://eprints.utas.edu.au/27198/> and can be located through web-based search engines.

The Guide was informed by existing literature and by UTAS staff and student perspectives of online discussions, which were researched via ethics-approved surveys and interviews. Previous studies have explored perspectives of educators, facilitators and students (Evans et al., 2019). These studies have consistently related recognition of satisfaction to one or more aspects of online discussion, including the structure of discussion forums, the level and type of interaction between educators and students and the quality of the discussion content (Ghadirian et al., 2017; Ladyshewsky, 2013; Thomas & Thorpe, 2019; Waters, 2012). Clear purpose of a discussion board is essential for engagement with identifiable student outcomes (Gregory, 2015; Steen, 2015). Research also identified issues with the design and facilitation of online discussion boards, including lack of student engagement, confidence and low levels of online communication skills of facilitators. The facilitator is often identified as the key to success or failure of discussions (Northover, 2002), with learning quality and student satisfaction largely driven by effective facilitation (Ladyshewsky, 2013).

The Guide is designed to assist staff in the creation and implementation of effective facilitated or non-facilitated online discussion. Irrespective of previous experience, the purpose of the guide is to assist educators in designing and utilising online discussion boards effectively. The guide consists of 8 chapters including an introduction and concludes with a checklist as illustrated in Table 1. Embedded within each chapter is a list of additional references and weblinks.

Table 1: Chapters of the Guide and included information.

Chapter	Included Information
Purpose	Discussion boards (DBs) must have clear purpose. This chapter presents the 'student voice 'and their perceptions of the use of DBs. Key reasons for incorporating DBs into curriculum design are discussed. How curriculum can be tailored to be more applicable to student and industry/professional needs are covered.
Discussion Board Design and Netiquette	Emphasis is placed on determining a clear purpose and goals for DBs. Educators are encouraged to consider unit learning outcomes, outlining the generic and the specific aims. Social connectivity is considered along with the types of discussion boards. Netiquette is also defined and addressed. Netiquette is defined as an outline of expectations, or clear 'rules of engagement'. This section includes: Discussion board design; social connectivity through discussion Boards; types of DBs; resources; netiquette and netiquette tips.
Student Engagement	Effective online teaching primarily relies on student engagement. To promote meaningful student engagement, there should be some degree of facilitation and constructively aligned to intended learning outcomes. The facts of student engagement are explored. This chapter includes: the student voice; student engagements tips and dealing with difficult behaviours.
Facilitation	This chapter flows from the previous chapter and addresses ways a facilitator can encourage active engagement and enrich learning experiences. The roles of a facilitator in gaining a robust discussion are covered along with circumstances that may impede success. This chapter includes: Facilitating a robust online discussion; Before discussion; during discussion; dos and don'ts during discussion and after discussion.
Assessment and Referencing	This chapter has two main parts, firstly it raises vexing issues of whether to assess or not, linking back to pedagogical goals. The student voice is again considered along with the perceptions of facilitators. Criteria for assessment (rubric) are addressed. This part includes: To assess or not to assess; Considerations when using assessment as an element ofthe discussion board. How to communicate requirements for referencing are discussed and examples of criterion referenced assessment are given. Both intext and end text referencing examples are provided.
Review & Evaluation	This chapter starts with the premise that effective learning and teaching practices require reflection, encouraging the review and evaluation of activities on a regular basis. Learning analytics are considered along with examples of surveys and peer review.
Checklist	This chapter summaries the overall content and includes general 'checks' and 'tips'. A section on time management concludes the Guide.

The implementation of the Guide as a free resource to support design and facilitation of online discussion boards is currently being investigated by the research team. Support includes, building confidence in unit coordinators to direct facilitators using the best practice exemplified in the Guide. Research has shown the Guide is a useful resource for all staff teaching online, and with an interest in online discussions as a learning and teaching platform. Evidence from students and staff at UTAS and data analytics regarding access of the Guide, both locally and globally may demonstrate the impact of the Guide in its initial two years of release.

The aim of this study was to investigate the use of an open access online Guide by facilitators who are responsible for developing and facilitating online discussion boards and supporting students' digital engagement. A snapshot of the use of the Guide globally is the main focus of this article.

Literature Review

Overview

Online education is now an integral part of higher education (Kebritchiet al., 2017; Li & Irby, 2008; Luyt, 2013). The rapid integration of online learning into higher education, further hastened by the 2020 COVID-19 pandemic, has meant that academic facilitators may be ill-equipped to transition effectively from face-to-face to blended or online modes of delivery of unit content. Blended learning and the delivery of online content requires an additional set of learning and teaching skills which includes re-imaging the digital learning space and realignment of pedagogical approaches (Mayes et al., 2011). Additionally, transition to synchronous or asynchronous online discussions also demands facilitators develop the requisite knowledge, skills and behaviour to engage and model online learning opportunities and etiquette to their students.

Online discussion boards

AOD is an effective communication tool in online learning. Kebritchi et al. (2017) identified four specific categories of issues and challenges for teaching successfully online. These categories included the changing role of the educator, transition from face-to-face to blended or online learning, time management, and teaching styles. Of relevance to this study was the struggle for facilitators who no longer had face-to-face contact with students to learn to engage and deliver content in an online learning environment (Crawley, et al., 2009). A barrier to engaging students when transitioning to online education is that facilitators often bring their traditional styles of teaching to the online environment, and these styles may be ineffective (Coppola et al., 2002). The effectiveness of online learning can be improved using AOD boards to support students' activity, exploration, and knowledge development (Juan et al., 2011). However, for novice online facilitators this can be challenging, and so the availability of high quality resources to support engagement is essential to enable effective online learning and teaching environments, for example, Teacherstream LLC (2010). Online discussion boards can be synchronous or asynchronous, with the latter the most likely scenario.

Synchronous online discussion board facilitation requires a teacher and social presence that promotes the importance of person-centred opportunities for learning (Garner & Rouse, 2016; Thomas & Thorpe, 2019). Effective engagement of learners requires online facilitators to establish the culture and tone of the group by maintaining an authentic presence that can enable students' to be motivated to develop a willingness to participate (Mokoena, 2013; Thomas & Thorpe, 2019). When positive group dynamics develop there is opportunity for students to learn effectively, so the intangible qualities of the facilitator to guide student learners cannot be underestimated (Mokoena, 2014; Thomas & Thorpe, 2019).

Synchronous and asynchronous online facilitation has well-documented challenges. These challenges include learner expectations such as readiness to learn, lack of engagement, limited interaction among participants and/or the facilitator or a lack of academic focus (Kebritchi et al., 2017; Verenekina et al., 2017). Unsound pedagogy can compound content and presentation issues (Kebritchi et al., 2017). Additionally, these issues can be further exacerbated by lack of preparation, incongruent facilitation styles or inexperienced facilitators (Mokoena, 2014, Kebritchi et al., 2017).

Facilitation

The value and success of eLearning programs is to a large extent dependent on the facilitators' skills and expertise. This was recognised by Hootstein (2002), who argued that facilitators wear "four pairs of shoes"; they must fulfil roles as instructors, social directors, managers and technical assistants. Facilitation requires a guided and supported training system, and must be based both on educational theories, and a model supporting online facilitation. Evans et al. (2019) suggest there is limited research exploring the training and support required for online facilitation and that future research is required. While there is emerging literature on the importance and contents of training for facilitators (Legros et al., 2015; Milot et al., 2017), along with well-established studies focusing on general training for online teaching (Gold, 2001; Hampel & Stickler, 2005), there is a lack of detailed insight into the specific training and support requirements of online facilitation (Evans et al., 2019). Given that effective online facilitation is crucial to student learning, the importance of effective training cannot be understated.

Costs

Increasing pressure on university budgets and the pressure to teach within resource constraints often conflict with facilitator preparation expectations. Failure to address the time it takes to prepare high quality online content that engages students and time allocated may lead to facilitators becoming isolated from their colleagues. Practical resources such as a guide to effective use of online discussion boards enable instructors to enhance their skills in AOD within a less isolated environment (Mayes et al., 2011).

Accelerated digitisation of learning

During 2020 there has been a rapid growth of digitalisation of teaching as the COVID-19 pandemic has become a major interlude in higher education, halting face-to-face classes and 'super-speeding' online learning and facilitation. Just as the Titanic sinking progressed naval architecture, educational responses to COVID-19 have propelled, and will continue to propel, online teaching and learning forward. Langford & Damsa (2020), discussing COVID-19 online teaching experiences and the acceleration of digitisation teaching at

record speed, estimated that such a process would normally take 15 years. These authors noted a need for pedagogical knowledge and guidance, improved understanding of what works for students, and opportunities to access information on how to design digital teaching from both experts and colleagues. University educators teach in different faculties and disciplines, using diverse teaching strategies pertinent to particularcohorts of students.

The Guide is a result of the authors' collective experiences drawn together to assist other educators and students. As educators during the pandemic we moved quickly to online delivery; concerns naturally arose about the quality of remote education. The Guide is a ready to use resource easily accessible for educators globally. Crawford et al. (2020) observed that this intra-period has potential to be an enabler of more flexible and innovative digital education methods. The Guide can be an intra-period and future practical resource to encourage and harness fresh preparedness for the uptake of new teaching strategies. The renewed interest in technology enhanced learning and teaching for a diverse range of learners who may not have access to reliable internet provides valuable insights to further improve online learning for the benefit of all stakeholders: students, facilitators and institutions.

A review of the literature on the experience of facilitators in the use of online instructional guides for AOD suggests that, while guides are available within the grey literature, there is a scarcity of studies on the usage of any guides, and on how effective they are in supporting digital engagement with students. According to Mayes et al. (2011), online facilitators face a daunting task of reviewing an increasing amount of literature to enable them to facilitate effectively. This can be simplified by the access to the Guide. The current study endeavoured to contribute to the literature, and to report the use of this AOD Guide both locally and globally.

Methods

Formative study and participants

To explore understanding of discussion board facilitation both students and facilitators were invited to participate in an ethics approved study (University of Tasmania Social Sciences Ethics H0013544). Students completed an online survey and semi-structured interviews with facilitators were undertaken. The findings indicated that a guide for facilitation of discussion boards would be beneficial and may provide best practice evidence-based guidelines for use within the UTAS LMS.

Development of the Guide

The findings of the formative study led to the development for UTAS staff of the Guide to online discussion boards (Douglas et al., 2017b). The facilitator perspectives of using discussion boards is currently in press (Douglas et al., in press). To support the findings and strengthen the evidence base, the researchers conducted a comprehensive search of the literature to scope for current resources regarding online learning and teaching, specifically facilitation. The databases ERIC, Scopus, Web of Science and Google Scholar were searched using terms including: asynchronous discussion, discussion boards, online learning, e-learning, facilitator, online training, pedagogy, and student engagement.

Literature searches of journals were also conducted to ensure currency of the information aligned with current pedagogy. Triangulation of the information was undertaken by each of the researchers being responsible for development of chapters within the proposed Guide. The research group met monthly and then fortnightly over a 12-month period to collaboratively workshop and produce the Guide and ensure researchers understood the scholarly intent. Collaborative discussions also ensured that all researchers involved were congruent in the purpose and Guide development outcomes.

In consultation with two members of the team, the Guide was converted to webpages by a web developer. A downloadable version of each chapter and a full version of the Guide was also provided to ensure users had access to the information in the Guide in more than one format. A feedback form was provided to users for comments, which could be used to amend or improve the Guide over time. Evaluation of the Guide was embedded as part of the research process. Interviews with self-identified Guide users and facilitators, and feedback from the website, were collated. Additionally, the Google Analytics data was uploaded monthly to monitor the use of the Guide. It was anticipated that this data could be used to direct further development or alteration of the type of information or format provided for use. Google Analytics data has been collected since the launch of the Guide (http://www.teaching-learning.utas.edu.au/communication/online-discussions) in November 2017 at the UTAS Teaching Matters conference (Douglas et al., 2017a).

Analysis of Guide use

For the purpose of this paper, the use of the guide has been monitored using Google Analytics for the period of 1 May 2019 to April 2020. Data regarding the number of users and user type, page views, downloads and time in sessions has been obtained and averages determined. Feedback from students and facilitators via anonymous student evaluations and facilitator focus group interviews within a single unit of study has been obtained. This has provided a snapshot into the value of the guide to enhance discussion board design and facilitation.

Results

The online discussion board was hosted on the learning and teaching component of the UTAS website with open access available. From May 2019 to the end of April 2020, Google Analytics and download data from the UTAS Open Access Repository (ePrints) were analysed using Microsoft Excel to gain a snapshot of access to the guide in the last 12 months. During this time period, there was a total of 252 downloads from the website (Figure 1). The majority of these were from Australia, with the highest download month being reported

in August 2019, March 2020 and April 2020.

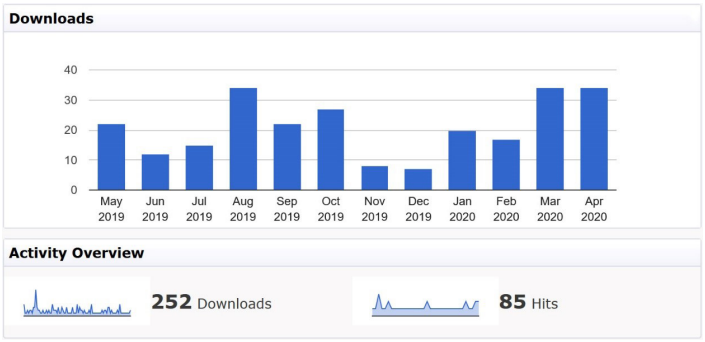

Figure 1: Total document downloads in 12 Months (May 2019 to April 2020) (https://eprints.utas.edu.au/27198/)

The number of downloads increased in August, 2019 and March and April, 2020. The fewest downloads corresponded with the breaks between semesters, as shown by the figures for January and February, June and July, and November and December.

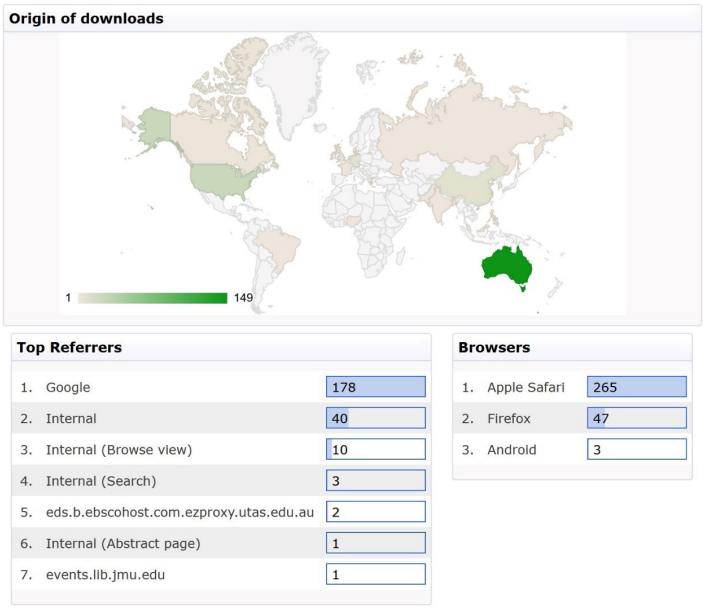

Figure 2: Origin of downloads from May 2019 to April 2020 (https://eprints.utas.edu.au/27198/)

Google Analytics data indicated that the Guide was downloaded predominantly from Australia, however, North America, United Kingdom, China, South East Asia, and Germany, using a variety of search engines was also recorded (Figure 2). Google was commonly used as the search engine to locate the existence of the Guide and Apple Safari was the most common browser used.

From May 2019 to April 2020, 1291 users accessed the Guide with over a total of 1400 sessions. Within this time, 218 page views occurred. The largest number of sessions were recorded in March and April 2020 with 88% of users identified as new users during this time. This finding aligns with a period of learning and teaching impacts created by COVID-19 across the education sector. The amount of time spent viewing the pages online was minimal, indicating that users are more likely to download or copy information than spend time reading information online. Bounce rates support this download assertion, as they are indicative of single page sessions, in which the user views one page and then exits the website. The bounce rate on average for the Guide was 64.1% per month and the average amount of time spent viewing the Guide online was 1 minute. More than 80% of the views each month were new, suggesting that individuals accessed the Guide and were able to download or retrieve the required information rather than continually re-visiting the Guide for additional assistance.

The Guide is divided into chapters: purpose of online discussion boards; learning design and netiquette; engagement; facilitation; assessment; review and evaluation; and a checklist of tips and tricks. These sections were determined via survey and interview data from participants in the UTAS academic community. Google Analytics data identified that the most common chapters of the Guide to be accessed during the 12-month period were assessment (34.6% of page views), followed by learning design and facilitation (14.6% of page views), and thirdly, design and netiquette (13.4% of page views). Design and netiquette chapters were particularly popular during February 2020 to April 2020 which correlates with the impact of COVID-19 on learning and teaching globally.

Once the Guide was available for facilitators, they were interviewed. Students were asked to participate in an online survey to indicate their experiences of online discussion boards. Facilitators responded positively to their experience of facilitating online discussions once they had access to the Guide as a resource:

> "I initiated the conversation each week to get the discussion going and the students were totally engaged"

> "the frequency of my engagement provided an opening for students to answering their questions and responded to each other"

> "being proactive and responding every day allowed the students to engage in almost real-time like a tutorial"

> "Understanding how different students engage differently was a huge learning experience"

Similarly, students also experienced a positive learning experience when facilitators were supported by the availability of the online Guide:

> "really enjoyed reading other students' opinions and sharing my own"

> "It really challenged the way I think…. It was also really good to have facilitator opinions to consolidate learning"

> "topics such as disability and mental health really opened my eyes and the discussion posts helped my learning"

> "The facilitators being present allowed students to respond in almost real time"

Responses reinforced the value of the Guide to enable online discussion boards to be used as an effective learning platform and pedagogical tool.

Discussion

The initial purpose of the Guide was to provide open access support to educators and facilitators by providing a resource to assist with gaining understanding and insight, including valuable tips for effective online discussion board use in higher education, based on a need identified within our University context. Asynchronous online communication can enable critical reflection and rich discussions of learning and teaching (Salter et al., 2017) as an essential component of active learning. However, staff involved in facilitating AODs need to be resourced to promote these rich learning environments that create positive learning experiences. Facilitation is widely recognised as essential to an effective online discussion (Ladyshewsky, 2013). Effective online discussion board design fosters student engagement (Hew et al., 2010), and assessment is also feasible within discussion board contexts (Douglas et al., 2015). The 12-month period of the use of the Guide as identified through the analytical data in this study indicates that assessment, design and facilitation were the most commonly accessed chapters of the Guide. During the initial research before the development of the Guide, the project team identified design of effective discussion boards, the use of discussion boards in assessment and the role of the facilitator in meaningful discussions as areas that educators required support (Douglas et al., 2015; Douglas et al., in press). The popularity of these chapters was further evidence that these were areas of need for educators seeking advice or information about online discussions.

The Guide was designed as a fit-for-purpose tool for a specific LMS. However, it was envisaged that aspects of the Guide would be useful to any users of online discussion boards. The chapters within the Guide enable users to easily access specific content areas related to enabling effective online discussion and so a high bounce rate by users (average 61.3%) is not interpreted as a poor result. Rather, the bounce rate indicates that users are accessing the sections of the Guide which are of relevance to their current learning and teaching requirements.

The literature review establishes that online discussion boards are valuable to student learning, support and engagement, providing a flexible and constructive form of professional learning whilst maintaining the currency of unit content. With this awareness in mind, the Guide provides strategies to improve positive and informative dialogue between students and educators. The sections of the Guide allow educators to select topics in designing and utilising online discussion boards effectively based on their current ability, allowing skills and ideas to build progressively as confidence builds. An example of how the Guide can be effectively used is demonstrated by an educator who has experience using boards for a general chat but has not as yet facilitated a discussion or assessed student responses; the guide provides strategies and examples for immediate application. The Guide incorporates the student voice through the use of student comments in sections to inform the reader of the value and possible opportunities for application of the tools, strategies and techniques presented.

Smalley (2020) noted previous studies have warned that student performance, particularly for students who are already academically struggling, can seriously suffer during online studies. Smalley also observed that research has found up to 20% of college students have issues accessing effective technology including working laptops and reliable high-speed internet. The Guide can assist educators to use asynchronous communication and facilitated discussions across student cohorts to improve the online experience nurturing those that are struggling or do not have reliable internet for synchronous studies.

Sixty-nine per cent of the downloads were from within Australia, which was not surprising given that the Guide was launched at an Australian university in response to the needs of that university. The pattern of downloads appeared to vary according to the university academic year in Australia with downloads consistently higher during common semester months across Australia. In addition, it was noted that 16% of downloads occurred in Northern America and Great Britain, indicating more interest in the Guide by English-speaking users. These countries have similar education systems; therefore, the relevance of the Guide could be similar in their learning and teaching contexts. Different countries do rely on different learning platforms, and teaching styles and computer-based technologies vary from country to country. Communications with colleagues have indicated that the Guide is a useful tool for facilitators planning and implementing online discussion boards within their curriculum (Douglas et al., in press). As the Guide was originally designed based on local knowledge and has only been advertised locally, it is encouraging that open access has enabled uptake of the Guide across the globe, albeit intermittently.

The existence of AODs is common in eLearning but has not been fully quantified globally, and the use of such boards as an assessment tool or solely as a communication tool varies within educational contexts (Serdyukov, 2017). As the Guide is written in English, English-speaking nations may use similar terminology and therefore provide search terms that enable them to easily locate the Guide as a resource. The use of English may explain why the Guide been accessed and downloaded more often within English-speaking countries. Furthermore, promotion of the Guide has only occurred locally within a single Australian university and so there is an expectation that Australia would be the main origin of users. The inclusion of eLearning both within higher education and in other education settings is increasing throughout the world (Sener, 2010). For this reason, blended learning paradigms incorporating AODs as an online communication tool are becoming more evident (Andresen, 2009). As blended learning becomes more prevalent, the need for a contemporary Guide will continue to increase to ensure that fit-for-purpose resources are available to support staff as they renew curriculum to accommodate current digital and

pedagogical needs (Ainscough et al., 2019; Dykman et al., 2008).

Patterns of access and downloads of the Guide are indicative of promotion peak points and often occurred during major semesters rather than at typical exam times or extensive breaks in the academic year in Australia (i.e. summer holidays). The high number of downloads in August 2019 may be due to the first assessment task (week 4) being due in the second semester within Australian universities. High downloads during March and April 2020 coincide with the impact of COVID-19 forcing higher education to transition quickly to fully online learning and teaching environment throughout many countries. It is interpreted that the overall download patterns are consistent with staff needs during semester, with peaks in access corresponding with promotion of the Guide within UTAS at local conferences and professional development activities, as well as the effect of the COVID-19 pandemic. Importantly, there are new viewers each month, suggesting that the Guide is consistently attracting new users, mainly within Australia, and also globally.

The data for browsers used to locate the Guide suggests there is a preference for Safari which is often used across a variety of devices. Unsurprisingly, Google is the most common search engine employed to find AOD information with more than three quarters of users using this engine to search for the Guide.

The Guide was originally designed to enhance facilitator skills, and so comparatively high use of this chapter of the Guide was enlightening. In addition to facilitation, the design of online discussion boards is known to be important in promoting discussion as an effective and engaging learning tool (Thomas & Thorpe, 2019). Well-designed asynchronous discussions have been found to enhance student engagement and learning (Ainscough et al., 2019; Dixson, 2010). It was encouraging to note that the design and netiquette section of the Guide was one of the most highly used. Educators often struggle with how to effectively assess students authentically, and so the regular access of the assessment chapter of the Guide indicates an interest in investigating online discussions as an effective form of assessment (Douglas et al., 2015). In addition, research has previously indicated that the use of referencing in online discussion boards can be unpopular amongst students (Douglas et al., 2015). The inclusion of referencing tips within the assessment chapter may be of interest to other educators who have experienced dissatisfied student cohorts.

The initial feedback obtained within UTAS indicates that the Guide is useful to instructors and has enhanced the value of online discussion boards in a fully online unit. Qualitative feedback from both facilitators and students highlights a richer experience in online discussion board usage as design principles and facilitation strategies from the Guide have been implemented (Douglas et al., 2018). Although full determination of the impact of the Guide globally from this evaluation of analytical data, local research has indicated that the Guide has enhanced learning and teaching practices within UTAS (Douglas et al., 2018). Improvements in facilitation have enabled students and facilitators to engage in enriched discussions across a range of disciplines.

Study limitations

This study, while providing useful insight into the use of the Guide had limited access to the Google Analytics and repository data. This lack of access hindered fully understanding the impact of the Guide beyond the UTAS setting, thus limiting a more granular understanding of the site and its users. Using other types of data analytics will enable a stronger check of performance of both promotion of the Guide and content along with heavy traffic areas and bounce rates.

Further investigation is needed on the bounce rates and to cross reference this rate with the time on each page. Some future considerations are, for example, whether the page load time is acceptable, whether formatting is suitable and checking the internal linking structure is logical and useful. Further, the number of people accessing the Internet from mobile devices is increasing. Future investigations should determine if the Guide should be optimised for mobile devices. A limitation of this study and an area for future research is the impact of supporting facilitators using digital engagement with international students, many of whom are learning in a second language.

Recommendations

The Guide was originally designed based on UTAS knowledge and advertised locally, however, as an open access ebook, there has been an intermittent global uptake. Broadly, it is envisaged using targeted promotion and marketing to encourage more educators to utilise the Guide from within UTAS and beyond our university attracting national and international users.

Expressions of scholarship are becoming more diverse and improvements of data analytics to determine who is using the Guide and the key traffic areas would be beneficial. Altmetrics can measure and monitor the reach and impact of the Guide through online interactions. Improving altmetrics and triangulating with other data analytics to understand which chapters are making the most impact will assist with the aim of improving the existing content to meet user needs and appeal to a wider global audience. As the Guide is in its third year of publication, the opportunity to collect longitudinal usage data to form a clearer understanding of users will be exercised along with collecting other evidence such as citation data.

There is currently a feedback box linked to the Guide on the UTAS teaching and learning website which needs to be more visible and promoted more effectively to enable users to provide opinions and suggestions. One example to improve feedback is the use of a pop-up survey before users leave pages of the Guide. The project team intends to continue to improve and evaluate the Guide based on feedback received. Additional improvements including a section to orientate novice facilitators of discussion boards and an online masterclass for facilitators are planned. In addition, a

version of the Guide suitable for students to enable them to engage in online discussions more effectively is envisaged. These additions will enhance the value of the Guide(s) to a global audience to provide effective 'just-in-time' resources for online learning and teaching practices.

Conclusion

Access to the Guide increases during promotions and at the beginning of semesters, with visitors accessing specific information according to relevant needs rather than browsing. There is a high proportion of new sessions each month, especially since the COVID-19 pandemic has moved higher education online, indicating that the Guide is appealing to a growing audience. Communications with UTAS staff indicate that the Guide has been a valuable resource to enhance online communication. Findings indicate that the Guide is contributing to interest in the pedagogical use of online discussion boards at a global level, although most users are currently located within Australia. The Guide has provided ideas to encourage and cement rich interaction between students and also between students and facilitators. This benefit reaches beyond the classroom to foster a range of positive graduate outcomes. Users found ideas to initiate and direct conversation, becoming confident participants exchanging information and expressing self-belief. The implications for practice from the Guide are a better fit between the learning outcomes of a unit and the ability of facilitators to use technology to achieve these outcomes. Facilitators responded positively to their experience of facilitating online discussions once they had access to the Guide.

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Digitally empowered students through teacher leadership: The role of authentic leadership

Kerryn Butler-Henderson[A] A *Associate Professor of Digital Innovation in Health and Health Pedagogy, University of Tasmania, Australia*

Joseph Crawford[B] B *Lecturer, Learning and Teaching, Academic Division, University of Tasmania, Australia*

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Abstract

Technology is advancing, and with that, our students require digital empowerment and fluency to maximise their chances of success in their current and future personal and professional lives. In this paper, we build on the existing teacher leadership and digital literacy literatures. We theorise that authentic leader behaviours in higher education teachers offer a moderation effect on the relationship between teacher leadership and digital empowerment of students. We discuss the implications proposed from this critical review on increasing efficacy of student learning within the digital era. We see significance in this work, particularly as educators begin to test new digital pedagogies incorporating immersive learning environments, virtual reality, and augmented reality.

Introduction

In today's digital world, there are far less classrooms filled with notebooks, printed hand-outs, bulky textbooks, pen licenses, and whiteboards with the teacher's name in the top right corner. From primary schools to higher education, the only significant difference is the size of the textbook and the frequency of exams. Today's contemporary higher education tutorial is a place of laptops and tablets, where innovative pedagogy enables learning: flipped classrooms (Abeysekera & Dawson, 2015; Bishop & Verleger, 2013) and blended learning (Osguthorpe & Graham, 2003) are but two examples. Contemporary approaches create opportunities for more effective and authentic learning for students, as well as significant challenges to facilitating high impact learning and teaching. Students can be engaged in learning relevant to their future personal and professional lives through effective utilisation of their devices (e.g. Prensky, 2005). Yet, a student's learning performance and cognitive abilities are affected by the mere presence of distracting technology (Thornton et al., 2014; Ward et al., 2017).

Students, in engaging with technology-enhanced learning and teaching require a suite of underlying digital competencies to a) critically evaluate digital content, and b) navigate content using their technology. There has been considerable emergent theoretical and empirical research conducted in this area despite a lack of clarity on terms used (Spante et al., 2018). In Spante et al.'s (2018) systematic literature review, digital literacy tended to be more commonly discussed in the literature compared to digital competence, except in Europe where the reverse was true. Regardless of the term or concept used, there is growing evidence that there is a genuine need to consider digital pedagogies for student (flexibility, opportunity, and authenticity) and organisational (financial efficiency and maintaining curriculum currency) reasons.

The aim of this paper is to examine the role that a teacher's authentic leader behaviours have on enabling students to be digitally empowered and to develop their digital fluency. Teachers play a critical role in the classroom, and their leadership behaviours influence this relationship (Yorke-Barr & Duke, 2004). To do so, this paper begins with a more holistic explication of the opportunities and challenges afforded by digital education and follows with a brief explanation of the critical review method approach adopted for this paper. In the literature section, we explore the current evidence on the digitally empowered student, and what teacher leadership is. We follow with explicating the authentic leader and their role in classroom settings and follow with a discussion theorising possible development activities for developing digital fluency and enabling digital empowerment in tertiary students.

Context

With technology impacting all industries, organisations are moving towards a digital service model (McKinsey Global Institute, 2018). However nearly half (44%) of businesses acknowledge that whilst they are incorporating digital into their strategy, they are not adequately preparing for digital service delivery (Kane et al., 2016). Organisations are concerned about the impact of digital service growth on the workforce (McKinsey Global Institute, 2018). Those leading digital service transformations are considering now how to prepare the current and future workforce to be digitally fluent.

Digital literacy was conceptualised by Glister (1997, p. 1) as "the ability to understand and use information in multiple formats from a wide range of sources when it is presented via computers". This definition was proposed more than two decades ago, during the early days of home computing and even earlier days of the internet. During the two decades since, technology has integrated into every facet of our lives, reshaping how we transverse socially, professionally and educationally. As such, today's definition of digital literacy may be an extension of Glister's definition. Furthermore, its meaning differs depending on the discipline and context: "when we use the term literacy as a descriptor, it is because being literate is fundamental to how we communicate knowledge and meaning, and this includes the digital environment" (Combes, 2016, p. 6). Therefore, this paper adopts the Coldwell-Neilson (2018, p. 107) working definition: "digital literacy is the ability to identify and use technology confidently, creatively and critically to effectively meet the demands and challenges of living, learning and working in a digital society".

There are numerous predictions of technological transformation or trends for the next decade. As summarised by Hajkowicz et al. (2016), these often include the areas of data, connectivity, and artificial intelligence. Developments in the Internet of Things and automation will lead to increased big and small data, improving evidence-informed business strategies. This will, in turn, impact both organisational structures and workforces. Remote offices and co-working environments will increase, as will the number of contract or freelance workers. Within these environments, small business will experience rapid growth. Digital entrepreneurialism thrives in agile environments, driving productivity and innovation with low cost. As the governance structure of larger organisations does not inhibit start-ups, they can turn ideas into reality in lean, quick ways. Yet, it will depend on a digitally fluent workforce, with a higher skill set. In this transformation, Frey and Osborne (2013, 2017) predicted around 47 per cent of the employment market in the United States are at a high-risk for computerisation in the next one to two decades.

McKinsey Global Institute (2018) examined the impact of automation and artificial intelligence on the future of the workforce, stating that there are current skills shortages across industries. Predicting the number of hours spent using different skills, they forecast a 55 per cent increase in technological skills by 2030. Some categories of skills will be less in demand, such as basic data input and processing skills (decline by 15 per cent) and physical/manual skills (decline by 14 per cent). These shifts signal the impact of technology on roles where the functions are largely routine procedural or manual tasks that could be performed by machine language or robotics.

This need for digitally fluent workers is already shifting the graduate capabilities in vocational and higher education. The Committee for Economic Development of Australia (CEDA, 2015) identified the significant shortages in digital skills and recommended the need to increase digital literacy in school education. Technological advancements are enabling institutions to meet demand for more flexible, individualised education. Davies et al. (2017) reported industry research findings that 70 per cent of vice-chancellors agreed technology-enhanced learning is essential in today's environment. With innovations such as MOOCs and the increase in blended learning (Harris & Fu, 2018), more universities are introducing digital capability frameworks to support staff and students. An examination of 32 Australian university websites identified only half publicly advertised information on their website about their approach, framework or strategy to build digital capabilities (Huber & Shalavin, 2018). Of these, all referred to staff or students, but five websites only referred to students and did not include staff. So, while Davies et al. (2017) report that vice-chancellors may agree on the importance of technology-enhanced learning, Huber and Shalavin (2018) report this is not translating into digital capability building across the sector. Furthermore, while many publicly published frameworks provide a structure to develop digital capability in an organisation, they do not describe the attributes of a digital worker, which in this context is either the student or the teacher. Many also do not consider the impact of the relationship between educator and learner and its impact on building digital capabilities in graduates.

Method

This paper adopts a critical review method and does so for numerous reasons. First, the areas of literature considered in this paper have some development in their own right; but lack coherency across these domains. Thus, a less systematic approach to assessing the current literature is required to create a preliminary understanding of how authentic leaders may aid in the digital empowerment challenge. In a typology of literature reviews, Grant and Booth (2009) highlight multiple parts to a critical literature review. The aim of a critical review should be to "demonstrate [the] writer has extensively researched [the] literature and critically evaluated its quality" (Grant & Booth, 2009, p. 94). Thus, we draw on our existing works in the area of authentic leadership (Crawford et al., 2020c), leadership in digital contexts (Low et al., 2019), digital fluency (Marc et al., 2019), and their synthesis in the workplace context (Crawford & Butler-Henderson, 2020).

Literature

This section begins with a discussion on the digitally empowered student, building on existing literature on the digitally empowered employee. Next, teacher leadership with a focus on the influence of teacher behaviours on student outcomes and development is considered. The section on authentic leaders and followers begins to explicate the theory of authentic leadership and the leader-follower relationship parallels that exist with effective teacher-student relationships.

Digital literacy in students and academics

There is an assumption that the implementation of digital literacy approaches will result in students with a good level of digital literacy. For many, exposure is not equivalent to understanding in relation to a student's regular interaction with digital technology (Butler-Henderson & Crawford, 2019; Murray & Perez, 2014). Even where students are required to use technology as part of their studies, this does not translate into computer literacy (McLachlan et al., 2016). Further, there is a disconnect between perceived literacy and actual literacy, with ECDL (2016) reporting this variation differing on average by 55 per cent. Therefore, an understanding of the attributes of digital literacy in students is required as a foundation of any approach.

The existing frameworks are centered around the areas for development of digital literacy. The Jisc (2019) framework incorporates six elements: i) ICT proficiency (functional skills); ii) information, data and media literacies (critical use); iii) digital creation, problem-solving and innovation (creative production); iv) digital communication, collaboration and participation (participation); v) digital learning and development (development); and, vi) digital identity and wellbeing (self-actualising). The DigComp 2.0 framework (Vuorikari et al., 2016) includes the elements of i) information and data literacy; ii) communication and collaboration; iii) digital content creation; iv) safety; and, v) problem-solving. There is commonality between both frameworks, but neither describe the attributes they are aiming to develop in a student or academic. Taking the working definition posed by Coldwell-Neilson (2018), neither of these frameworks include their three C's: confidently, creatively, and critically. The closest is the Jisc Tool integration of creation, problem solving, and innovation, but this is still an area for development, not attributes.

The nomological network of the digitally empowered worker (DEW) posed by Crawford and Butler-Henderson (2020) identified four dynamic attributes observed in an individual who has digital literacy. The DEW is an individual with strong digital literacy skills. The first attribute, awareness, is "the ability to perceive, feel, know, and understand people and events" (Crawford & Butler-Henderson 2020, p. 110). This includes developing social and emotional skills, including communication, negotiation, interpersonal, leadership, entrepreneurial, initiative-taking, adaptability and continuous learning skills. The second attribute, creativity, "involves forming solutions to bring one's ideas, thoughts and dreams into reality in ways that are novel and useful" (Crawford & Butler-Henderson, 2020, p. 111). Through the creation of ideas, innovation occurs whereby these ideas are used to improve processes, products, services, or procedures. The third attribute, agility, is the "ability to be flexible and quick" (Crawford & Butler-Henderson, 2020, p. 112). This involves decision making, cognitive flexibility, and judgement. The last attribute, learning orientation, is the ability "to be able to identify and set their own learning goals, and be open to new ways of working and learning" (Crawford & Butler-Henderson, 2020, p. 113). This enables individuals to remain current across contemporary developments through the

development of their knowledge and skills.

Three quarters of over 7,000 students surveyed reported improved learning when digital innovations were used effectively by teaching staff (Davies et al., 2017). Innovations included online activities, virtual learning environments and assessment submission. Huber and Shalavin (2018) identified several studies that discussed digital literacy in education, of which nine included staff in a higher education setting in the study population. Teacher leadership influence on student digital literacy did not appear in any of these articles. Coldwell-Neilson (2018) recommended that academic digital literacy should be at least to a level of confidence with technologies to enable them to pass this onto their students. This is the only reference the authors could find with regard to the connection between leadership and digital literacy in higher education.

Teacher leadership

Teacher leadership and school leadership have been oriented around the idea that principals, headmasters, advanced skill teachers, and other senior education administrators influence the effectiveness of front-line teachers (Heck & Hallinger, 2009; Huber, 2004; Leithwood et al., 2004). The term 'leadership' in higher education often lends itself to an apparent synonymous term 'manager' (e.g. Roettger et al., 2017). This is despite the recent evidence suggesting that leadership is the enactment of informal influence by an individual, rather than the leverage of positional power for achieving outcomes (Crawford et al., 2020c). There is, however, much to be understood between formal and informal leadership relations (White et al., 2016).

While distributed leadership theories articulate that central authorities distributing positional power across the organisation is necessary (Harris, 2009), there is growing evidence of the role of the teacher's leadership capability and behaviour. In fact, some scholars go as far as to distinguish the notion of leadership using primarily informal influence with some formal authority, and the management-oriented use of coercive rules (Vigoda-Gadot, 2007). While informal leadership capabilities are often sought (Wingrove, Clarke, & Chester, 2015), they are not always a priority against research and teaching proficiency and experience. In broad educational contexts, leadership capacity building is a key success factor in enabling sustainable improvement of student outcomes (Lizzio et al., 2011).

In higher education, progression has moved towards developing the teaching team (Benjamin, 2000; Brown et al., 2013; Carr et al., 2020). Organisational scholars recognise the value of developing leadership capacity in teams through formal and informal leaders (Day et al., 2004). The contemporary focus on individual teachers and their effect on student performance should be replaced by a broader approach to considering the teaching team surrounding the delivering teacher. In higher education, this is particularly important given the need for diverse expertise to deliver high quality content: from lecturers, professors, and content experts to administration support and educational developers.

Three elements emerged with regard to teacher leadership in the higher education context: i) individual lecturer behaviours, ii) their exhibition of leadership, and iii) student legitimation. First is the individual leader and their innate and developing behaviours, attitudes, and skills. These psychosocial behaviours are commonly defined within leadership theories. Many of these behavioural frameworks have been applied to learning and teaching in higher education: transformational leadership (Lo et al., 2010), full-range leadership (Bodla & Nawaz, 2010), charismatic leadership (Bastedo et al., 2014), and authentic leadership (Elrehail et al., 2018) are commonly applied.

Second, lecturers and their relationship/exchange with students has a considerable effect on a student's desire to engage in their subject/unit content and remain in their course (Farr-Wharton et al., 2018). The authors reported these lecturers exhibit leadership through development of informal relationships and demonstration of legitimate expertise in their content delivery. They may, at times, also use minor forms of positional power by virtue of the institutional context they operate within. For example, via assessment deadlines and a baseline degree of power-distance between staff and student (e.g. DePew & Lettner-Rust, 2009; Taibi, 2006).

Third, within the literature, students characterise an educational leader different than lecturers (Richards, 2011). Teachers have perceptions of problem-based learning (Ribeiro, 2011) that conflict to some degree with student perceptions (Pepper, 2010). Follower legitimation of leaders is a common method of assessing leadership capability with reduced bias (Crawford & Kelder, 2019). This approach has also led to theoretical understandings of the way in which followers interact with their leaders. Likewise, the way a student perceives their teacher will influence their engagement and attainment in the classroom setting. These three elements offer unique insights for consideration in our pursuit to better understand the context that can create more digitally empowered students.

Authentic leaders and followers

Authentic leadership theory emerged in the early 2000s as a response to growing concerns of corporate malfeasance at the hand of unethical or unaware leaders. The dotcom bust and 9/11 are commonly cited in the early literature for their role in the formation of more ethical, positive, and authentic forms of leadership (Luthans & Avolio, 2003). The current literature debates the underlying philosophies of the authentic leader with new definitions and conceptualisations emerging from the literature. Some argue it may offer a positivity trap (Alvesson & Einola, 2019), or challenge its current assumptions (Iszatt-White et al., 2019a). The construct, however, has been applied broadly in the past decade. A systematic literature review (Gardner et al., 2011) formed the third-largest cited paper in Leadership Quarterly during the 2010-2019 decade (Gardner et al., 2020) signifying the emergent utility of the authentic leadership construct.

Crawford and Butler-Henderson (2020) argue that an authentic leader (a person) is distinct from authentic

leadership (a process of enactment and influence), defining the authentic leader as an individual who "influences and motivates followers to achieve goals through their sincerity and positive moral perspective, enabled through heightened awareness and balanced processing" (p. 126). In the same model, an authentic follower "is an individual who, through their capacity for authenticity and positive organisational engagement, is self-managing and follows leaders whom they share values" (Crawford et al., 2018, p. 274). These leaders and followers have been applied to a wide range of contexts including healthcare and nursing (Wong & Walsh, 2019), addressing wicked problems (Crawford et al., 2020b), and media discourse of politicians (Iszatt-White et al., 2019b). In the higher education context, authentic leaders are argued to enable greater innovation through transparent and sincere knowledge-sharing (Elrehail et al., 2018), higher academic creativity by leveraging intrinsic motivation and mood (Ahmad et al., 2015), and increased trust and engagement (Bird et al., 2012).

Outside of higher education, but within the scope of this paper is consideration of the role that authentic leaders have in elements of digital fluency, literacy, adoption, and skill development. Prince (2017) reported that several leadership scholars focus on the explication of leadership theories without consideration to digital applicability or efficacy. Arguably, there is a challenge in digital settings for leaders who understand the innate complexity of the digital landscape. At the time of writing, 'point of view' videos on social media platforms like TikTok pose a form of dysphoric entrance into a reality either unobtainable to the viewer or elucidating a nostalgic feeling from a commonplace experience of a younger generation. While evidence of these activities remains in its infancy at the time of writing, the growing deterritorialization characteristic of a post-truth digital era (Kozinets et al., 2018) has created a new wave of digital responses for students, employees, citizens, and teachers. Within emergent and future trends is a need to enable students to cope with, and navigate, the world. Likewise, is the need for lecturers and professors to exercise leadership to build a curriculum that is both temporally situated and relevant to students. This paper continues in the discussion to explicate the relationship between authentic leader behaviours exhibited by academic teachers and their students' digital empowerment.

Discussion

In a digital era, students having an adequate understanding of their digital landscape is critical for their future success in professional and personal lives. Throughout this paper, we have explored the need for digital empowerment in students, teacher leadership, and authentic leader theory. This section explores the role that teacher leadership has on student outcomes pertaining to digital fluency. We extend this narrative to explore the effect of authentic leader behaviours enacted by higher education teachers in contributing to greater digital empowerment in student populations.

Online pedagogy, including digital efficacy, is becoming a critical factor in the contemporary curriculum. At present, universities internationally are coping with the necessary digitalisation of curriculum as a result of COVID-19 complications (Crawford et al., 2020a). The authors reported that higher education institutions that have responded faster are likely to be those which have more robust digital processes and digital efficacy among their staff. In this section, we identify the theoretical parameters that would support more effective digital empowerment in student populations as digital curriculum becomes more prominent.

The review identified that while there are two main frameworks used by higher education organisations to develop digital literacy in students and staff, the attributes of digital literacy are poorly understood. A comparison of the attributes identified by Crawford and Butler-Henderson (2020), the Jisc framework (2019) and the DigComp 2.0 framework (Vuorikari et al., 2016) establishes that none of those frameworks addresses all four attributes. Whilst the Jisc framework can strengthen awareness, it has limited opportunities to develop agility while the DigComp 2.0 framework does not develop emotional intelligence (awareness) or development (learning orientation) attributes. Table 1 summarises the examination of the attributes within each framework.

Table 1. Examination of the digital enabled worker (DEW) attributes in the JISC and DigComp 2.0 framework.

DEW Attributes	Jisc	DigComp 2.0
Awareness	2. Information, data and media literacies (Critical use). 4. Digital communication, collaboration and participation (Participation) 6. Digital identity and wellbeing (Self-actualising)	2. Communication and collaboration 4. Safety
Creativity	3. Digital creation, problem solving and innovation (Creative production)	3. Digital content creation
Agility	3. Digital creation, problem solving and innovation (Creative production)	5. Problem-solving
Learning orientation	5. Digital learning and development (Development)	

The nomological network by Crawford and Butler-Henderson (2020) postulates that authentic leader behaviour influences development of these attributes in a follower. In context, this is the influence of a teaching academic on the digital literacy attributes of a student. However, neither of the frameworks examined here refers to the influence of leadership, and the literature cited above similarly did not examine this influence. Therefore, organisations need to ensure that digital literacy strategies include staff. Furthermore, a focus on authentic leadership development can theoretically enhance student digital literacy. The findings from a study by de Jong et al. (2014) provides evidence on the ability to teach authentic leadership skills, resulting in students developing many of the attributes listed above. Lastly, Crawford and Butler-Henderson (2020) posit that this influence will subsequently result in higher rates of digital innovation and digital productivity, as discussed by Crawford and Butler-Henderson (2020). As such, graduates can develop the attributes to work in digital services industries. Adapting the nomological network by Crawford and Butler-Henderson (2020) to this context, as shown in Figure 1, four hypotheses are drawn:

Hypothesis 1. *That academics with authentic leadership behaviours will have a direct influence on the degree to which*

students develop digital literacy.

Hypothesis 2. *That students' authentic follower behaviours will have a predictive effect on student digital literacy.*

Hypothesis 3. *That students who develop digital literacy will have higher rates of digital innovation than students who do not develop digital literacy.*

Hypothesis 4. *That students who develop digital literacy will have higher rates of digital productivity than students who do not develop digital literacy.*

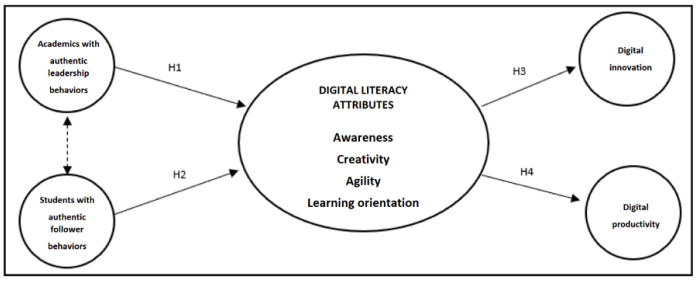

Figure 1. Influence of academics with authentic leader behaviour on student digital literacy.

Future research and conclusions

This paper seeks to adapt the nomological network posed by Crawford and Butler-Henderson (2020) to a higher education context. Other than a brief recommendation by Coldwell-Neilson (2018), there is no theoretical or empirical examination of the influence of the academic role on student digital literacy. Further, the alignment between authentic leadership behaviours and digital literacy attributes suggests developing authentic leadership behaviours in academics will improve student digital literacy. This paper posits an organisational strategy that focuses on developing authentic leader behaviours in academics will directly influence student digital literacy, as will student authentic follower behaviour. In turn, graduates will be better prepared to work in digital services, meeting employer needs.

This research is limited by a lack of primary data, as are all theoretical work. However, we believe there is a necessary logical theoretical argument posed prior to empirical analysis. This research provides the theoretical foundations for a series of empirical works, particularly with the opportunity to test our theorised moderation relationship. Likewise, scholars should also consider how other leadership behaviours beyond authentic leadership may enable higher student digital empowerment and fluency. The role of the teacher's leadership in relation to student self-efficacy and their own self-leadership should also be examined to enable student digital fluency. This will create a baseline set of knowledge to understand whether teacher leadership has a similar effect on students compared to organisational leaders on their subordinates. The differences in the teacher-student relationship compared to manager-subordinate relationships needs to be explored to understand the nuances in the nomological network posed by Crawford and Butler-Henderson (2020) when contextualised to higher education.

We conclude with a critical remark. This paper discusses the nature of digital empowerment within the higher education context and problematizes the notion of conflating continued use of digital technology with digital fluency. Just because our students' technology exposure is often high, does not mean their skills are proficient without pedagogical support to embed digital literacy training into the curriculum. We have proposed that academics who develop their authentic leadership behaviours will enable greater digital fluency in their students. We also proposed that students who develop their authentic followership behaviours in class will be more digitally innovative and productive. The outcome? The propensity for students who are better able to engage with their personal and professional lives as a result of their digital fluency.

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Doctoral employability: A systematic literature review and research agenda

Sarah Young[A] A *Sessional Lecturer, University of Tasmania, Australia*

Jo-Anne Kelder[B] B *Senior Lecturer, University of Tasmania, Australia*

Joseph Crawford[C] C *Lecturer, Learning and Teaching, Academic Division, University of Tasmania, Australia*

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Abstract

Doctoral education is facing a revolution: not a new fact. Likewise, the nature of employment post-PhD has dramatically changed as market-forces drive accommodating employability outcomes from contemporary doctoral programs. This systematic literature review examines the themes emerging from 20 articles identified through the PRISMA approach to systematic reviews. The themes were grouped into three high-level concepts: policy and economics, the student, and expectations of the student. These themes are discussed in-depth within this paper, drawing on the sample literature. Following, we postulate a position for the future. Rather than reinforce the literature's approach of acknowledging the problems, and problematising the same issues of doctoral programs insufficiently preparing candidates, we propose an outlook oriented towards practically improving doctoral programs with a focus on innovative solutions that address the general themes of preparedness and the industry-academic gap.

Introduction

Twenty-first century doctoral candidates are challenged by a constantly evolving employment landscape. The traditional postdoctoral academic pathway is no longer the norm (McGagh et al., 2016). Historically, doctoral graduates moved directly from doctoral completion into postdoctoral fellowship programs as the first stage to a tenure track academic career. In modern times, this is no longer the case (Cuthbert & Molla, 2015). The current employment prospects are different when compared to that experienced in previous generations, and this shift has left doctoral candidates uncertain as to how to prepare for their futures (Hancock, 2019). A recent report states that 57 percent of doctoral graduates are employed in non-academic roles (McGagh et al., 2016). Studies confirm the general saturation of doctoral graduates compared to academic positions available (e.g. Universities Australia, 2019).

There are reasons for concern, considering the evidence of doctorate program enrolments against academic jobs, coupled with a mismatch between the expectations of many new doctoral graduates regarding their perceived likelihood of gaining employment in the academic sector (e.g. Crawford & Probert, 2017). While some research indicates that many graduates are uncertain about their career path upon graduating (Pearson et al., 2011), a 2015 European study involving nearly 7,000 doctoral candidates indicated that the candidates believed completion of a PhD would increase their chances of employment in academia by a great extent (Parada & Peacock, 2015). Most of these respondents planned to pursue a career in academia, which led researchers to conclude there may be overly high expectations about the value of a doctoral degree for academic employment (Parada & Peacock, 2015). Accordingly, information needs to be imparted to doctoral candidates that a career in academia is not guaranteed, nor even necessarily likely.

The issue of employability post-PhD is gaining attention around the globe, for example in Canada (Rancourt & Archer-Kuhn, 2019) and the United Kingdom (*The Guardian,* 2018). As noted by a UK-based academic in a recent Guardian newspaper article, academic careers are elusive at best, and perhaps a more successful recipe for job-related emotional turmoil than for a tenured academic position (*The Guardian*, 2018). A suggestion that capabilities, such as critical thinking, are even more important than instrumental skills in terms of employability may be illustrative of the new climate affecting the postdoctoral employment landscape (Molla & Cutherbert, 2019; Rancourt & Archer-Kuhn, 2019).

As a result of this shift in the employment landscape, scholars, practitioners, and governments are seeking more industry-ready candidates (Group of Eight, 2013; Poole-Warren, 2017). Both funding bodies and industry are suggesting universities need to more effectively facilitate both academic and industry preparedness for employment (e.g. Noonan et al., 2018; TEQSA, 2017). Given the significance and potential long-term ramifications of this situation for doctoral candidates, it is important to develop a clear understanding of the current status of the employability landscape for doctoral candidates. Accordingly, the aim of this article is to provide a systematic review of the existing literature on the concept of their employability, and to produce an illustration of the employability landscape which candidates enter both during and after the completion of their doctorate.

There is significant value in pursuing research into doctoral employability within an applied learning and teaching context, given the necessity of the PhD qualification in the context of higher education. Irrespective of the domain or specialisation of the Doctor of Philosophy, this degree serves as a foundation for effective higher education more broadly: the training it provides has direct impact on the capabilities of newly graduated and appointed teaching staff and their effectiveness for students' learning. Likewise, this study focuses on the nature of doctoral training.

Background

Historically, career success was marked by permanence (Donohue, 2006; Sullivan & Baruch, 2009). However, changing societal values have resulted in a shift in how success is defined (Fazey, 2017; Sullivan & Baruch, 2009). Across all employment sectors, the predictable progression that was the hallmark of career success in decades past is less common (Baruch, 2004; De Vos & Soens, 2008; Fazey, 2017), and careers which account for the importance of an individual's objectives and needs (i.e. the 'protean' career model) are now more prevalent (De Vos & Soens, 2008; Hall, 2004; Sullivan & Baruch, 2009). Contemporary success has different parameters: a sense of intrinsic reward and allowance for work-life balance is now more desirable than linear promotions and standardised 'ladder climbing' (Mainiero & Sullivan, 2005). Protean careers are based on dynamic individual reassessment and flexibility rather than the continuous stability that was the marker of career success in previous generations (Ballout, 2007; Fazey, 2017). Protean approaches are more common for highly trained and skilled workers, making this concept even more relevant for doctoral graduates (Fazey, 2017; Holland et al., 2007).

Despite common expectations of an academic career, there is an emergent trend, and a level of necessity, for doctoral candidates to choose a greater diversity of career paths. The ACOLA report (McGagh et al., 2016) confirms that post-graduation, even on a short-term scale (three to nine months), many Higher Degree Research (HDR) graduates are turning to areas outside academia to fulfil career objectives. The historical perspective that PhD graduates will progress directly to an academic position after doctoral completion is being challenged, and universities need to shift their perspectives to ensure that HDR candidates are prepared for a career outside academia (McGagh et al., 2016; Manathunga et al., 2009; Molla & Cuthbert, 2015). As a result, universities need to adapt their practices to ensure graduates are readily employable upon doctoral completion. The next step is to determine what defines employability.

Doctoral employability within the context of higher education has multiple definitions, depending on who is supplying the definition. From an industry perspective, the Australian Chamber of Commerce and Industry (ACCI) and Business Council of Australia (BCA) developed an employability skills

framework, and defined employability as "skills required not only to gain employment, but also to progress within an enterprise to achieve one's potential and contribute successfully to enterprise strategic directions" (ACCI & BCA 2002, p. 3). The ACCI (2007) later implored universities to apply their framework to higher education, however, whether it is the responsibility of universities to train and prepare doctoral graduates with the skills specified in the framework is an unresolved issue still under debate. For example, Taylor (2005) argues employability and the associated skills should be part of the doctoral curriculum, while Sheldon and Thornthwaite (2005) argue that it is the responsibility of the employer to provide vocational skills. Some researchers on the employability of doctoral candidates take this argument one step further, stating that a PhD is simply not adequate training for employment (Jones & Warnock, 2015).

Within the field of higher education, the most common definition of employability is: "a set of achievements – skills, understandings and personal attributes – that makes graduates more likely to gain employment and be successful in their chosen occupations, which benefits themselves, the workforce, the community and the economy" (Yorke 2004, p. 8). There are some notable differences between the industry-provided (ACCI & BCA, 2002) and academic-orientated definitions (Yorke, 2004). Chiefly, the point of view from which the definition stems differ; industry employers view employability as a higher-level ability to enterprise and strategise, whereas the academic definition is positioned from the point of view of the potential employee. Given the purpose of this research, which is to illuminate a picture of the employability landscape faced by doctoral graduates, both definitions will be considered. However, further additions and modifications to these definitions may be called for given recent developments in the field of postdoctoral employment preparedness, which suggest that the sector needs to move beyond the current focus on achieving a set of employability skills and realign the focus to achievement of a more sophisticated suite of capabilities (Molla & Cuthbert, 2019).

Method

Search strategy

This paper adopts a systematic literature review method to enable a response to the study objectives, using a PRISMA approach (see Moher et al., 2009) within an online software platform, Covidence®. To search, we only included peer-reviewed journal articles published between January 2000 and December 2019, that had full-texts available within the search database. The following databases that were used to undertake a query were: ProQuest, A+ Education (Informit), and Education Research Complete (EBSCO). The keyword string for this search was kept considerably strict: [("doctoral" OR "PhD") AND ("employability")] to offer a form of scoping understanding of the literature that specifically talks to, and draws on, the notion of employability. While there are likely many other studies that refer to broader notions of post-graduation work for doctoral candidates, our focus was to explore the literature that was primarily related to employability, not literature which considered employability among a wide range of other variables (e.g. Beasy et al., 2019; Crawford & Probert, 2017). Within this frame, we excluded conference papers, book chapters, and books, along with those papers not available in English.

Selection procedure

All abstracts and metadata were imported into Covidence® to facilitate the implementation of the PRISMA approach (see Figure 1). From the three databases, there were 1,664 results, 102 of which were duplicates. Using a single author screening process, the authors assessed the validity of the papers against the criteria: i) was it relating specifically to PhD students/doctoral candidates, and ii) was it relating specifically to employability or a facet of employability? If the answer to both was yes, these would remain. If it was unclear from the abstract or title, they would also remain. While some researchers use a double screening process, we opted to use an approach to ensure that it was a second author that conducted the full-text review. We did this as the questions were considerably binary, and if in doubt, the paper was progressed to the full-text review for consideration by a second author.

Quality review

The papers that progressed through full-text review then underwent a quality review. For the quality review, an adapted form of the Mixed Method Appraisal Tool (MMAT: Hong et al., 2018) was used with scores ranging from high (75% to 100%), medium (50% to 75%), and low (below 50%). Where papers were marked as low, they were excluded from the final sample. The results of the quality assessment (QA) are recorded in Table 1.

Analysis

To identify themes, an inductive thematic analysis (see Braun & Clarke, 2006) was conducted, resulting in eight key themes across three broad thematic areas: policy and economics, the student, and expectations of the student. This process involved six steps: familiarisation with the data, coding, searching for themes, reviewing themes, defining and naming themes, and writing findings. The authors began with immersion in the final papers during the full-text and quality assessment stages. By the end of two careful examinations of the manuscripts, deep contextual awareness was possible. Next was the process of coding for themes. In this, authors individually and independently coded themes for a selection of the collected manuscripts, without an aim for synthesis. The authors discussed the preliminary themes to review and eventually defined higher-order themes that emerged (Tracy, 2010). The authors then sought to define and write the themes independently. Following this process, the authors co-examined, reflected, and continued to review the themes both as creators of some themes and as independent reviewers of others. This process was employed with the intention and belief that the authors would continue to view the data behind the themes

with new vision, depending on the perspective adopted, to create a form of sincerity and reflexivity in the process (Creswell & Miller, 2000).

Results

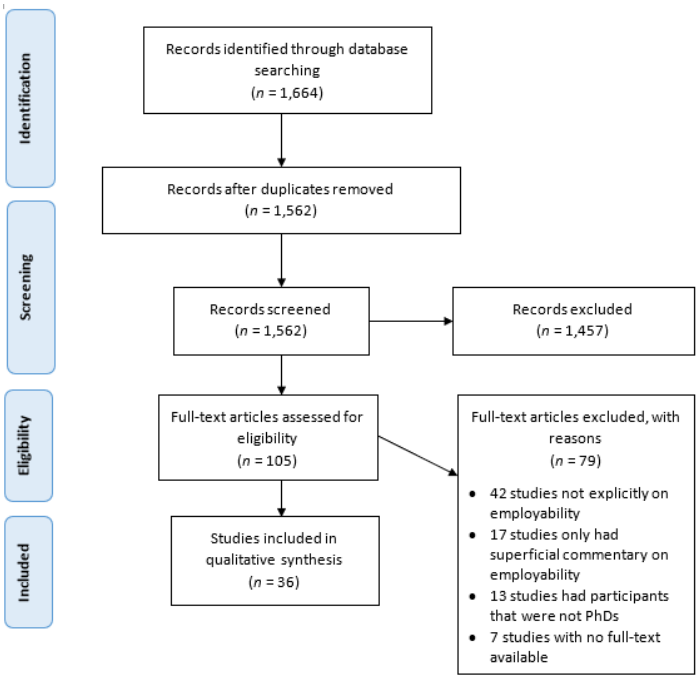

Figure 1. PRISMA Results

Characteristics of selected articles

The articles represent a wide range of viewpoints involving current and prospective PhD Candidates, recent and longer-term Doctorate Holders, doctoral program supervisors, institutional policy analyses, industry employers, and academic employers (see Table 1). These perspectives range across numerous countries, with Australia representing the majority of examined literature. For simplicity, we have only included the name of the first author in Table 1, noting that the full reference is used in-text and within our reference list.

Thematic analysis

When examining the literature sample for the quality assessment, preliminary themes were extracted from the papers. To do so, an inductive thematic analysis was conducted. If the quality assessment demonstrated a medium or high rating, these were recorded, with low-rated papers being removed. With this, we sought to synthesise the discrete themes (e.g. policy and student expectations) into a series of broader themes.

Policy and economics

Policy

Globalisation and the increasing economic value placed on knowledge has led to growing importance of higher education in national policy and funding, but also pressures to conform to new conceptions of the purpose and outcomes of doctoral study (Allen, 2002; Pederson, 2014). Doctoral education is increasingly subject to institutional management, as well as national and supranational policymaking; with national and international educational politics moderating effectiveness (Manathunga, 2012; Molla & Cuthbert, 2019). In Australia, the policy shifted from an efficiency framing (late 1990s) to an employability framing (mid-2000s) and linked to employer demand for generic or transferable skills (Cuthbert & Molla, 2015).

National strategies to increase the number of PhD graduates included a whole of education system approach focused on quality, contributions to financing PhD studies and increasing PhDs in targeted areas. A focus on the sciences based on labour undersupply (Pederson, 2014) has been disputed as skewing the workforce away from the contribution to national wealth through humanities, arts, and social sciences knowledge production (Craswell, 2007).

First author	Article	QAS	Country	Method	Sample	Theme(s)
Allen (2002)	Responding to the field and to the academy: Ontario's evolving PhD	Medium	Canada	Student evaluations	26 EdD and 30 PhD graduates	Policy, student expectations
Bessudnov (2015)	A Statistical Evaluation of the Effects of a Structured Postdoctoral Programme	High	USA, UK, France, Italy, Other	Quantitative survey	79 Research Fellows and 76 PhD Applicants	Knowledge or skill development, job availability
Bos (2017)	Reflections on the ESRC Internship Scheme for Postgraduates	Medium	UK	Reflections	Four PhD Candidates	Knowledge or skill development
Boud (2006)	Putting doctoral education to work: Challenges to academic practice	Medium	Australia	Discursive, invitational approach based on literature, PhD scenarios	PhD programs	Student expectations, professionalisation
Craswell (2007)	Deconstructing the Skills Training Debate in Doctoral Education	Medium	Australia	Literature review, open-ended questionnaire	973 students (76% PhD students) in 2004; 471 students in 2005	Policy, student expectations
Cumming (2010)	Contextualised Performance: Reframing the Skills Debate in Research Education	Medium	Australia, UK	Environmental scan, single-institution extended case study		Knowledge or skill development
Cuthbert (2015)	PhD Crisis Discourse: A Critical Approach to the Framing of the Problem and Some Australian "Solutions"	Medium	Australia	Critical analysis	Four higher education programs	Policy, academic expectations
Edwards (2009)	Issues facing scientific research employment in Australia	Medium	Australia	Interviews and discussions	120 science trainers, employers, and researchers	Industry expectations, job availability, student expectations
Haapakorpi (2017)	Doctorate Holders outside the Academy in Finland: Academic Engagement and Industry-Specific Competence	High	Finland	Survey and interviews	1,183 doctorate holders and 26 employers	Job availability, industry expectations
Harman (2004)	Producing 'industry-ready' doctorates : Australian Cooperative Research Centre approaches to doctoral education	High	Australia	Survey	651 PhD students	Industry expectations, professionalisation, knowledge or skill development, student expectations
Hill (2010)	Graduate research capabilities : a new agenda for research supervisors	Low	Australia	Focus group style discussions	PhD Supervisors	Academic expectations, job availability, policy
Jones (2018)	Contemporary Trends in Professional Doctorates	High	-	Desktop analysis	-	Changing education policy, job availability, academic expectations, industry expectations
Leonard (2004)	Continuing professional and career development : the doctoral experience of education alumni at a UK university	Medium	UK	Student data files; open-ended postal questionnaire (35% response)	162 Doctorate Holders	Knowledge or skill development, policy, professionalisation
Manathunga (2012)	Evaluating Industry-Based Doctoral Research Programs: Perspectives and Outcomes of Australian Cooperative Research Centre Graduates	High	Australia	Survey	1,068 Doctorate Holders	Industry expectations, knowledge or skill development, job availability
Molla (2019)	Calibrating the PhD for Industry 4.0 : global concerns, national agendas and Australian institutional responses	Medium	Australia	Multi-scalar policy lens and desktop program survey	Australian PhD program description, policy discourses, institutional responses	Industry expectations, knowledge or skill development, job availability
Mowbray (2010)	The Purpose of the PhD: Theorising the Skills Acquired by Students	Medium	Australia	Interview and grounded theory procedures	20 PhD Candidates	Knowledge or skill development, academia expectations
Neumann (2011)	From PhD to Initial Employment: The Doctorate in a Knowledge Economy	Medium	Australia, UK, Canada, USA, and France	Secondary data survey	Undefined number of PhD graduates	Job availability
Passaretta (2019)	Between Academia and Labour Market--The Occupational Outcomes of PhD Graduates in a Period of Academic Reforms and Economic Crisis	High	Italy	Survey	13,325 Doctorate Holders	Industry expectations, policy, equity
Pedersen (2014)	New Doctoral Graduates in the Knowledge Economy: Trends and Key Issues	Medium	Europe, US, Australia (OECD countries)	Secondary data survey	N/A	Job availability, policy, equity
Pitt (2016)	Academic superheroes? A critical analysis of academic job descriptions	High	Australia	Textual analysis	178 job advertisements	Academic expectations

Disruptive elements are inherent in the idea of the knowledge economy and "Industry 4.0" and have impacted higher education policy and prompted critical appraisal of the PhD in relation to its relevance, efficiency, and quality (Molla & Cuthbert, 2019, p. 167). "Industry 4.0" is considered the Fourth Industrial Revolution, characterised by technological advances in combination with significant knowledge gains (Schwab, 2016) and the emergence of digital jobs. Missing in debates about industry engagement for relevance and employability is discussion on public responsibility to "cultivate social-minded knowledge workers" (Molla & Cuthbert 2019, p. 181) and student responsibility to be aware of the need to develop professional skills (Craswell, 2007).

Policy, with consequent regulatory and funding arrangements, has a high impact on value, design and uptake of doctoral programs (Allen, 2002). Canada houses both the traditional PhD and professional doctorates (Allen, 2002), a policy now adopted by many nations. In Canada, increased development costs and quality assurance create a disincentive for new professional doctorate program development. Concurrently more flexible arrangements for traditional PhD programs and funding only traditional PhD candidates further erode uptake of professional doctorates (Allen, 2002). This contrasts with Jones' (2018) claim that the growing and global (US, UK, Australia) popularity of professional doctorates is a response to a shift in focus to PhDs designed to broadly benefit all stakeholders, not just university priorities, and that research focus should transform from mostly "ivory tower traditionalists" to include "pragmatic researchers" (Pederson, 2014, p. 640).

An important distinction made by several scholars is the impact on policy of discourses critically appraising the "capacity of the PhD to meet the expressed and perceived expectations of internal and external stakeholders" (Molla & Cuthbert 2019, p. 168), perceptions that are problematised and challenged (Leonard et al., 2004; Craswell, 2007; Cuthbert & Molla, 2015). There is an argued need to recognise diversity in the PhD student cohort and the importance of context in education policy (Craswell, 2007; Leonard, 2004). Similarly, quality is a focus for policy that is lacking, according to some scholars. The quality of research training and the quality of research produced by PhD graduates requires investment in supervisors, resources, and design to provide learning experiences (Cuthbert & Molla, 2015).

Job availability

Competition for jobs has intensified due to growth in doctoral graduates (Haapakorpi, 2017), characterised as a supply and demand mismatch (Pederson 2014; Bessudnov et al., 2015). Issues associated with increased supply do not appear to affect employment, and the PhD may act as a "signal of quality" (Pederson 2014, p. 638). The risk is over-skilling the workforce and lack of clarity on the value PhD employees provide (Pederson, 2014). However, with 'knowledge economy' and 'Industry 4.0' (Molla & Cuthbert 2019) framing discussions on doctoral programs and graduate employment outcomes, there is conflicting evidence that traditional PhDs are being superseded by more industry-ready programs. Context is key (Cuthbert & Molla, 2015; Leonard, 2004), and considerations of all stakeholders need to include the complexity of the cohort (their aspirations and motivations).

While most PhD graduates find permanent employment as academics, there was a significant time lag (4+ years) (Bessudnov et al., 2015). Doctoral graduates seeking academic employment face contraction of permanent positions. Transition from PhD to academic career is characterised by uncertainty and stress of temporary, sequential employment over a period of years before obtaining permanent positions (Bessudnov et al., 2015). In this context, scholars note post-doctoral positions are viewed as a necessary step for an academic career in the sciences (Bessudnov et al., 2015), who recommend structured career development programs as an antidote to reported issues of isolation, concerns about the future, and publication pressure.

However, educational achievement is internationally linked to favourable employment and salary prospects both within academia and outside (Edwards, 2009; Molla & Cuthbert, 2019; Neumann & Tan, 2011) and "it is well documented that unemployment is not a serious problem among doctoral graduates" (Molla & Cuthbert, 2019, p. 179). For jobs outside academia, research in Finland identified evidence of stratification, with university reputation and non-educational attributes (social origin, personal attributes) impacting job availability, even where genuine demand existed (Haapakorpi, 2017). Responsibility of industry towards PhD graduate employment is raised as a policy gap: "The issue of the PhD-ready industry is rarely, if ever, addressed" (Cuthbert & Molla, 2015, p. 49). Discourse and policy that focus on deficits in doctoral graduate capabilities means that employers do not make the changes that would allow them to fully utilise doctoral graduates' skills and knowledge (Cuthbert & Molla, 2015). Percentages of employment outside the education sector are around half of doctoral graduates to be employed in the education sector, primarily higher education, although Australian figures do not distinguish what kind of position; those employed outside education are widely dispersed across all sectors (Neuman, 2011).

Professionalisation

Craswell (2007) argues against the efficiency framing of policy based on an employability discourse that uses a deficiency (of skills) model to justify expectations of professional skills training in addition to research skills training to facilitate diverse career paths. The graduate employability agenda means that both institutions and students need to be aware of the range of capabilities to be acquired through a research degree, preparing them for diverse career paths (Hill & Walsh, 2010). Professional skills courses on leadership and communication, project management, research commercialisation, and entrepreneurship are formally provided to doctoral candidates at the Australian Collaborative Research Centre, or by centralised services within a university context (Craswell, 2007), or embedded

within a PhD program (for example the Monash PhD and UQ Advantage PhD) (Cuthbert & Molla, 2015), replacing less structured, more informal and ad hoc provision.

The diversification of doctoral degrees reflects the range of research and professional outcomes expected of, and desired by, graduates (Boud & Tennant, 2006). This diversity aligns with the increasing diversity of the PhD cohort, which is increasingly older and desiring to integrate existing professional experience into their studies as they join an academic community (Boud & Tennant, 2006; Leonard, 2004). The evolution of PhD programs, for example, professional doctorates, involves alignment of PhD research to goals of industry and economic return, as well as explicitly providing a mix of research and professional skills training (Jones, 2018). Industry-focused partnerships such as Cooperative Research Centres (CRCs), which increase the likelihood of employment in the private sector and public sector research, are a context in which professional skills attainment (e.g. negotiation, management, leading interdisciplinary teams) is integrated with research skills development (Harman, 2004).

Student

Knowledge or skill development

Many scholars argue in favour of skills development during the doctoral training process, including Harman (2004). Manathunga et al. (2012, p. 856) suggest that doctoral candidates who are given access to industry experience during their candidature are more likely to work outside academia after completion, and that participation in such programs may provide more effective training in strategic research that crosses boundaries between academia, industry, and the public sector than traditional PhD programs. It has also been shown that participation in a government-led internship program outside academia during candidature led to skills improvement in communication and collaboration, and an increased understanding of how academic work is applied in non-academic settings (Bos et al., 2017).

The value of skills development as part of doctoral training is not seen by all academics, however, for a variety of reasons. Leonard et al. (2004) state that doctoral candidates are equally as concerned with satisfying intellectual curiosity and making an original knowledge contribution as they are with future employment, and therefore question a move toward increased skills training for PhD candidates. Mowbray and Halse (2010, p. 653) argue that the employability skills push in doctoral education diminishes the importance of the PhD as a process of acquiring 'intellectual virtues', and that doctoral education should be more than the collection of marketable skills. Cumming (2010) similarly purports that the focus on and push for employability skills comes largely from outside academia, and may be misplaced given the wide array of attributes possessed by doctoral graduates that are less easily defined. Molla and Cuthbert (2019, p. 168) also argue against the employability skills push, but with a different, and perhaps more current, rationale. They argue that the "PhD crisis" has deepened in recent years, and there is increased disruption in the mandate of the higher education sector (Molla & Cuthbert 2019, p. 168). They go on to argue that the skills-based employability discourse for doctoral candidates is inadequate, and a deeper, more complex "capabilities" approach is required to bring the PhD in line with emerging requirements for global progress (Molla & Cuthbert, 2019, p. 183).

Equity

Passaretta et al. (2019, p. 547) found that employability and "occupational outcomes" for doctorate holders varied "considerably" depending on the academic discipline. Like effects noted at lower levels of academic qualification, hard disciplines such as engineering and medicine tended to have higher rates of employment post-PhD than softer sciences such as humanities and social sciences (Passaretta et al., 2019). It is suggested that at five years post-graduation from a PhD program, doctorates from soft science disciplines will have "worse occupational outcomes" (lower rates of employment, higher rates of short-term contracts, higher rates of employment outside academia) than those from hard disciplines (Passaretta et al., 2019, p. 547). Pedersen (2014) also noted a push for science, technology, engineering, and math (STEM)-based PhDs. These hard science fields were being promoted as areas of study as they were seen to highly impact innovation, and areas that would have favourable employment prospects due to the relative undersupply of qualified candidates in these areas of academia (Pedersen, 2014).

Student expectations

Allen et al. (2002) suggest that the climate shift in recent decades toward a knowledge-based economy has resulted in a need for universities to adapt to the changing demands of the labour market as well as globalisation and new technology. Expectations of students, the government, and the public are that a doctoral degree will result in employment opportunities and marketable skills, and it is suggested that traditional PhD programs need to be modified to accommodate these needs (Allen et al., 2002). Conversely, other research suggests that placing the responsibility of skills training to increase employability is not under the purview of doctoral programs (Craswell, 2007). The authors go on to suggest that the notion that doctoral programs should embed skills training within them is "reductive", and that it is "simplistic" to suggest such a broad solution when PhD training is, by its very nature, highly complex and discipline-specific (Craswell 2007, p. 388). Craswell (2007) suggests that HDR students themselves need to be involved in designing skills-based programs to embed their knowledge and experience in the process, thereby making the programs more effective.

Research graduates saw two realistic options for a career: the university sector, or a key government scientific research agency. Research jobs suitable to PhD graduates were "almost non-existent" in the private sector, according to

recent graduates (Edwards, 2009, p. 5). Despite this, recent and emerging doctoral graduates were also pessimistic about their ability to be employed post-PhD in academia (Edwards, 2009). For students seeking future careers, 74 percent of those who were based in industry-partnered PhD programs sought industry careers, comparted to 62.5 percent of traditional graduates seeking industry careers. Students want more support to prepare for a non-academic career, be supported to develop more soft skills, tend to be dissatisfied with their course, and want more opportunities to do research outside of universities (Harman, 2004). Fewer contemporary prospective students are seeking cross-disciplinary projects, relationships between decades of professional experience and their project, and opportunities to consolidate practice-based expertise (Boud & Tennant, 2006).

Expectations of the student

Industry expectations

In what has been termed "Industry 4.0", the Fourth Industrial Revolution, (Molla & Cuthbert, 2019, p. 167), the demands of industry for their future research employees have evolved. The value of the PhD is questioned by industry when comparing their needs to what is available in the labour market. In a federally commissioned study, 120 participants involved in Australian science training and employment were interviewed (Edwards, 2009). Among these participants, science industries and science recruitment firms articulated that the science PhD was not a highly desirable qualification among potential employers outside of the university sector, and key government research organisations. Among the private enterprise, there was minimal research at the scale and scope of a PhD being conducted, with most short-term projects outsourced to universities and government research organisations (Edwards, 2009).

Indeed, PhD candidates were seen by industry as too specialised and lacking adaptability to a fast-paced private sector. Distinct from trends in Australia, Finland is experiencing growth in industry-based research careers (Haapakorpi, 2017). There are, however, parallels; from a survey of 1,183 doctorate holders, 31 percent were employed outside of higher education. Interestingly, among the business sector respondents was a diverse range of careers from researcher to consultant, physician, and legal professional (Haapakorpi, 2017). Despite growth, most of those PhD graduates situated within industry were not researchers: a characteristic outcome typical of a traditional doctoral program. Employment options within academia are less secure, and employers are seeking more specific skillsets absent in traditional programs (Jones, 2018). Employers recognise that the completion of a PhD develops narrow expertise that is not generally applicable to their organisational needs. These employers are seeking broader skillsets from their prospective research employees as a mechanism to respond to competitive market forces.

Outside of the traditional model, other alternatives have been assessed with deeper industry embedding into the program to match more closely the future labour and research needs of industry with forthcoming graduates. Students who participated in a CRC arrangement between university and key industry partners, had a better experience than traditional students (Harman, 2004). Added in parallel, CRC graduates were preferable to 36 percent of industry employers over traditional graduates. In a subsequent comparison of CRC and non-CRC graduates (n = 1,068), students tended to engage in more professional development programs (CRC: 72%; non-CRC: 55%), attend more industry meetings (CRC: 57%; non-CRC: 31%), attend more research skills programs (CRC: 77%; non-CRC: 64%) and interact with more non-academic professionals than non-CRC students (CRC: 75%; non-CRC: 63%) (Manathunga, 2012).

In Italy, there was a general increase in graduates from PhD programs from 2006 to 2014, despite that during this period there were four years where expected hiring was lower than the number of graduates (Passaretta, 2019). In a comparison between 2004 graduates (n = 5,595) and 2008 graduates (n = 7,730) in Italy, there was a growth in the probability of full-time employment by 10 percent, despite a decrease in the probability of academic employment by 6 percent (Passaretta, 2019). While opportunities for doctoral candidates have increased in some parts of the world, the rate of employment into academic roles is decreasing.

Academic expectations

University executives express concern over a lack of understanding from private enterprise as to the value of a science PhD. Some universities are feeling the need to respond by developing high proficiency in soft skills such as communication and leadership or commercialisation skills, while balancing the desire for innovative research (Edwards, 2009). These pressures add intensity to the PhD program, without any clear guarantee of better career outcomes.

Universities are seeking better alignment between candidate projects and industry needs to support new revenue generation strategies (Jones, 2018). Their responses include committing to redeveloping their programs to ensure better alignment with both industry and academic needs (Molla & Cuthbert, 2019). Cuthbert and Molla (2015) argue a need for strong industry-university collaboration to create specialist knowledge that exists in both commercial and university settings.

In a review of positions advertised for by universities, there was a skew towards full-time roles, with a greater number of lower-level research-intensive roles (e.g. Postdoctoral Fellowships) and broader level balanced research/teaching roles available (e.g. Lecturer with balanced workload) (Pitt & Mewburn, 2016). Among the sample of position descriptions were expectations of discipline-specific expertise, administrative duties, demonstration of research performance, teaching experience, demonstration of continued networking and professional development, interpersonal skills (e.g. communication, creativity, self-management, and personal qualities), and corporate citizenship. Responses from universities are to create pro-skill PhD programs (Cuthbert & Molla, 2015).

Scholars are arguing for greater research student reflection on their own capabilities as well as academic institutions supporting development of research capability (Hill, 2010). Mowbray and Halse (2010) articulate skills development through the lens of intellectual virtues: theoretical knowledge, scientific knowledge, productive knowledge, and intuitive knowledge.

Discussion

We love to problematise

In the literature we identified a growing problematisation of the doctoral landscape concerning employability. Surveys, critical analyses, and interviews point to similar challenges. These challenges include that there is a recognisable gap between what industry and academic employers need of their future research employees and what is currently available. There is a form of misalignment between candidates and their future employers on what is needed, and this includes a focus on specialised knowledge and insights that go beyond what could be commercialised or applied to industry contexts. There are also a set of soft skills that candidates and prospective employers identify they need, but do not have.

The challenges recognised by the literature are not typically new and novel findings, rather studies applied in different contexts that identify similar evidence with caveats. Each of these are important aspects within the literature: for example, understanding the forces that doctoral candidates in Australia are facing versus those in Finland. We argue the need to move beyond the problematising of elements where we have some consistency, with a progression towards testing interventions that may provide solutions. The areas we identify that are repeated within the literature:

- Traditional doctoral programs are not fit-for-purpose with a twenty-first century employment and research landscape;
- There is a need for soft skill development among and during the doctoral program;
- A balance is needed between the specialised knowledge created during a PhD and knowledge that is usable in industry, classrooms, and similar; and
- Opportunities for candidates to embed their research in industry have benefit in enabling those students to make informed decisions about their future career prospects.

There is some skepticism, however, in relation to the efficiency and employability discourse, and the associated push for doctoral training that includes transferable skills and professional skills. Dissenting scholars identified that a focus on quality is missing (both research training process and research produced by candidates). Also, that the current discourses fail to locate achievable changes by employers and the value of a 'PhD-ready' industry context.

There are some positives, however, with some scholars indicating proactive and engaged PhD graduates have high employability, both within academia and in diverse career opportunities. It is a diverse cohort, and scholars who focused on the 'student voice' identified a range of opportunities to support and facilitate their aspirations and goals, as well as create opportunities for connection and creativity (Cuthbert & Molla, 2015; Leonard, 2004).

Scholars identify the need for national-level data (Pederson, 2014) and international data (Passaretta, 2019) - pointing to the difficulty of quantifying the career paths and mobility of doctoral graduates. Critics of current policy argue for more careful terminology and policy framing, against graduate employability as 'crisis discourse' (Cuthbert & Molla, 2015) and for incorporating student voice (Leonard, 2004).

We need to focus on solutions

With evolution comes opportunity. The landscape of twenty-first century doctoral candidates has offered new and innovative solutions to contemporary challenges, provided program, candidate, and industry are aligned in their expectations and needs. We posit the introduction of a carefully mapped stakeholder network at national and international discipline levels could facilitate a clearer understanding of the true needs of flourishing for candidates during their experience, while meeting institutional requirements, and future industry needs.

This is not an impetus from industry or higher education institutions alone, with candidates called upon to take control of their experience (Beasy et al., 2019). Establishment of shared expectations is needed early in the candidature to clarify what is the desired outcome of the program for the candidate, and for the institution. This series of conversations should be complemented with realistic industry advice and contextualisation, whether through industry mentoring, supervision, or networking. The candidate should also be exposed to both industry and academic settings to enable an informed decision of their future, given their exposure is related to their choice (e.g. Manathunga, 2012).

By establishing at the candidate-level the desired outcomes, a clear employment pathway can be developed. To provide a simple illustration, a candidate seeking employment in academia may require a series of Top Quartile journal publications demonstrating their research capability combined with teaching and grant experience. A candidate seeking employment in their chosen industry should focus on impact and engagement between their theoretical work and the challenges relevant to their future employment settings. In both contexts, a broad range of knowledge and soft skills to complement their newly formed specialisation and expertise is also recommended. Whatever the future for doctoral education, the focus must be candidate-centric, contextualised to their institution and future personal and professional prospects. The value in doing so is the generation of knowledge that enables societal development and sustains the perpetual development of scholarship over the next century.

Limitations

One of the challenges with all systematic literature reviews is the confinement placed on the literature by adding parameters. While our parameters were broad, we also eliminated a lot of potential sources of rich data. For example, working papers and conference proceedings in the past year may have provided unique data that is not currently published in the available journal publications. We believe that we collected a breadth of data with sufficient depth to systematically understand the current state of doctoral employability, but there will be many more works we may have missed as they may have used different descriptors in their abstract than those within our search phrases.

Conclusion

The aim of this paper relates to systematically understanding the literature on doctoral employability. We deployed a PRISMA approach to the raw texts that were identified through our search phrases. From this, we identified a series of themes that we grouped by policy and economics, the student, and expectations of the student. We discussed these in-depth, and continued to problematise the doctoral employability landscape, encouraging scholars to progress to workable solutions that support better integration between industry, student, and institutional needs. We believe an outlook oriented on how we can practically improve doctoral programs will serve to enable a more supportive and optimistic orientation of those involved in doctoral education, employment, or management.

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Evaluating leadership, wellbeing, engagement, and belonging across units in higher education: A quantitative pilot study

Matthew Wayne Knox[A] A *Honours Candidate, Academic Division, University of Tasmania, Australia*

Joseph Crawford[B] B *Lecturer, Learning and Teaching, Academic Division, University of Tasmania, Australia*

Jo-Anne Kelder[C] C *Senior Lecturer, Curriculum Innovation and Development, University of Tasmania, Australia*

Andrea Rose Carr[D] D *Associate Professor, University of Tasmania, Australia*

Clayton J. Hawkins[E] E *Senior Teaching Fellow, University of Tasmania, Australia*

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Abstract

Students are increasingly diverse, with traditional pedagogies and instructional approaches lacking effectiveness in engaging a variety of student cohorts. This study takes a behavioural approach to examining students in the classroom, seeking to better understand the relationships between authentic leadership, wellbeing, belonging, and engagement among students in an Australian Associate Degree program. This paper reports on a quantitative survey conducted at the beginning of a teaching period, with longitudinal data points expected as this cohort progresses. Preliminary findings are that while students' self-reported authentic leadership scores had associated gains in their psychological wellbeing, and classroom belongingness and engagement, their informal influence played the largest role. This could indicate that supporting students to develop deeper psychological behavioural capabilities (such as self-awareness and sincerity) would have the potential to strengthen the relationship between authentic leadership and student outcomes, by supporting a self-reinforcing effect among the authentic leader behaviours.

Introduction

Contemporary society has undergone significant evolution over recent decades, with citizens engaging with education and consuming knowledge in increasingly diverse ways. The traditional students attended lectures and tutorials on-campus. They were likely to have higher than average socioeconomic status, did not need to support their study by working, nor were they likely to hold a primary care responsibility for their children.

The contemporary student population are much less homogenous and therefore more difficult to define. Gender and age are more diverse, entry pathways less conventional, and desired modes of learning challenge current instructional approaches to teaching. Changes, influenced by the deconstructionist attitudes associated with the postmodern era, are occurring to the general beliefs and attitudes towards education (Lincoln, Lynham, & Guba, 2011). The outcome of constant redefinition of the student and their desired learning environment, with concomitant education policy reforms, has resulted in a situation where educational reforms still fail to create optimum learning outcomes, processes and environments.

In developing capable and competent tertiary learners, the intended learning outcomes of curriculum should extend beyond proficiency of knowledge required of their future career prospects towards attributes and behaviours of a flourishing citizen. Many studies report on lists of these so-called 'soft skills' as essential to future development including leadership, communication, collaboration, emotional intelligence, and creativity (Anderson, 2020). Holistic forms of higher education consider student learning, education and teaching, and development in combination (e.g. Kolb & Kolb, 2009). We posit that while significant emphasis is currently given to student learning and higher education teaching practice, there is a dearth in knowledge on student behaviours and associated development.

Students, to be successful in an evolving post-graduation landscape, require more than knowledge and skills. They need attributes, capabilities, and behaviours to be able to follow and adapt to their chosen pathway (Barrie, 2006; Green et al., 2009; Kavanagh & Drennan, 2008; Millican et al., 2011; Walsh et al., 2001); recognizing that their personal and professional pathways will not necessarily be linear (Briscoe et al., 2006; Hall, 2004). To create a strong foundation for learning, educators require a classroom that is both engaging and that students feel connected to. One concept associated with the formation of new campuses is the 'sticky campus'; a location that pulls students from afar and keeps them there (Robertson, 2019). At the heart of a sticky classroom is a location where students feel they belong, combined with high quality learning and teaching.
The aim of this paper is to explore preliminary quantitative data relating to the student baselines on their authentic leadership, psychological wellbeing, student engagement, and classroom belongingness, and to outline the following hypotheses:

> Hypothesis 1. That authentic leader behaviours in students will have a positive relationship to classroom engagement.
>
> Hypothesis 2. That authentic leader behaviours in students will have a positive relationship to student wellbeing.
>
> Hypothesis 3. That authentic leader behaviours in students will have a positive relationship to student belonging.

To do this, we begin with an overview of the context relating to the sample University, and the differences among their populations compared to traditional cohorts. The literature on evaluating behaviour, authentic leadership, student engagement, student wellbeing, and student belonging are drawn on to postulate three hypotheses for testing. The method summarises the quantitative survey and associated administration and analysis, followed by a presentation of the findings. This paper concludes with a discussion on the implications on the work, and opportunities for future research.

Context

The University of Tasmania's University College is a newly formed teaching intensive academic college that offers industry informed and employability focused sub-bachelor qualifications. Additionally, University College delivers preparatory and pathway courses that function to prepare students for bachelor level study. University College's courses are geared toward students who often believe higher education is beyond their capabilities or who have never aspired to undertake further education. University College Associate Degrees are two-year programs of study that provide students with specific skills and knowledge and are designed to connect them to employment opportunities in local industries or sectors.

University College brings together academic and industry expertise to ensure students' learning has real-world application. In addition, the University College practice-based pedagogy is informed by outcomes-based education and Kolb and Kolb's (2009) experiential learning theory. Focusing on what students will 'do' as a graduate practitioner, the curriculum is designed around 'the practice' and 'the experience'. This approach ensures that students develop transferrable skills that are key to their employability and future employment. The curriculum exposes students to industry relevant knowledge within a strong academic and theoretical framework. University College's commitment to academic coaching is integral to maintaining positive and authentic development of non-traditional student cohorts.

The University College teaching model centers on learning through practice and consolidating that learning through reflection (see Kolb & Kolb, 2009). This ensures students develop work-related skills, knowledge and behaviour by engaging in purposeful, authentic activity (McRae & Johnston, 2016). University College students, for example, engage in experiential learning activities, ranging from local

case studies and design thinking projects, through to industry or community projects, wicked problems, simulations, placements and fieldwork. In addition, experiences are typically project or problem-based and situated within industry or community contexts.

Most universities have more traditional 'classroom' or 'lecture theatre' teaching models. In addition, they typically offer work integrated learning opportunities, but traditionally these are limited to practicums, placements or 'co-ops' and industry projects. The University College practice-based model extends on the more traditional teaching and experiential education, opting for a balance of practice-based learning, along with classroom-based.

Literature

The literature review and hypothesis formation are synthesised in this section. The rationale is to demonstrate a clear theoretical link between the literature drawn on and the postulation of each associated hypotheses. This section presents literature on authentic leadership and student engagement to establish why we evaluate students' behaviours as well as their learning and the curriculum they are taught, justifying Hypothesis 1. The literature on student wellbeing and belonging is presented to justify Hypotheses 2 and 3.

Evaluating behaviour in courses

Behaviourism is one of the core tenants of psychological theories and their applications. Its approach is analogous to the ancient and sacred scientific method, applying logic to observations and drawing conclusions. This notion of observational study was made prominent by John Watson in his seminal piece on the topic (Watson, 1957), and contemporary academia has utilized this style through its application across the social sciences. Evaluating behaviour presents its benefits in a variety of fields, from the criminology of the corporate psychopath, to organisational success. Political sciences for example have been applying behavioural evaluations to a variety of interactions, such as the notion of apparent sincerity, in which one behaves in an insincere way to achieve personal agenda (Ferris et al., 2005).

Evaluating behaviour in education is likewise applied, such as classroom productivity and its relationship with student behaviour and wellbeing (Kern et al., 1994). Nonetheless, discourse on behaviour lacks in contemporary education studies, especially when considering students. This is not to say that no research exists, however there is an overemphasis on other evaluation elements regarding the evaluation of behaviour in students in higher education. Our paper looks to remedy this through demonstrating the effects of behavioural theories such as authentic leadership. Higher education studies do not altogether lack research on behaviour in students. Online education has seen a recent surge in literature, and some behavioural analysis does exist. These evaluations tend to focus on surface level analysis however, such as participation rates (Morris et al., 2005) and time spent studying (Morris & Finnegan, 2008).

Authentic leadership and student engagement

Literature on leadership within student populations often conflates the practice of leadership (involving behaviours and attributes) with the belief that positional roles are core to fostering development (Dempster & Lizzio, 2007; Eich, 2008; Schuh & Laverty, 1983). Such a development perspective takes leadership research back to 'Great Man' philosophies of leadership (e.g. Carlyle, 1840), where 'great men' were identified and given positional power to be followed without question. Against this conflation and drawing on theoretical foundations of authentic leadership (Crawford et al., 2020; Luthans & Avolio, 2003), we argue that cultivating the behaviours of effective and ethical leaders ought to be the focus of curriculum, so that graduates in future positional management roles may exhibit effective leadership.

Authentic leaders are aware of themselves and others, sincere to those around them, have positive morals, think in a balanced manner, and build their own informal influence. Authentic leadership was coined as a response to global challenges to ethical leadership (e.g. 9/11 and the dotcom bust) but extended over time to encompass effective leadership (Luthans & Avolio, 2003). Scholars posit authentic leadership behaviours as the foundation of all positive forms of leadership (Avolio & Gardner, 2005).

Within the organisational context, authentic leaders have a positive effect on their own development and the development of those around them. Authentic leaders tend to be enablers of higher psychological wellbeing (Laschinger & Fida, 2014; McMurray et al., 2010), feel pride in belonging to their workplace (i.e. social belonging: Wong et al., 2010), and are more engaged in their work (Giallonardo et al., 2010; Hassan & Ahmed, 2011). This paper draws on each of these understandings, to investigate the transferability of organisational psychology research to the field of higher education development research, beginning with student engagement.

Student engagement is a multidimensional construct comprising "cognitive (e.g. concentration, effort in an activity) and affective (e.g. enjoyment, interest) elements" (Strati et al., 2017, p. 132). In one study, perceived challenge and teacher support were predictors of student engagement, along with teacher obstruction during high challenge periods as a predictor of disengagement (Strati et al., 2017). Other predictors of student engagement include teacher beliefs (Archambault et al., 2012), self-esteem (Olwage & Mostert, 2014), and social networking (Junco, 2012). In higher education, student engagement is discussed through multiple lenses including psychological, socio-cultural, socio-political, and holistic (Kahu, 2011). We postulate a relationship that may exist between student-level authentic leader behaviours and their engagement in the classroom for several reasons. First, authentic leaders are more engaged in the workplace, and this knowledge may have transferability to the higher education student context. Second, student engagement is predicted by self-esteem, teacher beliefs, and social networking. These

predictors are enabled by authentic leader behaviours. Self-esteem is a product of self-regulatory effects of an authentic leader's balanced processing and self-awareness (Gardner et al., 2005). Awareness of other's beliefs and attitudes is a product of effective awareness and sincerity, and authentic leaders are effective in elements of the knowledge economy such as social networking (Crawford et al., 2020). Based on these established relationships, we posit:

> Hypothesis 1. That authentic leader behaviours in students will have a positive relationship to classroom engagement.

Student wellbeing

While positive emotions such as a sense of belonging signal emotional wellbeing, Fredrickson's theory of positive spirals suggests positive emotions perpetuate flourishing through broadening attention and cognition (thought-action repertoires) and increasing personal resources for flexible and creative thinking, coping with stress and anxiety (Fredrickson & Joiner, 2002). In several studies in the early 2000s Fredrickson's data demonstrates that positive affects reciprocate one another, acting in upward spirals towards positive mental wellbeing.

The correlation between having a sense of belonging (fitting in with others) and perceived meaningfulness of life is empirically established across four studies (Lambert, et al., 2013). Increasing meaning and social relationship quality supports wellbeing and belonging. Belonging and wellbeing can be understood through social identity. Self-enhancement is an individual goal that is enacted through evaluation of their own social identity (Abrams & Hogg 2004). What this means is that an individual person's wellbeing is influenced by how their actions relate to their place among the social identity continuum (personal and interpersonal to group and intergroup). As individuals belong to several groups, they look to understand their sense of self through managing their own interests, essentially finding balance between expectations and their sense of self. Mobility, creativity, and competition all aid in this process, along with self-categorization, which helps determine expectations through specific group identification (Turner et al., 1987). For example, a student who is vegetarian for animal-based ethical reasons may experience internal conflict in a laboratory where they are expected to engage in animal experimentation.

Authentic leader behaviours have a positive relationship with engagement (Gardner et al., 2011). Additionally, given the positive impacts of authentic leader behaviours across a range of contexts, it is reasonable to investigate whether authentic leader behaviours act to promote one of these positive spirals into positive mental health through a heightened sense of belonging and engagement. On this basis, we predict a positive relationship between authentic leader behaviours and student wellbeing.

> Hypothesis 2. That authentic leader behaviours in students will have a positive relationship to student wellbeing.

Student belonging

Belonging is fundamental to human flourishing and survival (Ryan & Deci, 2000). Belonging is defined and shaped differently among the existing literature. The construct of belonging is often explored from multiple analytical lenses: social locations, identification and attachment, and ethical/political values (Yuval-Davis, 2006). Social locations refer to belonging to a specific set of demographics (e.g. young, female, and university educated). Identifications and emotional attachments refer to the construction of narratives that individuals build, and their connection to their rhetoric of story and this story may include emotional investments and attachments to others and/or groups. Ethical and political values are focused on the specific attitudes and attachments to ideology, and on how these are valued and/or judged (Yuval-Davis, 2006). We focus on the identifications and emotional attachments of students, with a specific focus on how this is informed by their higher education context as a 'student' and a 'learner'.

Commitment, engagement, and connectedness are incorporated as three critical components of a belongingness model (Anderson-Butcher & Conroy, 2002). Commitment to the organisation (Semedo et al., 2016), employee engagement (Giallonardo et al., 2010; Hassan & Ahmed, 2011), and team connectedness (Bird et al., 2009) have been either empirically or theoretically related to authentic leadership.

Within the higher education literature, belonging is considered important for enabling students to succeed. Disconnection of students on the negative along with creating a positive and caring environment on the positive are challenges that student belonging could solve (O'Keeffe, 2013). Student retention is a frequently cited reason for seeking to engage students and support their sense of belonging (Testa & Egan, 2014; Yorke & Longden, 2004). Belonging is often linked to engagement with the belief that these constructs in practice will enable greater academic outcomes for students (Zumbrunn et al., 2014).

Online communication and groupwork were identified as key belonging themes in a retention intervention implementation in first year business management students (Masika & Jones, 2015). Collaboration in a community of practice, establishing shared goals, collaborative working, opportunities for discussion and debate, and mutual respect were key themes identified through their focus group studies (Masika & Jones, 2015). Drawing on the current literature supporting a relationship between components of belongingness in students and authentic leadership and recognising the value of developing student feelings of belonging to their success and retention, we posit a relationship between student authentic leader behaviours and their sense of belonging.

> Hypothesis 3. That authentic leader behaviours in students will have a positive relationship to student belonging.

Method

Procedure

Students were invited to participate in this study's survey following a presentation by the researchers at the University of Tasmania's Cradle Coast, Newnham, and Sandy Bay Campuses. Convenience sampling was utilized as it allowed the researchers to draw a sample from the large population under limited time, and workforce (Eitkan et al., 2016). Use of pen-and-paper questionnaires was the preferred data collection method for this study as it allowed for a combination of four different measurements in one survey. This study was approved by the Tasmanian Social Sciences Human Research and Ethics Committee (Reference Number H0018174).

These measurements were in the form of four unique questionnaires, testing for authentic leadership behaviour, wellbeing, belonging, and engagement. The verbal presentation provided students with an overview of the study, as well as its aims, and assurances of voluntary participation, details of involvement, withdrawal procedure and confidentiality. The latter of which was promoted by the delivering lecturer leaving the room during the presentation to ensure they do not know which student participated. Following the presentation students either completed the survey or returned it to the researcher blank.

Analysis on the single timepoint data was conducted in IBM SPSS Statistics and the AMOS extension were used to analyse the data once collected. Testing included demographic reporting, reliability analysis, variable computation, significance testing, and regression analysis. These were done to test for relationships between the various scales, which included authentic leader behaviours, belonging, engagement, wellbeing, gender, and age.

Measures

Student self-assessments for their authentic leader behaviours were measured using the Authentic Leader Behaviour Index (ALBI: Crawford, 2019). The ALBI was developed to assess the five behaviours of an authentic leader (Crawford et al., 2020): awareness, sincerity, balanced processing, positive morals, and informal influence. The development of the tool was conducted among a diverse sample exceeding 1,000 participants, and applying rigorous psychometric analysis (Crawford & Kelder, 2019). The scale consists of 15 items assessing these behaviours on a 7-point Likert scale. The results were cross analysed with the study's other measures to investigate possible relationships. Preliminary Cronbach alphas for the ALBI were 0.87.

The Utrecht Work Engagement Scale (UWES-9: Schaufeli et al., 2006) was adapted for use as a measurement tool for student engagement in the classroom. The modified items are presented in Table 1, demonstrating strong loadings in maximum likelihood confirmatory factor analysis.

Table 1. Validity of the revised Student Engagement Scale

Revised items	$\bar{x}$ (SD)	Loading
1. In my class, I feel bursting with energy.	3.95 (1.35)	0.84
2. In my course, I feel strong and vigorous.	4.30 (1.23)	0.87
3. I am enthusiastic about my study.	4.73 (1.30)	0.85
4. My learnings inspire me.	5.02 (1.27)	0.78
5. When I get up in the morning, I feel like going to University	4.02 (1.52)	0.84
6. I feel happy when I am studying intensely.	4.30 (1.36)	0.72
7. I am proud of the work that I do.	5.20 (1.36)	0.52
8. I am immersed in my study.	4.52 (1.21)	0.83
9. I get carried away when I am in class.	3.70 (1.32)	0.07

Interestingly, item nine performed poorly, but had little effect on the model fit reported in Table 2. Although the chi-square test was significant (Model 1: $\chi 2/df = 1.66$, $p = 0.02$; Model 2: $\chi 2/df$, $p = 0.01$), the sample size is far too small to confirm these fit indices with any degree of confidence. Crawford and Kelder (2019) recommend a minimum of 150, whereas Barrett (2007) recommends a definitive minimum of 200 for any form of structural equation modelling. Future studies will need to confirm the preliminary findings, so we opted not to exclude the ninth item. Composite reliability (CR) was used to test internal consistency, noting that the Cronbach's alpha was 0.89.

Table 2. The fit of the revised Student Experience Scale

Model	χ^2/df	CFI	TLI	RMSEA	CR	AVE
Model 1 (Full Scale)	1.66	0.93	0.88	0.12	0.91	0.55
Model 2 (Item 9 Removed)	1.87	0.93	0.87	0.14	0.93	0.63

Degrees of freedom (df), comparative fit index (CFI), Tucker-Lewis Index (TLI), root mean square error of the approximation (RMSEA), composite reliability (CR), and average variance explained (AVE).

Assessment of student belonging was measured through Anderson-Butcher and Conroy's (2002) 5-item scale. Their measurements were developed due to the lack of attention around student belonging, especially in the context of youth development programs. Belonging scores were positively related to attendance rates for the program, with 417 students having completed the questionnaire. This scaled was adapted to the context of students in higher education for reliability and relevance. Preliminary Cronbach alphas for the scale were 0.84.

The Warwick-Edinburgh Mental Well-Being Scale (WEMWBS) was used to measure self-assessed student wellbeing. This scale was developed by expert panel discussions, qualitative research focus groups, psychometric testing and validated through student and representative population samples (Tennant, 2007). The scale itself consists of 14 items assessing hedonic and eudemonic perspectives of mental wellbeing. Adopting a 5-point Likert scale, student scores were calculated by totaling the scores of each item, the higher the score, the higher the indication of high mental well-being. Preliminary Cronbach alphas for the WEMWBS were 0.94.

Sample

In the student sample, 46 students completed all four questionnaires, with only one student partially completing the survey. Of this sample 18 identified as male, and 28 identified as female. The median age of participants was 34, with 60 and 20 at the extremes of the scale.

Students who completed the survey were all enrolled in a practical business course, of which researchers attended 4 separate classes. Some students were enrolled in more than one of these classes and the data analysis was adjusted to accommodate this. The units shared commonalities in their content delivery and intended learning outcomes. For example, all classes had 2-hour lectures and required students to attend full-day workshops.

Findings

We tested H1, H2, and H3 using Pearson's correlation coefficient, linear regression, and multiple linear regression. Table 3 reports on the correlations across the variables used in this study and provides preliminary support for each of the hypotheses. Table 4 reports on multiple linear regression of the effect of the individual dimensions on the outcomes posited in the three hypotheses. The following outlines the collected data, its interpretation will be discussed in the following section.

Table 3. Correlations across variables

	1	2	3	4	5	6	7	8	9	10	11
1. Age	**1**										
2. Gender	0.30*	**1**									
3. ALBI	0.26	0.17	**1**								
4. Awareness	0.15	-0.06	0.76**	**1**							
5. Sincerity	0.16	0.16	0.69**	0.37*	**1**						
6. Balanced Processing	0.15	-0.02	0.83**	0.63**	0.53**	**1**					
7. Positive Morals	0.25	0.28	0.78**	0.44**	0.35*	0.60**	**1**				
8. Informal Influence	0.28	0.25	0.40**	0.50**	0.53**	0.45**	0.53**	**1**			
9. Wellbeing	0.27	-0.04	0.40**	0.20	0.23	0.28	0.33*	0.46**	**1**		
10. Engagement	0.30	0.14	0.45**	0.42**	0.10	0.38*	0.33*	0.49**	0.61**	**1**	
11. Belonging	0.44**	0.42	0.32**	0.32*	0.21	0.18	0.33*	0.54**	0.60**	0.68**	**1**
x̄ (SD)	33.60	1.61	5.78	5.67	6.11	5.83	5.92	5.33	4.87	4.42	5.43
SD	14.04	0.49	0.59	0.70	0.64	0.78	0.86	0.83	1.05	0.97	0.87

* p < 0.05, ** p < 0.01

Table 4. Multiple regression analyses

	Student Engagement			Student Wellbeing			Student Belonging		
	β	SE	t	β	SE	t	β	SE	t
Awareness	0.16	0.24	0.90	-0.13	0.28	-0.68	0.15	0.22	0.86
Sincerity	-0.33	0.24	-2.00	-0.05	0.28	-0.27	-0.06	0.23	-0.35
Balanced Processing	0.25	0.25	1.22	0.13	0.29	0.59	-0.20	0.23	-1.00
Positive Morals	-0.01	0.19	-0.07	0.10	0.22	0.53	0.14	0.18	0.79
Informal Influence	0.20	0.20	2.60	0.43	0.24	2.24	0.51	0.19	2.88

Student engagement

As theorised, there was a positive correlation between authentic leader behaviours and student engagement ($r = 0.45$, $p < 0.01$). Using least squares linear regression, the model fit was satisfactory ($r2 = 0.20$, Durbin-Watson = 1.41, $F = 11.02$, $p < 0.01$) with authentic leader behaviour having a positive effect on student engagement ($\beta = 0.45$, $p < 0.01$). To test for a key least squares regression assumption, that the error terms are uncorrelated, a Durbin-Watson statistic was used (Durbin & Watson, 1951). The score was not too distant from a score of 2, representing a robust model. This confirms Hypothesis 1. When assessed with multiple regression, with the five behaviours of authentic leaders as predictors, model fit was moderate ($r2 = 0.34$, Durbin-Watson = 1.38, $F = 4.07$, $p < 0.01$), informal influence was the only significant predictor ($\beta = 0.20$, $p < 0.05$).

Student wellbeing

For the relationship between authentic leader behaviours and student wellbeing, correlation scores demonstrated some form of relationship ($r = 0.40$, $p < 0.01$). Least squares linear regression was used as a more robust assessment ($\beta = 0.39$, $p < 0.01$), with a satisfactory model fit ($r2 = 0.15$, Durbin-Watson = 1.33, $F = 7.95$, $p < 0.01$). This affirms Hypothesis 2. Like student engagement, when tested at the dimensional level of authentic leaders, the strongest factor was informal influence ($\beta = 0.43$, $p < 0.05$), although the model demonstrated some flaws in the Analysis of Variance (ANOVA) test ($r2 = 0.22$, Durbin-Watson = 1.34, $F = 2.30$, $p = 0.06$). This may be due to a lower sample size.

Student belonging

The correlation scores between authentic leader behaviours and student belonging were significant ($r = 0.32$, $p < 0.01$). In least squares linear regression, the model was reasonably robust ($r2 = 0.18$, Durbin-Watson = 1.89, $F = 9.37$, $p < 0.01$), with authentic leader behaviours having a positive influence on student belonging ($\beta = 0.42$, $p < 0.01$). Multiple regression was used to assess the individual behavioural impact on student belonging. The model was robust ($r2 = 0.32$, Durbin-Watson = 2.00, $F = 3.84$, $p = 0.01$) with informal influence the greatest predictor of belonging ($\beta = .51$, $p < 0.01$).

Discussion

The foundation of this study is research largely undertaken in contexts other than higher education. Positive organisational scholarship, and positive behavioural theory, developed in the field of organisational psychology as a response to unethical business practices and their large-scale negative consequences. The theory promotes the notion that positive emotions, reinforcement and reward lead to positive results. Studies in the field report a positive influence on various cognitive functions such as creativity, innovation, sustainable relationships, engagement and knowledge sharing behaviours. Crawford et. al's (2019) research distinguish the five behaviours that make a good leader and suggests that authentic leaders can be ethical with a strong positive moral perspective, while remaining effective through the combination of informal influence and a strong self-concept. Authentic leader behaviours are the synthesis of doing what is right, effective and efficient, with positive effects for self and others.

This study sought to translate broad findings into the specific context of student leader behaviours, to identify if, and to what extent, authentic leader behaviours are positively related to factors already established as important for student flourishing.

Each of the three hypotheses were supported by the results. That is, the study demonstrated positive relationships between engagement, wellbeing and belonging in University College students who completed the authentic leader behaviours survey instrument.

The quantitative analysis demonstrates that supporting the development of authentic leader behaviours in student cohorts will have a positive effect on individual

student's engagement (H1), psychological wellbeing (H2), and belonging in the classroom (H3). This research study tested the relationship of students' (self-assessed) authentic leadership behaviours related to their engagement, wellbeing and belonging. The objective was to shed light on different pedagogies and structures that can contribute to positive mental health, engagement and belonging among students with a concentration on the behaviours of authentic leaders. Through relationship analysis methods, as outlined above, results showed that students with higher authentic leader behaviours demonstrated heightened belonging, engagement and overall wellbeing.

Using multiple regression analysis, we assessed the relationship between the specific five authentic leader behaviours (awareness, sincerity, positive moral perspective, balanced processing, informal influence) and their effect on engagement, wellbeing, and belonging. Notably, informal influence was the only independent variable with a significant p value.

In the literature, authentic leader behaviours are positioned as a multilevel framework: with awareness and sincerity as the deepest level, balanced processing and positive morals on the middle level, and informal influence as the capstone (Crawford et al., 2020). This indicates that the authentic leader behaviours instrument may test the general high-level sentiment of students' authentic leader behaviours, but on an individual level this cohort of students have difficulty interpreting and assessing their own, deeper level, behaviours. That is, students may lack sufficient sociopsychological development to be able to interrogate the underlying levels of the five authentic leader behaviours.

For the University College context, this suggests in order to develop authentic leader behaviours in Associate Degree students, effort should be focused on developing their awareness and sincerity, particularly given students likely over-rated their scores on sincerity (see Table 4).

Considering each hypothesis in turn, Hypothesis 1 posited that authentic leader behaviours in students will have a positive relationship to classroom engagement. The survey results were that students with higher authentic leader behaviours were more engaged in class ($\beta = 0.45$, $p < 0.01$). This finding, alongside the literature suggesting that more engaged students tend to perform better (Kahu, 2011; Olwage & Mostert, 2014; Strati et al., 2017), suggests that curriculum that explicitly develops authentic leader behaviours as a positive contributor to engagement, could improve student performance.

Hypothesis 2 posited that authentic leader behaviours in students will have a positive relationship to student wellbeing. The survey results confirmed that students with higher authentic leader behaviours had greater mental wellbeing ($\beta = 0.39$, $p < 0.01$). In the higher education context, where 1 in 3 students experience or show symptoms of mental illness or disorders, responding to poor student wellbeing is critical. Likewise, literature has shown that wellbeing is a significant factor in organisational success, especially in students as they organize in classrooms. The finding that authentic leader behaviours positively affect student wellbeing, suggests that curriculum that explicitly develops authentic leader behaviours may be a positive contributor to student wellbeing, perhaps through reciprocal positive spiral effects, such as identified by Fredrickson and Joiner (2002). For example, upward spirals towards positive mental wellbeing can have positive affects to other behaviours. Positive mental wellbeing can result in increasing self-efficacy. Self-efficacy has demonstrated spirals to motivation and student success (Yukselturk & Bulut, 2007). As such, further research into fostering student well-being has the potential to promote other behaviours linked to student success.

Hypothesis 3 posited that authentic leader behaviours in students will have a positive relationship to student belonging. The survey results confirmed that students with higher authentic leader behaviours felt they belonged more in their college, classes and cohort ($\beta = 0.42$, $p < 0.01$). In the context of University College's non-traditional cohort, attrition from their courses is a critical issue, as for any higher education course that has high attrition. Given that literature has demonstrated that belonging and engagement are linked to participation and retention (Giallonardo et al., 2010; Hassan & Ahmed, 2011; Masika & Jones, 2015), it is possible that curriculum that develops increased authentic leader behaviours, and therefore sense of belonging, will result in students being less likely to leave.

Limitations and future research

The paper reports the preliminary results of a longitudinal study. Although, our results suggest authentic leadership behaviours have a positive effect, future research is needed with greater student numbers and more diverse cohorts. This paper reports on a quantitative survey conducted at the beginning of a teaching period. Longitudinal data points will be collected as this cohort progresses. As such, the length of future study is determinant on the cohort's progression. The study is limited by its sample size, likewise, it focuses on the teaching of one discipline. Future research would benefit from a larger sample size, as well as the consideration of other areas of learning and teaching in higher education.

University College has a non-traditional pedagogy and instructional approach that is designed to effectively engage its non-traditional, heterogeneous student cohort. The study is longitudinal and will follow each cohort through the curriculum. Preliminary findings indicate informal influence has the most significant role in psychological wellbeing, and classroom belongingness and engagement. Future research will explore if supporting students to develop deeper psychological behavioural capabilities (such as self-awareness and sincerity) will strengthen the relationship between authentic leadership and student outcomes, by supporting a self-reinforcing effect among the authentic leader behaviours.

Conclusion

Leadership is distinguished in organisational psychology as a driver for change and wellbeing. Leadership skills consistently ranks as a critical success factor for student employability

and future success. Three factors (engagement, wellbeing, and belonging) are established in the literature as significant for student success in their future personal and professional lives. This exploratory study leverages a preliminary dataset from a longitudinal study that investigates engagement, wellbeing, belonging, and leadership in student populations. Through regression analysis, each of the three hypotheses were confirmed, demonstrating a positive relationship between authentic leadership behaviours and students' engagement, wellbeing, and belonging.

When considering what this paper means in the higher education context, our results suggest developing authentic leadership behaviours in students will have a positive effect on their own sense of wellbeing, belonging, and engagement. Students who are more engaged tend to perform better, and so factors that influence engagement could improve student performance. Wellbeing is a significant factor in organisational success, especially in students as they organize in classrooms. In a higher education context where 1 in 3 students experience or show symptoms of mental illness or disorders, responding to poor student wellbeing is critical. Belonging and engagement are linked to participation and retention. Students who feel a sense of belonging are perhaps less likely to leave.

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Departing from anonymous and quantitative student feedback: Fostering learning and teaching development through student evaluations

Isabelle Bartkowiak-Théron[A] A *Lead Senior Researcher, Tasmanian Institute of Law Enforcement Studies, University of Tasmania, Australia*

Andrew Laurance Jephson McShane[B] B *Senior Constable, Tasmania Police Service, Australia*

Maxwell Graham Knight[C] C *Education & Professional Development Adviser, Tasmanian State Service: Department of Police, Fire & Emergency Management*

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Abstract

The Police Studies program at the University of Tasmania (UTAS), Australia has been growing exponentially since 2015. Since then, UTAS became the only Australian university teaching police across several jurisdictions. One key to this success has been the improvement of teaching and learning via an incremental yet drastically altered approach to student experience and feedback. In 2017, rather than relying on student evaluations that were not engaging individuals positively, innovative and alternative means were sought to ensure communication and feedback could contribute to teaching and learning development, as well as collaborative staff and student development. Student evaluations became qualitative only and fully identified. This radically changed the feedback provided to both police and UTAS lecturers teaching recruits at the police academy.

This paper analyses the changes that occurred after teaching staff decided to completely depart from anonymous and quantitative student evaluations. Eighteen (18) police educators teaching at the Tasmania Police Academy (both police and UTAS staff) were invited to provide their views on those changes. Via an exploratory study of staff experience (67% surveys were returned), and in light of recent literature in tertiary education, we contest current assumptions about, and practice in, student feedback. Our approach arguably disputes traditional and historical thinking on the normative role and format of student data in evaluating the quality of a learning experience. We argue that this innovative, transparent and accountable feedback unlocks ways to embed students within curriculum improvement, teacher development, and learning experience.

1. Introduction

The tertiary education of police is a highly debated and divisive topic in both the profession and academia. Yet, in 2017, the University of Tasmania (UTAS) established its leadership in this areas by becoming the only Australian university teaching police officers across several jurisdictions. One key to this success was the adoption of a different approach to collaborative curriculum design, teaching and learning, and a radical approach to the positive engagement of students in providing feedback to their lecturers. In 2017, student feedback became qualitative only and fully identified. This radically changed the educative value of the comments provided to both police and UTAS lecturers teaching recruits at the police academy.

Following a brief account of the involvement of tertiary education in the professionalisation of policing worldwide, and then locally, the authors analyse the changes that occurred after teaching staff decided to use named and qualitative feedback from students. The invitation to present this initiative at the University's annual teaching conference allowed the team to reflect on its rationale, as well as its impact. In our discussion, we contest current assumptions about, and practice in, student feedback. Our approach runs counter to traditional and historical thinking on the normativity surrounding student evaluation data, and especially, the format in which institutions have gotten used to evaluating the quality of a learning experience. We argue that our initiative encourages teaching staff to consider drastically innovative, transparent and reliable feedback. In fostering new ways to foster trust between student and educator, student feedback practices can become vibrant ways to embed students within curriculum improvement, unlocking new perspectives for teacher development as well as learning experience.

2. Background (police education + UTAS setting)

Police tertiary education has been a much-debated topic since the 1960s. Most studies on the topic agree that higher education presents many benefits for police, and that "life-long learning and continuing professional development for officers throughout their careers is worth the investment" (O'Shea & Bartkowiak-Théron, 2019, p. 101; see also Bradley, 2006; Cordner, 2016; Wood & Tong, 2008). However, it took many years of scholarly and professional arguing before academics became embedded in the training of police officers around the world.

Several factors have contributed to the promotion of police education at university level. First, there was much debate about the role of academics in the teaching of police recruits, and whether or not they are 'atuned' to the realities of the field, and the daily operational business of being a police officer (Cordner, 1996; Wood & Tong, 2008). Scholars have argued that early difficulties (some of them are enduring) of police tertiary education rest in 1) the ill-thought inclusion of ready-made criminal justice curricula in policing studies, when most police everyday dealings rest outside criminal justice, and 2) in the absence of articulated participation of policing scholars in empirical policing research.

With the adoption of problem-oriented policing (Goldstein, 1979) in the late 1970s, came the acknowledgement that police officers need to effectively be critical thinkers to solve complex social problems, or at least contribute to their solution. To do so, it was acknowledged that they needed higher level thinking skills before becoming operational (Cordner, 2016). The push for educational qualifications for police has also often moved in lockstep with crisis, social upheaval and subsequent soul-searching through reviews and inquiries into police actions and culture. The 1987 Fitzgerald Inquiry in Queensland (focused on corruption), the 1995 Wood Inquiry into the New South Wales police force (on misconduct, corruption and the investigation of paedophilia networks) and the 2002 Kennedy Inquiry in Western Australia (again on corruption) have all made various recommendations about ethics and education. In the US, the final report of the 2015 President's Task Force on 21st Century Policing stresses the need for higher education for police. In those recommendations, tertiary education is presented as an 'antidote' to counteract negative public perceptions of the police (Wimshurst & Ransley, 2007). Tertiary education for police was even touted by Fitzgerald as a conduit for actual organisational change (Prenzler et al., 2010). However, due to the often knee-jerk nature of such inquiries, educational reform has often been poorly defined, with curricula and staffing not addressed comprehensively (Wimshurst & Ransley, 2007). Regardless of such 'hiccuppy' developments, while police tertiary eduation began modestly (with, for example, the inclusion of ethics, risk assessment and/or policy in police curricula), police education and training in most Western countries now involves some level of collaboration between a police organisation and an educational institution, including universities.

The Tasmania Police – University of Tasmania partnership follows this trend, and has been governed most recently under the Australia New Zealand Police Professionalisation Strategy (ANZPAA, 2012). Now in its 26th year, it is the longest-running police–academic partnership across all Australian states and territories (Bradley, 1996; Julian & Adams, 2010; O'Shea & Bartkowiak-Théron, 2019; Riley et al, 2017). It sets itself in stark contrast of generally negative literature about such partnerships, which have notoriously labelled universities as ivory-towers that feed on government education schemes (the "uneasy co-existence of practitioners with academics", O'Shea & Bartkowiak-Théron, 2019, p. 101). The creation of the Tasmanian Institute of Law Enforcement Studies (TILES), a police-sponsored research centre at the University, adds another dimension to this partnership, allowing academics to work hand-in-hand with police officers at all rank levels, for the purpose of applied and conceptual research into policing. Furthermore, against an international backdrop that pushes forward the professionalisation of police, the Tasmania Police – University of Tasmania partnership is expanding police education delivery and research into new domains (topics studied, jurisdictional capacity and delivery, and research streams).

The quality of teaching dynamics (inclusive of co-teaching with police officers), has often been argued as a component of the partnership's success, and the analysis of those

teaching dynamics is now an ongoing research stream at TILES. Teaching at the police academy is a continuing topic of discussion between UTAS and Tasmania Police, and is strictly monitored by teaching peers and managers, and via rigourous, daily student feedback surveys. A specific recruit satisfaction survey, installed on the SurveyMonkey platform, is run rigorously in the police organisational context, as part of the monitoring of the recruits' learning experience by Tasmania Police. All lectures are assessed, every day, by recruits. Results are collated daily, and immediately feedbacked to recruit course coordinators and lecturers for analysis and discussion or action. In comparison, UTAS student evaluation surveys were constantly receiving low responses from the recruits: with the mandatory nature of the Academy survey, recruits deemed their feedback already recorded by police academy staff and discarded the University instrument. The Dean of the Faculty of Arts therefore authorised all academic staff teaching at the police academy to cancel all UTAS student evaluations in 2012. Instead, lecturers were encouraged to substitute the daily instruments used by the police academy to assess teaching. This was a logical path forward to address survey fatigue, especially since both anonymous surveys were comparable. Questions were phrased in a similar manner, and topics were assessed in the same way: on a Likert scale from 1 (Strongly disagree) to 5 (Strongly Agree) (see the table 2 at the end of the article).

This all changed in 2017. As part of a process of revision, recruit evaluations of teaching became qualitative only, and fully identified. The feedback provided to all police educators, including University staff, radically changed. The rationale for the change stemmed from a number of dynamics. Education designers and academics had been flagging, for a few years, the rise in critiques about student evaluations as per international literature and research. From a more organisational point of view, police academies must be seen as a higher education microcosm: a small scale representation of the university, dedicated to the tertiary qualification of police officers, their professional advancement, and research capacities (Julian & Adams, 2010; O'Shea & Bartkowiak-Théron, 2019; Riley et al., 2017). It is only natural, then, to observe the same dynamics as for 'conventional' students, especially in terms of teaching and learning evaluations, which went from the extremes of the more than occasional venting or extreme congratulations, to derogatory comments towards staff (sometimes outside the context of teaching and learning). As the partnership between the two organisations matured, police educators became more knowledgeable in the kinds of evaluations that could be conducted to obtain more useful and constructive feedback (Berk, 2005). Police officers and academics were of the opinion that:

> "The feedback would be considerably more productive if the recruits were held to account for any comment they made." – Police Educator 1

> "I completely agree that the feedback should not be anonymous. We need to teach them responsibility for words/actions right from the start of their careers" – Police Educator 2

> "They would put more effort into the feedback if there weren't as many 'pointless' questions, more specifically being the number rating system" – Police Educator 4

The academic team, after debating issues of privacy and reliability, agreed with the point on de-anonymisation and full identification of surveys. The decision acknowledged an alignment with the professional standards of police officers to be held to account for any statement made in any public or private forum.

> "There is an element of transferability, from the evaluation of teaching onto the professional life that we can take into account; there is also an element of transparency and honesty that is interesting" – UTAS lecturer 1

However, the academics participating in the review of recruit satisfaction surveys approached the topic of dropping the rating scale cautiously. It would imply some significant changes for all staff arguing about their teaching capacity during performance management sessions and quality assurance framework exercises. Staff would have to develop explicit and long-winded narratives about the reasons why they are not 'graded' as teachers and why their survey results are missing from university assessment. After several team discussions and vetting from management, all staff agreed to use identifiable and qualitative data on teaching and learning. All agreed that levels of trust were high enough between teaching staff and recruits to allow honest, respectful and useful feedback; that transparent feedback was in the interest of all parties, including recruits; and that feedback would always benefit the learning and teaching evaluated.

3. Literature review and theoretical framework

Student evaluations

Student feedback is part and parcel of academic life. It is at the core of evaluations of teaching and learning, and has been used widely, for decades, as a general measure of teaching performance (Alderman et al., 2012; Spooren et al., 2013). The actual practice of such evaluations, however, has become a topic of controversy in the academic teaching trade, and in education scholarship.

Student evaluations generally have three main objectives: 1) to improve the quality of teaching, 2) to provide information for appraisal exercises (such as academic promotion or annual performance management as well as curricula audits), and 3) to provide accountability for the institution delivering educational services (Spooren et al, 2013). Tertiary institutions, as well as professional learning institutions (such as apprenticeship or industry-based teaching organisations) use student feedback in many ways and forms, and some secondary schools also use it to assess the learning outcomes of specific activities such as guest lectures or specialised intensive sessions (Barsalou et al., 1974; Berk, 2005).

In many tertiary institutions, student evaluations are also used as feedback to identify development needs. Teaching staff can use student comments to support an argument for professional development in the use of new teaching technologies, or to acquire skills such as public speaking confidence, curriculum development, or the mapping of their teaching competence (Boring et al., 2016; Oerman et al., 2018).

Such evaluative practices are considered important, and are, arguably, crucial to ascertain that the best possible education is provided to students (Hammonds et al., 2016). According to public management frameworks, evaluations have increasingly been used as tools of quality assurance and transparency. Such exercise is aimed at funding and governing bodies, as well as the public and prospective students, especially when 'teaching quality' is a benchmark by which universities might distinguish themselves in what is a highly competitive market (Watson, 2000). In short, student evaluations have become a fundamental instrument in 'customer satisfaction' evidence[1].

There is an argument to be made that students are the core business of universities, and, as such, should be a high priority for their teachers and administrators. With peer-reviews as the only other tool available to teaching staff, students are the only ones able to provide commentary on the quality of teaching in a course, according to the idea that "the opinions of those who eat the dinner should be considered if we want to know how it tastes" (Seldin, 1993, p. xx). There is indeed no argument that student feedback is important, needed, and "considered by many to be essential to improving undergraduate instruction" (Hammond et al, 2016, p. 26). However, there now exists a growing body of literature that argues that student evaluations, while essential for the conduct of tertiary education, have become too streamlined and rigid in their administration and format and that the 'satisfaction-like' tools are inappropriate for some discisplines and areas of study.

More and more, academic staff and specialists in evaluation research have argued that student surveys have been mistargeted, misaligned with teaching and learning priorities, and out of sync with intended learning objectives. Indeed, student evaluations of teaching, teachers and units of study (face-to-face or online) are increasingly being discredited in international scholarly literature (Boring et al., 2016). Critiques have focused on issues of student evaluation format (the ways questions are phrased), contents (what students focus on when they answer) and timeline (when surveys are administered). Results of systematic reviews of student evaluation and feedback have indicated, for example, that

1. Gender weighs heavily on the assessment of staff (female instructors are rated lower than their male counterparts: Boring, 2017; Boring et al., 2016; Miller & Chamberlin, 2000; Mitchell & Martin, 2018).
2. Student results in units of teaching have a significant impact on the ways students view teaching negatively: a student who failed a unit is likely to give negative feedback, as opposed to someone who received high marks, regardless of the quality of teaching (McPherson, 2006).
3. Questions are often ill-phrased, and do not differentiate between the ways in which students and teachers perceive effective teaching (Hornstein, 2017; Spooren et al, 2013).
4. Poorly designed questionnaires suggest that the architects of the questionnaires lack common understanding or consensus regarding what comprises 'good' or 'effective' teaching (Spooren et al, 2013).
5. Students often take this opportunity to 'vent' (especially since student feedback is anonymous), and often unfairly (Bedggood & Donovan, 2012; MacPherson, 2006; Miller & Chamberlin, 2000).
6. Very few students usually respond to surveys, and those who do are often at opposite ends of the satisfaction scale: students who are extremely satisfied or extremely dissatisfied fill in surveys, and those who are mildly satisfied or dissatisfied do not bother contributing their insights (Hornstein, 2017).

While some surveys have face validity, and are strongly embedded in good social science and teaching research work, the perspectives and backgrounds of teaching staff are also not captured, and teaching material is not contextualised enough in these evaluation exercises (Bedggood & Donovan, 2012). For example, there are things that students simply have to know. This is especially true in industry settings, where practitioners need to be proficient in the technicalities of a profession (Bartkowiak-Théron & Herrington, 2016). They also need to have knowledge of the gravitating issues that sustain their activities. For example, nurses and doctors need to hold exceptionally high clinical knowledge, and students in the medical and associated health disciplines will often strive in all clinical units of teaching. This may not be the case in other components such as communication and management, or even the need to keep account of all medicine in storage (McPherson, 2006). These course components are likely to garner less favourable student evaluations than their clinical or operational counterparts.

In Australia, surveying students in order to determine levels of satisfaction is part of the quality assurance and engagement enhancement activities of the university since 1972 (Alderman et al., 2012). It is a required activity under the Commonwealth Tertiary Education Quality and Standards Agency Act 2011, *Higher Education Standards Framework (Threshold Standards) 2015*, of which section 5.3 states that:

1 It is beyond the scope of this paper to argue whether students qualify as 'customers', and we will only note that this has been debated elsewhere for more than twenty years (see, for example: Bedggood & Donova, 2012; Clayson & Haley, 2005; Franz, 1998; Svensson & Wood, 2007).

1. All students have opportunities to provide feedback on their educational experiences and student feedback informs institutional monitoring, review and improvement activities.

2. All teachers and supervisors have opportunities to review feedback on their teaching and research supervision and are supported in enhancing these activities.

3. The results of regular interim monitoring, comprehensive reviews, external referencing and student feedback are used to mitigate future risks to the quality of the education provided and to guide and evaluate improvements, including the use of data on student progress and success to inform admission criteria and approaches to course design, teaching, supervision, learning and academic support.

The above is important in the context of the initiative on which this article focuses. It concerns the transferability of an 'established' academic evaluation instrument into an industry somewhat new to the domain of professionalisation of staff and to tertiary education: that of policing and law enforcement (Rogers & Frevel, 2018; Wood & Tong, 2008).

Embedding tertiary education instruments in a professional setting

The University of Tasmania is no stranger to student evaluations. Student feedback via survey is actually one of the key instruments used under the Academic Quality Management, part of the ongoing quality assurance framework of the university (University of Tasmania, 2019a). Student feedback is used to inform exercises run under the National Regulatory Framework, for bodies such as the Tertiary Education Quality and Standards Agency[2] and as part of the Australian Qualifications Framework[3], and under "recent regulatory activity and preparation for the university's renewal of registration as a self-accrediting Higher Education Provider in 2018" (University fo Tasmania, 2015). Student evaluations inform course and unit management, as well as external referencing (peer-reviews of curricula, delivery and benchmarking) and third party arrangements (University of Tasmania, 2015).

In using student evaluations as part of its managerial practice, UTAS swapped from Student Evaluations of Teaching and Learning (SETLs) to another instrument (eVALUate) in 2016. While the actual feedback practice has remained the same overall (and has not been without academic discontent, due to new limits on question numbers and discipline-specific questions), the stance of the university in making student evaluations part of teaching policy strengthened. Indeed, the principles behind eVALUate are now embedded in the Student Experience Strategy 2016-2020, which draws from and expands upon the university's strategic plan: "It reinforces our commitment to students to provide access to excellent student support and guidance services, regardless of their location and mode of study" (University of Tasmania, 2015). Articulated around several pillars of teaching and learning, the strategy states that "the views of [UTAS] students, graduates and stakeholders [are] of critical importance in monitoring, reviewing and enhancing the quality of teaching, learning and the student experience". Pillar No.5 in particular, insists on "the partnership between students and the university through conversations, co-creation and celebration, by providing opportunities for students to provide feedback on their university experience, and ensure outcomes are widely promoted". Student feedback therefore informs "all aspects of the learning, teaching and the broad student experience obtained through the administration of regular and systematic student surveys throughout the student life-cycle" (University of Tasmania, 2015).

4. Method

The changes to student feedback practice in the police studies context at UTAS are worth reflecting on. The focus of our study, encouraged by an annual exercise in teaching and learning[4], was to provide a forum for staff to think through the significant changes made to the way in which student evaluations were conducted at the police academy. We sought the insight of all teaching stakeholders involved in the delivery of the curriculum at the Tasmania Police Academy: Tasmania Police educators (serving officers seconded to teach at the academy) and academic staff.

Shortly after the UTAS recruit course coordinator received the invitation to present at Teaching Matters 2020, ethics approval was sought, and granted, to run a small qualitative project. We invited all teaching staff to reflect on how changes in recruit satisfaction data came about, how they were received and what impact such changes had on learning, teaching and teaching staff themselves. The aims of the project were to:

a. Document the changes to the evaluation of teaching and learning at the Police Academy,

b. Analyse the experience of teaching staff involved in this process (UTAS and Tasmania Police),

c. Challenge (if so) assumptions about the ways teaching and learning are currently being evaluated, and

d. Identify new pathways for the improvement of teaching and learning by involving students more positively in their own learning experiences.

2 TEQSA is Australia's independent national quality assurance and regulatory agency for higher education (https://www.teqsa.gov.au/what-we-do)

3 The AQF is the national policy for regulated qualifications in Australian education and training. It is hosted under the auspices of the Australian Government Department of Education, Skills and Employment in consultation with states and territories.

4 'Teaching Matters' is the UTAS annual conference on learning and teaching innovation at the University of Tasmania (see https://www.utas.edu.au/teaching-matters).

All lecturers and educators with the Tasmania Police Recruit Course were encouraged, on a voluntary basis, to fill in a three-minute anonymous[5] online survey. They were asked to do this with the view to providing tangible building blocks to address the development of teaching and learning within police studies, and also to comment on what are widely held views of evaluation practice in student evaluations of teaching and learning.

Steps were taken to ascertain validity and reliability as much as possible, as part of this qualitative exercise (Golafshani, 2003; Lub, 2015; Noble & Smith, 2015). Sampling made sure that respondents had taught before and after 2017 for a period of minimum two years (the equivalent of four recruit courses minimum), to allow for reflexivity (credibility and bias limitation). Respondents were invited to comment on the analysis of the survey, prior to its presentation at the conference (respondent validation). Data from police staff and UTAS staff were triangulated with policing and education literature to produce a comprehensive and articulated set of findings. The academic staff was debriefed in a focus group shortly after taking the survey (peer-debriefing). The survey was designed to be as transferable as possible to other disciplinary contexts, especially those closely associated to a profession.

Survey participants could choose to answer all, some, or none of the questions. A dedicated textbox at the end of the survey was dedicated to issues that participants wanted to discuss, but that were not mentioned in the survey. Submission of a response online was considered consent to participate.

In November 2019, eighteen (18) teaching staff members were sent the invitation to participate in the survey. The survey was left live until the write up of this article, to maximise response rates. Table 1 presents a snapshot of the survey outline.

Table 1: Snapshot of survey contents and outline

Police Studies 'Teaching Matters' Survey
Page 1
1. Information sheet contents. 2. Consent statement 1: By clicking on 'submit' at the end of this survey, you will agree to participate to this survey. Note that you will not be able to withdraw your responses after submitting them.
Page 2
3. You are a • Police officer • UTAS staff member
4. In your opinion, the decision to swap recruits satisfaction surveys was to (please rank): • Encourage recruits to 'own up' to their statements, since this is what they will have to do when they go out in the field • Discourage discriminatory, unfounded, or abusive statements • Encourage recruits to provide constructive feedback • Encourage more direct lines of communication between students and educators • Provide an identification of student learning styles, in order to adapt teaching techniques to learning preferences • Other: _____
5. In your opinion, the decision to abandon 'grading' of teaching techniques in satisfaction surveys was due to them (please rank): • Not being useful • Not being well understood by students • Being somewhat arbitrary • Other: _____
6. Has the new form of recruit feedback changed the way to teach recruits? • Yes • No If yes: how so? _____ If no: why? _____
7. For you, what are the main three things that have changed since the introduction of fully identified, non-graded recruit evaluations? Is there anything that you would like to add? _____
By clicking on 'submit', you agree to participate to this survey. Note that you will not be able to withdraw your responses after submitting them.

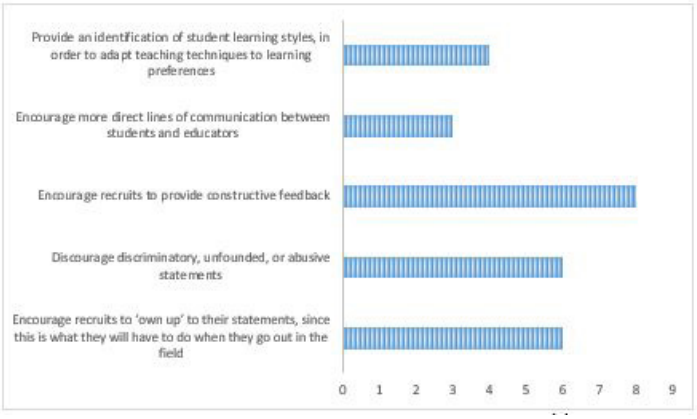

Figure 1: Responses to 'what are the main changes?' (n)

5. Analysis and discussion

Data analysis

A total of twelve responses were received (n = 12, 67%): 5 out of 7 UTAS lecturers, and 7 out of 11 police teaching and coordination staff. Such a response level is considered high in social science research, but needs to be seen in the context of a rather small teaching team, where organisational relationships of trust built over more than twenty years, and deliberative discussions over curriculum delivery and contents are current practice.

A majority of responses indicated that changes were sought to primarily encourage feedback (Fig 1) that is constructive and positive (n = 8), and intended that students take responsibility for their statement (n = 6), which reduced the possibility for derogatory comments (n = 6).

The feedback received seemed to have some impact on the way learning material was delivered in the classroom (Yes: n = 8, 67%; No: n = 4, 33%. Figure 2). Respondents commented that they use more varied ways to teach, use more conversational techniques in the classroom, and rely less on PowerPoint. One respondent also indicated that new, positive feedback helped with teaching techniques specifically.

> I now receive very positive comments on teaching and that helps identify what students like in the classroom. Some encouragement to find a variety of things to do, and some confirmation of 'what works' to get or sustain the attention of recruits in class - for example, they like to be clear on Intended Learning Outcomes. – Police Educator 1

5 The anonymous component of this survey would seem contrary to the practice we are advocating for here. However, we need to distinguish the logistics of conducting surveys for the purpose of industry quality assurance, and those of conducting research for publication purposes. Here, the anonymisation was chosen to abide by mainstream minimal risk ethical research guidelines, expedite the ethics clearance process, and the ethics documents that would need to be otherwise signed off individually by respondents.

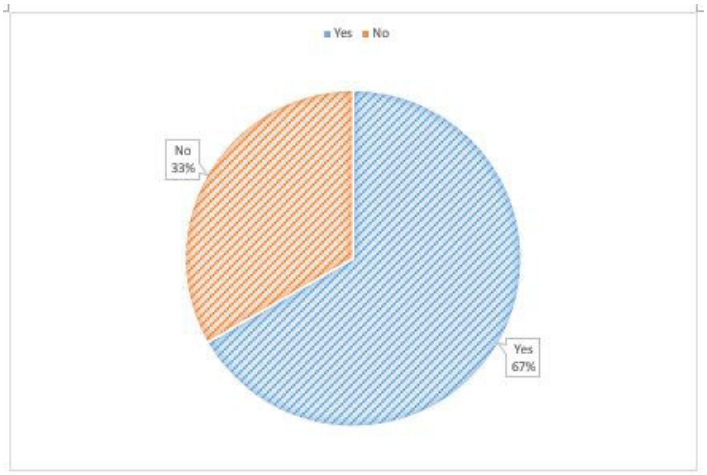

Figure 2: Responses to the question 'have you changed the way you teach as a result of new feedback?' (%)

However, workload and timing of the recruit course (the recruit course is conducted over an intensive 31 weeks) was noted as a hindrance to changing teaching rhythm, dynamics and delivery. As noted by a participant who answered 'no' to the above question:

> "My workload is such that I am often unable to spend enough time in contemplation and reflection with the feedback, and that stifles my ability to produce material that will drive change - although I have read and 'surface' reflected on the feedback, I rarely have time to do more than that with it." – Police Educator 2

Qualitative answers to the open questions unveiled a rather positive picture of the feedback obtained in the new identified and qualitative survey. Respondents not only indicated that there was 'more feedback than before', that it was 'more detailed about the content of the sessions being taught', especially 'when recruits were asked to expand on strengths/areas for improvement etc.'. Respondents stated that there are generally 'fewer derogatory comments', with 'less personality driven feedback', and 'more polite, relevant and constructive' comments. It was noted that:

> "Recruit feedback is most often positive or neutral; when it is negative, it is usually not constructive and is normally simplistic in that it does not address the learning needs of others but focuses on their own wants and needs." – Police Educator 5

Respondents indicated that the new survey allowed a new relationship to develop between teachers and students, with, it seemed, 'Recruits feel[ing] confident to provide feedback, and feel[ing] like they are being listened to'. In addition to providing 'more constructive feedback, with seriousness', 'in return [the new survey allows] more trust between lecturer and recruit'.

The identification of recruits on survey forms was seen from a more utilitarian perspective, with components of responses enabling educators to map out student learning preferences. As a result, the identification of students allowed:

a. "the ability to seek clarification and implement meaningful change that cannot always be communicated clearly in the written feedback"

b. "to know who exactly is providing the feedback, so as an educator I can adapt as required"

c. "to have better ways to assess the student experience ; with the possibility of remediating it in real time."

The Teaching Matters exercise provided an opportunity for university lecturers to reflect on the differences in receiving student evaluations through traditional tools such as eVALUate, as opposed to the new instrument at the academy.

> "The decision to swap the recruits' satisfaction surveys was a positive experience for me as an educator. Having taught across many areas of the university, eVALUate has rarely provided me with constructive feedback and is riddled with personal comments unrelated to teaching practice. The recruits' satisfaction surveys were (...) a way for students to express their ideas openly to ensure the material was presented in an engaging, informative and relevant manner." – UTAS Lecturer 3

One UTAS lecturer provided some insight about how the new satisfaction survey had some impact about teaching confidence and, contrary to the literature, self-esteem in how teaching and learning happen at the police academy.

> "Identifying the recruit feedback was frankly liberating. It made us, as a group of lecturers, become so much more constructive and confident in what we are doing. It feels like the recruits are taking the feedback process more seriously, and think hard about what they write, and for the purpose of making things better too, for the future of 1) the rest of their own course and 2) future courses. It also shows that feedback can be very constructive. Some of it is positive, some of it negative, and always respectful. I think this is how you build relationships, and how you engage both students and lecturers in the teaching/learning experience." – UTAS Lecturer 1

Discussion and limitations

There are a number of lessons to take out from this study. Primarily, the administration of surveys that allow students to provide constructive, honest and reliable information about the teaching they receive, is essential to curriculum and pedagogical practice. Then, whilst student evaluations of teaching and learning come in many forms (Berk, 2005), anonymised, quantitative feedback is only one of those. It is also fraught with complex issues that often fail to capture specific teaching dynamics or contents values. eVALUate, as currently administered by UTAS, is one of those options. However, one needs to consider the rigidity of these instruments, which are often standardised and conducted

on the scope of a whole course or university, for the purpose of establishing large satisfaction patterns, and whether these macro patterns could be to the detriment of micro, specific disciplines.

The new survey used at the police academy indicates that departing from the traditional notion of anonymised quantitative feedback provides the teaching and learning community with more honest, encouraging and reflective ways to engage students and teaching staff in discussions about teaching and learning, often for the benefit of both parties. Here, the identified, qualitative survey

- provides a forum for feedback that encourages dialogue between student and lecturer
- puts people at the centre of curriculum design and ongoing improvement
- encourages feedback and discussion to improve classroom dynamics and curriculum delivery (University of Tasmania, 2019b)

The point has to be made that whilst literature insists on gender dynamics and discrimination in university surveys (Boring, 2017; Boring et al, 2016; Miller & Chamberlin, 2000), gender was not once mentioned by respondents. This is important to consider, since four out of the five UTAS staff dedicated to the Police Academy are female lecturers, working in a highly masculine environment. The identification of student survey respondents accounts for some amount of accountability and respect, which is crucial in the policing context in which the surveys are conducted. Identifying abusive comments on the part of future police officers is a possible red flag in terms of professional conduct. It also bears some considerable ethical and legal requirements for a profession that is, after all, primarily responsible for the enforcement of the law, including anti-discrimination laws.

Notwithstanding the above comment from Police Educator 2, the fact that evaluations are ongoing certainly allows for educators to adapt to the landscape of learning styles in the classroom, albeit within limits (literature cautiously argues that despite progress in terms of technological modes of delivery, one lesson in a particular format may not cater for all learning styles at any point in time, and may not be advisable anyway; Olson, 2006; Willingham, 2018). Lecturers have however noted that PowerPoint slides have become clearer, that Intended Learning Outcomes have become a standard feature of lessons, and that more interactive ways of teaching have been adopted since the implementation of the new evaluation (see Figure 2).

In the same vein, conducting surveys daily needs some analysis and commentary, and some reflection on whether this is transferable to a university context. At the academy, police officer educators apply for a transfer from operational duties to a teaching position based on many personal and professional factors, some of them not always relating to teaching and education (Bumback, 2011; O'Shea & Bartkowiak-Théron, 2019). A passion for, a knowledge of, or skills in the facilitation of learning in an academic environment are rarely the driving factor(s). Selection from the pool of applicants for a position at the academy is often based on an individual's personal skill sets and recent operational policing experience rather than his/her ability to promote learning in the student body. New police educators working for the first time in an academic environment rely heavily on immediate, honest and accurate feedback to quickly develop the skills required of effective teachers. A robust, honest commentary system where a police educator has access to the author has proven to be a necessity in the rapid development of educators within the policing organisation and the maintenance of broader educational standards during periods of high staff turnover. Moreover, as police educators become closely involved with this style of feedback, their own aspirations for continual improvement become evident and their ability to impart meaningful and contextualised knowledge to recruits improves quickly and continuously. In the university context, and whilst discussions of the 'ivory tower' still pepper scientific literature, our experience shows that academics have welcomed open feedback, which encourages some reflection on teaching activities. Student evaluations at UTAS are currently run at the end of a semester, which limits opportunities for staff to address immediate learning or teaching issues. While keeping in mind that survey fatigue can quickly become an issue, one could envisage regular one- minute surveys every four weeks, or before mid-semester breaks to check on students and their learning concerns (if any).

Arguably, there are limitations to the feasibility of this initiative, and while the identified, qualitative survey design itself is transferable and generalizable, the particular context in which the survey is conducted at the Tasmania Police Academy poses research limitations. The police academy is run as per policing organisational guidelines, which means that the 'Command and Control' framework very much streers recruits' behaviour (Bradley, 2009). It is only natural, then, for lecturers and police educators to receive constant feedback on what they do, with high rates of responses: recruits are told (not asked) to fill in their satisfaction surveys at the end of the day. This is not the kind of dynamic that we can expect from university students and their lecturers. This does not mean that such new evaluation methods are not transferrable to other fields. On the contrary, practitioner-based education would specifically benefit from such transparent feedback and two-way exchange of knowledge (medicine, social work, security studies, for example).

A point also needs to be made on the impact that new evaluation methods had on Police Studies teaching staff at UTAS. The new dynamics and the relationship between student evaluations of teaching and performance management at UTAS implied that lecturers approach the evidence of teaching activities differently. While the new instrument was being vetted by Faculty and College administrators, the team started writing their own teaching philosophy narratives, developed a statement about teaching evaluation changes as part of the Police Studies core-business, and also used different avenues to get recognition of their teaching. Since 2015, the team has embarked on teaching recognition exercises, and received five team and individual teaching merit certificates and two individual citations, with one staff member encouraged to

nominate for an Australian Teaching Award. While these are significant accomplishments in the career of an academic, these exercises take a significant amount of individuals' time (while arguably still relating to their teaching scholarship). At a time when academics feel constantly pressured to add to their workloads, these are considerable variables to take into account. However, and on the policing side of things, we note that more police officers are complementing their knowledge of policing by enrolling in university courses, often in the education discipline.

6. Conclusions and recommendations

Universities have recently been redefining their role, their generation of knowledge and their relationship with communities. Relationships to students are paramount to their core-businesses, the administration of education services and to the staff that delivers them. When education relates to the needs of a specific industry, such as medical sciences, social work, or, in our case, policing, the dynamics present another layer of complexity. The university needs to adapt to the demands of that industry, whilst maintaining high academic standards. This is in addition to the demands to adapt to new technologies that impact on the industry, and on the ways in which students learn.

Like others in scientific literature, we do not claim that we should completely depart from student evaluation of teaching and learning (Bedgood & Donovan, 2012). However, we argue that adhering to rigid evaluation instruments that are deeply embedded in history and habit is to the detriment of providing evidence of a university's proactive research and scholarship nature. The problems inherent to student evaluations have been well documented in literature. Recently, the impact of teaching evaluations on staff wellbeing has been highly scrutinised, in light of the dramatic consequences various factors (including students' comments) have had on mental ill-health in the academic and educational workplace (England, 2016; Skogen, 2012).

It is high time that the student experience is matched up to the teaching experience, and to revisit student evaluations so that the main stakeholders (students and teachers) see their views valued, constructively assessed and taken into account. Managerial pressures on teaching institutions have normalised the use of surveys to ascertain quality and service delivery. This does not mean that one needs to remain frozen in, what is, after all, a normative way to 'measure' teaching and learning. Our exercise demonstrates that there are many ways to engage in assessment exercises. Universities, and especially UTAS, are well placed to consider the future of learning and teaching with courage, and to leave behind the instruments of the past.

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Appendix

Table 2: At a glance overview of student satisfaction surveys pre and post 2017

Recruit evaluation feedback form (prior to 2017 changes)	New recruit evaluation feedback form (Post 2017 changes)
You are providing feedback on (lecturer's name) 1. Date and Time of Presentation 2. Module 3. Was well prepared for this session 4. Gave helpful and timely feedback for assignments from previous sessions (if applicable 5. Clearly explained how this session relates to others in this module 6. Clearly explained at the outset the key learning points in this session 7. Stimulated students' interest in the subject material 8. Clearly highlighted the key learning points during the session 9. Held students' interest and attention throughout the session 10. Effectively encouraged students to ask questions and gave clear answers 11. Effectively encouraged and guided student discussion on this subject 12. Effectively engaged students in a variety of learning activities (e.g. listening, reading,discussion, Q/A, collaborative activities, problem solving activities, case studies, etc.) 13. Made allowances for students' differing learning styles and ability levels 14. Clearly reiterated the key learning points at the end of the session 15. Presented concepts and learning materials in a logical sequence 16. Clearly explained the readings and assignments for this session 17. Was knowledgeable about this subject. 18. Presented an appropriate amount of material for the available time 19. Clearly explained what students were required to do in order to prepare for the next session (ifapplicable). 20. Started and finished this session punctually 21. Treated all students respectfully 22. Was available for consultation after this session 23. In your own words...How might the presentation of this session have been changed in order tofacilitate improved learning?	• Your Name • Your Syndicate • Presenter's Name • Presentation Descriptor (e.g. Topic Name, Session No., Time of Day, or Nature of Activity) • Module/External Presenter We are serious about continuously improving the police training course. In order to do this we need good quality feedback from trainees to factor into the design and delivery of future lessons and presentations. Please therefore put some thought and effort into writing a paragraph that addresses the question: *Which aspects or features of this lesson were either beneficial or detrimental to your learning?* Consider things such as: 1) Were you told at the beginning what you were about to learn? 2) Did you meet the Intended Learning Outcomes (ILOs) for this lesson? 3) How do you know you met the ILOs? 4) Were the teaching strategies used appropriate for this subject matter? 5) Were the teaching materials readily available, well organised, up to date? 6) Were you engaged in a variety of learning activities? 7) Were you personally encouraged to participate, question or discuss points? 8) Did some trainees dominate discussions while others flew under the radar? 9) Was your interest stimulated and maintained? How? 10) Were you told how and when the learning from this lesson will be assessed? 11) Was time managed effectively? 12) How would you have gone about teaching this lesson?

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Evaluating an interprofessional workshop on persistent pain: The role of Adult Learning and Social Identity theories

Heather Bridgman[A] A — Lecturer in Rural Mental Health, Centre for Rural Health, School of Health Sciences, College of Health and Medicine, University of Tasmania, Australia

Marie-Louise Bird[B] B — Academic Lead, Allied Health Sciences, University of Tasmania, Australia

Karina Jane Heyworth[C] C — Research Assistant, PhD student, Centre for Rural Health, School of Health Sciences, College of Health and Medicine, University of Tasmania, Australia

Greer Maine[D] D — Research Assistant, Centre for Rural Health, School of Health Sciences, College of Health and Medicine, University of Tasmania

Sibella Georgia Hardcastle[E] E — Lecturer, University of Tasmania, Australia

Sandra Lea Murray[F] F — Lecturer, School of Health Science, University of Tasmania, Australia

Jan Radford[G] G — Professor of General Practice, Launceston Clinical School, College of Health and Medicine, University of Tasmania, Australia

Shandell Lee Elmer[H] H — Senior Research Fellow, School of Education, College of Arts, Law and Education, University of Tasmania, Australia

Kimberley Anne Norris[I] I — Associate Professor/Senior Clinical Psychologist, School of Psychological Sciences, University of Tasmania, Australia

Tracey Dean[J] J — Psychology Clinic Manager and Professional Experience Coordinator, School of Psychological Sciences, University of Tasmania, Australia

Annette Helen Marlow[K] K — Associate Professor, College of Health and Medicine, University of Tasmania, Australia

Andrew Dafydd Williams[L] L — Associate Professor in Clinical Exercise Science, University of Tasmania, Australia

Anne Michelle Todd[M] M — Research Pharmacist, University of Tasmania School of Pharmacy and Pharmacology, Australia

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Abstract

Interprofessional learning (IPL) is vital for developing work-ready health graduates and enhancing outcomes of people living with persistent pain. Our aim was to pilot an authentic IPL workshop on persistent pain in an Exercise Physiology Clinic. We also sought to explore the application of Adult Learning and Social Identity theories in understanding learning outcomes.

Thirty students from five health disciplines participated in a half-day workshop on IPL and persistent pain, facilitated by multidisciplinary staff. Workshop activities included authentic, simulated case studies and problem-based learning. A mixed-methods, pre-post survey showed significant increases in students' confidence in understanding their own and others' discipline roles in managing persistent pain ($p < 0.001$), readiness for IPL ($p = 0.046$) and self-efficacy ($p < 0.001$). These increases were supported by qualitative outcomes, which were mapped onto Adult Learning and Social Identity theory. A preliminary conceptual framework was developed incorporating proposed learning mechanisms.

This innovative workshop, delivered through an Exercise Physiology clinic, formed an effective learning environment, increasing understanding of discipline roles generally and in the pain context. It led to a preliminary conceptual framework to understand learning processes underpinned by theory. There is potential for application of this IPL approach for other chronic conditions.

Persistent (or chronic) pain, is defined as pain experienced every day for three months or more in the previous six-month period and affects at least one in five Australians (Access Economics, 2007). Persistent pain is associated with ageing, lower socio-economic status, less employment participation and poorer health status (Blyth et al., 2001). In 2018 in Australia, the overall cost of persistent pain was estimated to be $139.3 billion and the nation's third most costly health problem (Pain Australia, 2020). In Tasmania, an island state of Australia with a population of just over half a million people, the persistent pain problem is compounded by an ageing population, increased prevalence of chronic disease, higher lifestyle risk factors, lower educational attainment and workforce participation and higher poverty rates relative to the rest of Australia (Department of Health and Human Services [DHHS], 2018).

Although recommendations that persistent pain be assessed and managed with a multimodal, multidisciplinary approach are widely accepted (Gatchel et al., 2007), less than 10% of the Australian pain population accesses multidisciplinary care due to geographical challenges and service availability and access (Pain Australia, 2020). Tasmania, characterised by higher geographical dispersion across rural and remote areas is no exception, with access worsening with remoteness (DHHS, 2018). As the Tasmanian (and Australian) population ages, the need for a skilled health workforce to manage the growing and increasingly complex demands for persistent pain presentations will increase. This need has prompted calls for the development and enhancement of multidisciplinary undergraduate education programs (National Drug and Alcohol Research Centre, 2012; Pain Australia, 2011).

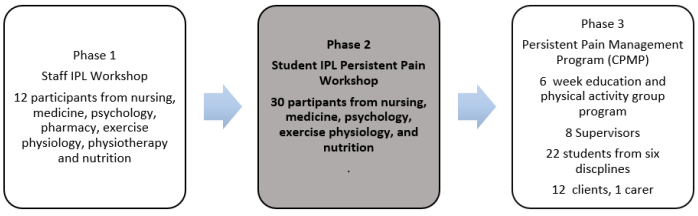
The Interprofessional Persistent Pain Project

Tasmania is serviced by one tertiary institution, the University of Tasmania (UTAS) with multiple campus locations across the state. The northern campus based in Launceston hosts multiple health degrees including medicine, pharmacy, nursing, exercise physiology, and health science (pathway to dietetics). Psychology students also undertake Professional Experience Placement (placement) within the area. On campus there is a community accessible Exercise Physiology (EP) Clinic. The EP Clinic offers final-year EP students a supportive environment to consolidate their clinical skills under the supervision of an accredited EP supervisor. The EP Clinic offers individual and group sessions for community members with a range of persistent conditions (including pain) for which exercise is known to be an effective treatment.

The setting of the EP clinic and access to students training across multiple health disciplines offered an opportunity, through a small UTAS funded Teaching Development Grant, to pilot and evaluate IPL activities. Project team members consisted of staff from seven different health disciplines that were involved in teaching, placement supervision and/or clinical practice. Persistent pain was chosen as an exemplar of a relevant, highly prevalent chronic condition, significantly impacting the Tasmanian community, that authentic IPL activities could be designed to address. The EP clinic setting offered a unique contextual opportunity as IPL activities are predominantly aimed at medical and nursing disciplines (Hammock et al., 2007). Further, in a systematic review of 21 IPL evaluations involving eight health disciplines, Exercise Physiology was notably absent (Hammock et al., 2007).

The aim of the overall project was threefold: first, to improve the understanding of approaches to incorporating IPL into tertiary curricula; second, to offer students authentic opportunities to increase awareness of and skills in managing persistent pain presentations in an interprofessional context (via the EP clinic); and third, to modestly address an unmet need in the community where less than 10% of people affected by persistent pain access appropriate support. The Interprofessional Persistent Pain Project (Figure 1) consisted of three phases: a staff workshop, a student workshop and the delivery of an interprofessional community pain program co-facilitated by students and project team members (reported elsewhere). This paper focuses on the outcomes of Phase 2, the student IPL Persistent Pain Workshop.

Figure 1. The Interprofessional Persistent Pain Project phases



Interprofessional Learning and Persistent Pain

The World Health Organisation (WHO, 2010) defines Interprofessional Education occurring:

> "when students from two or more professions learn about, from and with each other to enable effective collaboration and improve health outcomes" (p.7)

Interprofessional learning (IPL) occurs when students from more than two disciplines interact, which may be an outcome of interprofessional education, or may spontaneously occur in an education or workplace setting (Freeth et al., 2005). For the purposes of this paper we will use the term IPL to reflect the student learning context. There is a wide body of research indicating that effective interprofessional education fosters effective collaborative practice, and in turn improves health systems outcomes (WHO, 2010; Reeves et al., 2010; Zwarenstein et al., 2009).

Given the biopsychosocial model of pain viewing persistent pain as a result of complex interactions among physiologic, psychological and social factors (Gatchel et al., 2007), pain offers an "excellent model for interprofessional teaching and learning because of pain's prevalence across divergent groups and its potential complexity requiring interprofessional involvement" (Carr & Watson, 2012, p. 60). Interprofessional learning also offers an opportunity for students to understand each other's roles and responsibilities and how to communicate using common language within the pain context (Gordan et al., 2018).

Interprofessional learning for health students predominantly takes place in the placement setting where students have exposure to authentic interactions between and within health care professionals working in teams (Anderson & Lennox, 2009) and where, depending on the setting, students can learn with and from students from other disciplines (Brewer & Barr, 2016). Such learning, however, is dependent on the presence of interprofessional workplace based teams modelling a cooperative, collaborative approach (Gordan et al., 2018). Alternatively, delivery of IPL within curricula has been and continues to be hindered by structural barriers such as course timetabling, varying discipline requirements for assessment and accreditation and poor attitudes from staff and students regarding the perceived value and relevence of IPL (Ebert et al., 2014; Lawlis et al., 2014; Reeves et al., 2016).

In examining the barriers and enablers of delivering IPL within the current project setting a workshop format was chosen to best suit the context, accessibility of students and their learning needs. Olsen & Bialocerkowski (2014), in a review of 17 studies, concluded that university-based IPL in health is feasible and effective, particularly when using patient-based scenarios and small group work to improve attitudes towards interprofessional teamwork and health professional roles. The use of a workshop approach specifically for IPL and pain has previously been shown to increase knowledge of pain management (Erikson et al., 2016) and roles of other professions and is an acceptable and satisfactory learning experience (Hadjistavropoulos et al., 2015).

Adult Learning theory, Social Identity theory and IPL

A range of theories across multiple disciplines have been applied to IPL (Hean et al., 2012) which vary in their practical application according to the different context of the learners, the learning environment and the learning activities being undertaken. In this article, two theories have been identified as applicable to the project setting to offer a useful framework to guide and explain the process and outcomes of IPL activities within the EP clinic context. As a reflection of the complex and multiple factors that impact IPL delivery (O'Leary & Boland, 2019) we have taken a layered approach, looking at theories that support and explain IPL at the level of the learner, as well as interactions between the learner and the context (Mann, 2011).

First, from the perspective of 'students as learners', student clinic settings have a strong emphasis on Adult Learning principles (Jakobsen et al., 2017). That is, adult learners are self-directed and internally motivated, have pre-existing experiences that enhance learning, a readiness to learn, apply knowledge to the problem and need justification for what they are learning (Knowles, 1984). Adult Learning theory has previously been shown to be highly applicable in the IPL context (Hean et al., 2012) and in healthcare (Clapper, 2010).

Second, theories based on social interactions are particularly useful in IPL as they are the essence of experiential learning in social contexts where students learn with, from and about each other (Hean et al., 2013). Social Identity theory postulates that membership of social groups is important for developing identity (Tajfel et al., 1979). There are individual benefits for developing a Social Identity within a 'professional' group that can include social support, a sense of belonging and self-efficacy. According to Social Identity theory, through shared membership, group members recognise and value each other's strengths and weaknesses (Carpenter & Dickinson, 2016).

The design of the workshop was guided by these two underlying theories situated within the local context, and was tailored to prepare students to later co-deliver a real-world community program (outcomes reported elsewhere). The workshop was also based on a biopsychosocial approach that is especially relevant for persistent pain (Gatchel et al., 2007). Fundamentally this supports a person-centred team approach (Carpenter & Dickinson, 2016). Effective teamwork relies on the ability to understand and capitalise upon the roles of other health professionals in complex, chronic care situations (Nitz et al., 2013). Simulation has been shown to be an effective approach for building interprofessional communication skills (Foronda et al., 2016) and enhancing self-efficacy in clinical situations (Watters et al., 2015).

In addressing an identified local need, national calls for pain management education and recommendations for authentic methods of IPL (Gordan et al., 2018) we aimed to evaluate the learning outcomes of the student IPL Persistent Pain Workshop, within the context of Adult Learning and Social Identity theories.

Method

The Student IPL Workshop

Thirty students from five disciplines (exercise physiology, psychology, nursing, medicine and health science - nutrition) based at the northern regional campus of UTAS voluntarily participated in a half day IPL workshop focusing on persistent pain management. Members of the project team from each discipline selected cohorts of students to invite to the workshop based on access/availability to attend. Students were verbally invited via lectures and tutorials or by email.

The student IPL workshop content was developed (as an outcome of the Phase 1 staff workshop, see Figure 1) and facilitated by multidisciplinary staff members (see Table 1). The half-day workshop program involved interactive activities designed to generate understanding of the role of other disciplines; simulated case study scenarios and problem-based learning focused on persistent pain. Activities were designed to encourage authentic, multidisciplinary interaction and reflection (see Table 1). Students were also able to observe interprofessional practice role-modelled by the project team as they facilitated the workshop. The intended learning outcomes (ILOs) of the workshop were to:

1. Increase understanding of the role of other health disciplines overall and within the context of persistent pain management.
2. Experience working in collaboration with other disciplines in the assessment and management of a case study client with persistent pain.
3. Experience the use of key skills of communication, teamwork and reflection in a multidisciplinary context.

Table 1. Description of workshop content

Session Topic and Learning Activity	Facilitator Discipline	Format and Resources
1. Understanding scope of practice across different disciplines • Butchers' paper mounted on walls with each of the discipline's titles written on it • Students brainstorm the role of others' disciplines • At the end of the activity, a student from each discipline discusses the scope of practice identified and adds or amends any information	Clinical and Health Psychology	Large group work
2. Introduction to persistent pain • Definition and function of pain (different types: acute vs persistent; neuropathic pain) • Evidence base for multidisciplinary management of persistent pain	Exercise Physiology and Medicine	Lectures with videos Handout: • Understanding pain • Pain and exercise
3. Case based learning - Scenario of persistent pain in small interprofessional groups. Task: Read the case and discuss the following: • What might a diagnosis of persistent pain mean for a person? • Where is the pain for this person? Draw an outline of a group member's body and mark the body systems impacted. • Complete a WHO analysis of impairment, activity and participation impact	Pharmacy and Dietetics	Small interprofessional group work Case study incorporating biopsychosocial elements of pain Handouts: • WHO International Classification of Functioning, Disability, and Health framework
4. Interprofessional assessment based on case study. Task: Negotiate how you would conduct an IP assessment with your group Discussion Questions • What are 3 areas that all disciplines will gather clinical info on? • What are 3 areas that your discipline would gather different or additional info on? • What are the gaps in this scenario that need to be followed up? • What would be the benefits/challenges of an interprofessional assessment? • What are the benefits/challenges of a discipline specific assessment?	Nursing	Small interprofessional group work Handout: • Benefits/challenges of discipline specific / interprofessional Assessment
5. Pain management plan Using the case presentation develop a collaborative management plan Discussion Questions: • Discuss the difference between treatment and self-management • Reflection: Brainstorm some of the barriers to implementation of the treatment plan	Medicine	Small interprofessional group work Handouts: • Management plan template • Cochrane reviews • Discipline guidelines

Learning activities were designed to scaffold students' learning with the intent of preparing them to later co-facilitate an interprofessional persistent pain management program for local community members (outcomes reported elsewhere).

Workshop evaluation

All workshop attendees (N=30) were invited to participate in the pre and post evaluation, which occurred on the same day as the workshop.

Design and data collection

Olson and Bialocerkowski (2014) recommend that interprofessional education research takes a realistic approach to evaluation inclusive of contextual factors, therefore participants completed a pre and post survey using a mixed method approach, tailored to assess the learning outcomes of the IPL workshop. Pre-workshop open-ended questions were designed to gauge students' understanding of IPL and any past IPL experiences. Change was measured using the Readiness for Interprofessional Learning Scale (RIPLS: Parsell & Bligh, 1999), the Generalised Self-Efficacy Scale (Schwarzer & Jerusalem, 1995) and tailored confidence scales with items addressing workshop learning outcomes. Post workshop open-ended questions elicited three top learnings from the workshop from each participant. Ethics approval was received from the Tasmanian Social Sciences Human Research Ethics Committee (H0015313).

Measures

Readiness for Interprofessional Learning Scale (RIPLS: Parsell & Bligh, 1999)

The RIPLS assesses a student's readiness to engage in interprofessional education and consists of 18 items. Responses are measured on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The tool has 3 subscales: teamwork and collaboration, negative and positive professional identity, and roles and responsibilities. An example question is "Shared learning will help me to understand my own professional limitations." The items are averaged with higher scores indicating greater perceived readiness for shared learning. The RIPLS has been shown to demonstrate acceptable internal consistency and high content validity (Parsell & Bligh, 1999) and has been validated for use in an undergraduate context (Carpenter, 1995)

General Self-Efficacy Scale (GSES: Schwarzer & Jerusalem, 1995)

The GSES measures students' perceived self-efficacy used to cope with variety of demands in life and consists of a 10-item psychometric scale. Responses were measured on a 4-point Likert scale ranging from 1 (not true at all) to 4 (exactly true). An example question is: "I can solve most problems if I invest the necessary effort". The items were averaged with higher scores indicating greater perceived self-efficacy. The GSES has been shown to demonstrate good internal consistency and reliability (Scholz et al., 2002) as well as construct validity (Tipton & Worthington, 1984).

Tailored confidence rating scales

In order to measure students' levels of pre and post workshop confidence, six questions were designed focusing on confidence relating to understanding of others' roles, persistent pain management and collaboration and communication with other professionals. The six questions were congruent with the intended learning outcomes of the workshop. Responses were measured on a 5-point Likert scale ranging from 1 (no confidence) to 5 (very confident). For example: "How confident are you in collaborating with other professions to assess the needs of patients with persistent pain?". Self-appraisal of confidence levels has been used previously in learning contexts (Stewart et al., 2001). Levels of confidence are related to self-concept and self-efficacy and have been shown to be a strong predictor of learning achievement in educational contexts (Stankov et al., 2012).

Data analysis

A theory-informing inductive data analysis approach was undertaken whereby theory or theories are evolving throughout the research process and are informed by researchers' values, experience and perceptions (Varpio et al., 2019).

Quantitative data analysis

Descriptive statistics were conducted to analyse the demographic characteristics of the sample (discipline, number of practical experience placements and IPL experiences). Pre-post workshop data were tested for normality and paired sample t-tests were conducted for normally distributed data. The Wilcoxon matched-pairs signed-ranks test was used for non-parametrically distributed data.

Qualitative data analysis

To gauge the level of pre-workshop understanding of IPL, students' definitions of IPL were compared against the Centre for Advancement of Interprofessional Education (2019) definition – "occasions when two or more professions learn with, from and about each other to improve collaboration and the quality of care" (para. 3). Based on the above definition of Interprofessional Learning, five key elements were identified: 1) Interactive learning with others, 2) Interactive learning from others, 3) Learning about each other's roles, 4) Collaboration, and 5) Quality of care. Participant definitions were by two authors (HB and KH) against these five elements and were allocated one point each for the presence of each element in each student definition, for a maximum total of five points.

Key concepts from pre and post open ended survey questions were elicited through a conventional content analysis which is a widely used approach in healthcare to describe a phenomenon. (Hsieh & Shannon, 2005). Data was entered into an excel spreadsheet. Of the 30 participants, 25 (83%) reported three learnings, three (10%) reported two

learnings and two (7%) reported one learning. Data was read and re-read by author HB to capture initial impressions. An initial coding schema was developed, then codes were organised into meaningful categories under the three Intended Learning Outcomes in line with the aims of the evaluation and frequencies noted. Category descriptions were then developed and exemplars were identified and checked by a second author ML. Any discrepancies were discussed until congruence and agreement was reached. Content areas were also assessed by HB and ML for evidence of elements of Adult Learning theory and Social Identity theory and mapped accordingly (see Table 5). Both HB and ML contributed to the content development and facilitation of the workshop and come from the disciplines of psychology and physiotherapy respectively.

Results

In total, thirty students from five disciplines consented to participate in the workshop evaluation. Discipline, prior placement/s and IPL experience/s are described in Table 2.

Prior experience with and understanding of IPL

23 out of 30 participants (77%) reported having experienced IPL prior to the workshop (Table 2). Of these 23, all but one described IPL occurring whilst on placement and 4/23 (17%) described experiencing IPL during lectures or tutorials. Examples of IPL on placement included: "collaborating with dietitian, physio, medical team members in acute care [in hospital]" and "placement… for exercise science involved working closely with the physio and team doctors for rehab programs for injury".

Table 2. Workshop participants' discipline and prior IPL experience

Discipline	n	Prior IPL Experience n (%)	Prior IPL on Placement n (%)	Prior IPL during course n (%)	Average Number of placements Range (Mean)
Exercise Physiology	11	9 (82)	7 (64)	2 (18)	1-3 (1.9)
Nursing	8	6 (75)	5 (63)	1 (13)	2-5 (4.1)
Medical	7	7 (100)	7 (100)	1 (14)	6-16* (10.8)
Health Science (Nutrition)	3	1 (33)	1 (33)	0 (0)	0-1 (0.5)
Psychology	1	0 (0)	0 (0)	0 (0)	3 (NA)
Total	30	23 (77)	22 (73)	4 (13)	

Note. *Data missing from one participant

27 students provided a pre workshop definition of IPL. 3 (11%) participants scored 5/5; 12 (44%) scored 4/5; 2 (7%) scored 3/5; 4 (17%) scored 2/5; and, 6 (22%) scored 1/5. Over half of participants (55%) could identify at least four or five of the correct elements. Table 3 gives examples of participant definitions and respective scores out of five related to the number of correct elements identified.

Table 3. Participant examples of a scored IPL definition

Total Score (/5)	Participant Example of a scored IPL definition
5	*Learning with other health professionals to gain knowledge and skills on collaborating with each other in order to manage health relating problems that will ultimately benefit the patient*
4	*The ability of students and professionals to learn within the same environment and share their experiences with one another to improve skills*
3	*Learn together with other students in other professions*
2	*Learning to work with other health professionals better and more effectively*
1	*Undertaking learning activities with students from other disciplines*

Pre and post workshop change

All scores significantly increased on the RIPLS, GSES and confidence scales from pre to post workshop (Table 4). This outcome indicated participants demonstrated increased readiness for IPL, self-efficacy and clinical confidence related to understanding own and others' disciplines and interprofessional management of patients with persistent pain, as a result of the IPL workshop experience.

Table 4. Within participant changes in RIPLS, GSES and confidence scales

Measure	*n*	Pre-test *M*	Pre-test *SD*	Post-test *M*	Post-test *SD*	Mean Difference (95% CI)	*p*
RIPLS[a]	28[c]	78	7.4	82	10.0	4.0 (-0.7, 8.7)	0.047
GSES[b]	28[c]	31.3	3.8	33.4	4.1	2.1 (-0.01, 4.2)	0.002
Confidence in:							
Understanding own role	30	3.4	0.8	4.3	0.9	0.9 (0.46, 1.3)	<0.001
Understanding others' roles	30	3.8	0.7	4.4	0.5	0.6 (0.3, 0.9)	<0.001
Understanding of others' role in pain management	30	3.3	0.7	4.2	0.4	0.9 (0.6, 1.1)	<0.001
Collaborating for an IP assessment	30	3.6	0.9	4.5	0.5	0.9 (0.5, 1.3)	<0.001
Collaborating for an IP pain treatment plan	29[d]	3.4	0.9	4.4	0.5	1.0 (0.6, 1.4)	<0.001
Communicating with other professionals	30	3.9	0.8	4.4	0.6	0.5 (0.1, 0.9)	0.004

[a] Readiness for Interprofessional Learning Scale
[b] General Self-Efficacy Scale
[c] two missing values
[d] one missing score

Workshop learning outcomes

Students were asked to list three learnings from the workshop. A conventional content analysis revealed 14 content areas. The 14 content areas were categorised under the three Intended Learning Outcomes for the workshop. Seven met ILO1, two met ILO2 and five met ILO3. Elements of Adult Learning theory and Social Identity theory were also identified mapped across the content areas (Table 5).

ILO 1. Increase understanding of the role of other health disciplines overall and within the context of persistent pain management

The most frequently reported learning outcome (n=22) for the whole sample was an increased understanding of the role of other professions – e.g. "Greater insight into the roles of other health professions" and "Exercise physiology is not

the same as physiotherapy". Participants also reported an increased understanding of persistent pain in general – e.g. "Differences in acute versus persistent pain"; in relation to interprofessional practice – e.g. "how to handle persistent pain with an interprofessional approach, interprofessional is key" and recognising the complexity of pain – e.g. "How persistent chronic pain may be".

ILO 2. Experience working in collaboration with other disciplines in the assessment and management of a case study client with persistent pain

Two content areas were identified as meeting ILO2. Skills in 'how to' collaborate with other professions were identified – e.g. "Problem identification and solving", "sharing my ideas" and "team effort, looking outside the square to provide a collaborative care plan which helps the person achieve their goals". Communication was also cited by some as key in working interprofessionally – "communication and respect is extremely important in avoiding conflicts of opinions".

ILO 3. Experience utilising key skills of communication, teamwork and reflection in a multidisciplinary context

For ILO3, the positive impact of interprofessional collaboration was most frequently cited (n=10) – e.g. "That chronic pain is a multidisciplinary issue" and "How working with other health professionals leads to better care". Participants reported learning from others and some participants were also able to reflect on and recognise the potential negative impact of IP practice – e.g. "the possible negatives such as differing treatment approaches". Finally, some participants recognised that the attitude of health professionals enabled an IP approach – e.g. "There is a great willingness of each profession [at the workshop] to understand the roles of others".

Table 5. Content analysis mapped against adult learning and social identity theories

Intended Learning Outcome	Total *n*	Adult Learning Principles	Social Identity Theory
ILO 1. Increased understanding of the role of other health disciplines overall and within the context of persistent pain management			
Increased insight into others disciplinary roles	22	X	X
Increased understanding of pain	9	X	
Increased understanding of IP/MD approach to pain	7	X	X
The importance of a holistic approach/IPL approach	7		X
Increased understanding of complexity of pain	6	X	
Awareness of mindfulness/CBT as a therapy approach	3	X	
Pain management from own discipline perspective	1	X	X
ILO 2. Experience working in collaboration with other disciplines in the assessment and management of a client with persistent pain			
How to collaborate with other disciplines	5	X	X
How to communicate in an IP context	3	X	X
ILO 3. Experience utilising key skills of communication, team work and reflection.			
Collaboration Positive for patient outcomes	10	X	
Learning from others	4		X
Possible negatives of IP collaboration	3	X	X
Noticing a willingness/attitude to work together	3	X	
Consistency in interpersonal care	2		X

Discussion

The aim of this study was to evaluate the student learning outcomes of an interprofessional workshop focusing on persistent pain management, based in an EP clinic setting. The majority of participants attending the workshop identified having prior experience of IPL, mainly in the placement setting. Reflective of this exposure, over half could readily offer an appropriate definition of IPL. For the IPL descriptions that didn't fully meet the WHO definition, there was a basic awareness of multidisciplinary learning among the participants. Despite participants' prior IPL exposure, a significant increase in readiness for IPL and self-efficacy was demonstrated when comparing pre and post workshop scores on study measures, suggesting that the workshop enhanced learning beyond traditional lectures, tutorials and placements. A major outcome was participants reporting increased insight into others disciplinary roles in addition to recognising the positive contribution interprofessional practice makes to patient care. There were also significant increases in participants' confidence in the understanding of self and others' disciplinary roles in general and in the persistent pain context, as well as how to collaborate interprofessionally for pain assessment and treatment planning. Quantitative outcome data were congruent with qualitative responses indicating that the content and approach met the workshop's intended learning outcomes. The outcomes of our study using a multidisciplinary workshop format, problem based learning and patient scenarios are consistent with prior studies (Olson & Bialocerkowski, 2014) demonstrating effective learning. The workshop format is a useful approach to deliver health education to more closely replicate the practice environment (Foronda et al., 2016) and can lead to improved attitudes towards teamwork and interprofessional interaction (Morison et al., 2003; Olson & Bialocerkowski, 2014). Students were also able to observe the multidisciplinary project team modelling teamwork and communication during the workshop, which Taylor and Hamdy (2013) consider to be vital education principles underlying teaching and learning in clinical settings. Morison et al., (2003) further suggests that relevant, practice focused subjects facilitated by 'professional experts' contributes to successful IPL through authentic applied learning activities.

A common barrier of delivering IPL within existing curriculum structures is managing siloed and complex timetable structures (Reeves et al., 2016). The unique challenge of bringing together students from five health disciplines to participate in an IPL workshop within curriculum (as opposed to placement settings) was addressed through the ability and motivation of the project team. Previous literature has identified enablers to integrating IPL as organisational support and leadership (Reeves et al., 2016) facilitator skills (enthusiasm, commitment, role modelling), shared interprofessional vision, displaying equal status, professional collaboration and commitment to unified goals (Lawlis et al., 2014), with all elements present throughout the current project. The success of this format offers further impetus to address complex and growing healthcare needs of the community through provision of authentic IPL oppotunities.

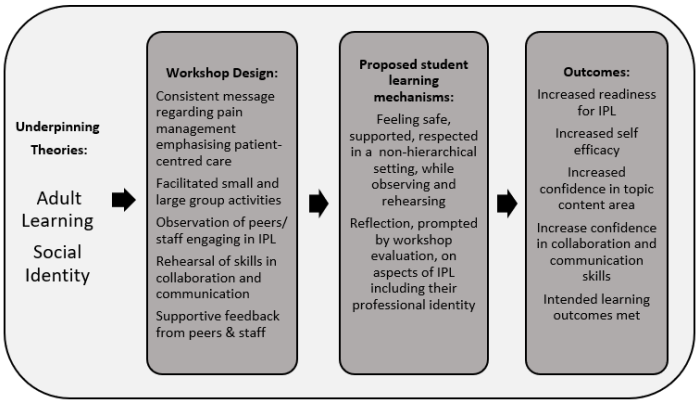
A preliminary conceptual framework

Consistent with Varpio et al's. (2019) theory-informing inductive approach, a preliminary conceptual framework was developed throughout the data analysis and interpretation phases of the evaluation (Figure 2). There was evidence of elements of Adult Learning and Social Identity theories in the evaluation outcomes. Concepts of Adult Learning were present particularly where participants reported an increased understanding of other disciplines' roles and within the context of persistent pain management. Participants indicated not only an increase in knowledge needed to understand others' disciplines but were able to reflect upon and apply that knowledge to process related elements such as communication and positive attitudes. This application of knowledge, combined with internal motivation, pre-existing experiences and justification for learning certain content provides evidence that the workshop format and activities were conducive to meeting Adult Learning needs.

Elements of Social Identity theory were also present in the outcomes with participants able to compare and reflect upon the role of other disciplines and their own. Clark et al., (2009) state that the process of becoming a health professional is a social one where realities, knowledge, thought patterns, and, ultimately, self-identities are created from a shared sense of reality assumed by the health professional group. Social Identity theory supports the notion that membership of a social group is important for developing identity, accessing support, increasing self-efficacy and feeling a sense of belonging (Tajfel et al., 1979), however, in a uniprofessional education setting there lies a risk in fostering competition, rather than collaboration among professions (Gordan et al., 2018). McPherson et al. (2001) suggests that practice-focused IPL can mitigate competition and enhance collaboration and ensure that each profession's unique learning is retained while students learn the value of the other disciplines' contribution to healthcare. Developing insight into other's roles is key for the development of own role identity which Olsen and Brosnan (2017) suggest is important to mitigate the potential for interprofessional practice to undermine conventional professional roles. Adult Learning and Social Identity theories offer a complementary approach incorporating the 'what' and the 'how' in understanding the learning outcomes for students participating in this IPL workshop focused on pain management.

Consistent with Dornan et al's (2019) experience base learning pedagogy we also postulate that the learning activities offered during the workshop, which were aimed at generating authentic multidisciplinary interactions in a supportive setting, created a positive environment for student learning. Dornan et al. highlight the importance of offering a supportive participatory experience for students to observe (being present and learning without hands-on involvement), rehearse (practising tasks without patient care contribution) and contribute (being given responsibility to undertake tasks). These opportunities in conjunction with capability and authentic patient learning foster skills development and identity formation. The supportive behaviour of the facilitator/clinician is key to creating these conditions (Dornan et al., 2019) and although these elements were not specifically evaluated, we propose these conditions were present in the workshop design and delivery. We propose that a combination of all of these elements contributed to the learning outcomes identified by the participants and the significant post workshop changes on the scaled measures. Future research could specifically examine the importance of these conditional elements within a workshop setting and further test the proposed framework.

Figure 2. Preliminary conceptual framework, with proposed student learning mechanisms for the Interprofessional Persistent Pain Project workshop



Limitations

There are several limitations to this study. The sample size was modest and therefore we were unable to examine differences in learning outcomes by discipline or level of IPL experience. We also did not ask for a post workshop IPL definition as a measure of change but have extrapolated through the qualitative responses that the participants experienced an increase in understanding of IPL, beyond basic multidisciplinary learning. Confidence levels in participants' understanding and skills development were self-reported and not otherwise assessed. The workshop was voluntary for students, therefore the pre-existing motivation and interest from the students could indicate a bias in motivation to attend and achieve learning outcomes. We are also unaware how many students declined to attend. The follow up measure was undertaken directly after the workshop, therefore we do not know the longer term impact of the learning outcomes.

Future directions

This workshop format shows promise for delivering authentic health related IPL activities. Replication with a larger sample would assist to demonstrate generalisability of the approach, testing and refinement of the proposed conceptual framework and the potential for the approach to be adapted across different chronic conditions and settings. This potential adaptability is valuable for the Tasmanian educational context, given the above national average rates of other chronic conditions such as diabetes, obesity and multiple sclerosis (DHHS, 2018). There is also potential to explore online learning delivery options to mitigate scheduling, geographical location and varying student

number challenges. Although a newer area in IPL literature, there is some evidence to suggest that online IPL facilitation may be a feasible approach (Evans et al., 2019).

Conclusion

This study showed that a face to face workshop format involving multidisciplinary students and staff using authentic, real-world learning activities to increase understanding of interprofessional practice within the persistent pain context, is effective. The outcomes also offer support for a preliminary framework to potentially explain how the workshop design, underpinned by Adult Learning and Social Identity theories can potentially generate learning mechanisms leading to learning outcomes. As health education moves toward replicating the practice environment, and the need for persistent pain education continues, the outcomes of this study have also contributed to the broader literature on approaches to integrating IPL within curriculum and uniquely within an EP clinic setting. A preliminary conceptual framework has been proposed suggesting potential student learning mechanisms within the context of IPL and pain management. For those educational institutions wanting to embed IPL into curriculum while considering local context, this educational approach offers a useful and potentially flexible model that could be adapted and tested across multiple chronic conditions, disciplines and settings. As the prevalence of chronic conditions continues to rise in Tasmania (and nationally), integrating a deliberate, interprofessional approach across curriculum will be vital in preparing workforce ready health graduates into the future.

Disclosure

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Addressing student attrition within higher education online programs through a collaborative community of practice

Alison Jane Canty[A] A *Associate Director Learning and Teaching, Wicking Dementia Research and Education Centre, University of Tasmania, Australia*

James Chase[B] B *Academic Director, Student Engagement and Retention, College of Arts, Law and Education, University of Tasmania, Australia*

Matthew Hingston[C] C *Manager, Early Intervention, Academic Division, University of Tasmania, Australia*

Melanie Greenwood[D] D *Director of Postgraduate Programs, School of Nursing, University of Tasmania, Australia*

Casey Peter Mainsbridge[E] E *Director of Student Engagement, School of Education, University of Tasmania, Australia*

Jane Skalicky[F] F *Director, Student Retention and Success, Academic Division, University of Tasmania, Australia*

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Abstract

Student retention is a key strategic issue in higher education affecting student experience, university funding, and reputation. It is critical for institutions to identify factors that impact upon student success, build effective strategies to enhance student outcomes, and respond to the emerging evidence-base of distance student engagement. The University of Tasmania has one of the highest attrition rates in Australia, at 28 percent for commencing bachelor students. Studying by distance is a known risk factor affecting attrition and it is vital that we understand the challenges that 'at risk' distance students face when they engage in higher education and how to best support them for success. This study describes a Community of Practice approach that identified four key challenges to reduce student attrition in online degree programs: (i) the importance of knowing your students, (ii) the difficulty in getting reliable data, (iii) the need for 'belonging' for online students and early, meaningful engagement, and (iv) student access to known academics. With no magic bullet to reduce student attrition rates, we present a range of targeted and connected early interventions designed to support students to succeed and enhance their learning experience.

1. Introduction

In the current competitive and globalised higher education (HE) market, student retention and success are key strategic issues for higher education institutions with retention rates affecting a university's reputation and long-term financial security. While overall student load is one measure of an institution's success and attractiveness in the market, today's performance indicators are increasingly about student outcomes; in particular, student retention and completion. One measure, 'adjusted student attrition' has recently been directly linked to ongoing funding in Australian Higher Education. Adjusted student attrition describes students who commence study but don't progress in the same or a different course in the following year.

The University of Tasmania has for many years implemented a range of both curricular and co-curricular initiatives and programs to decrease student attrition rates. However, with the rise in popularity in distance learning, primarily online learning, student cohorts are shifting. This shift means that retention and attrition strategies need to be refocused to take into account the diversity of the student cohorts, and the modes of learning (particularly distance education) and breadth of curriculum that are offered. This study describes how a nascent Community of Practice (CoP) challenged with addressing student attrition in online programs has been able to learn from each other, has resulted in cross-fertilisation of ideas and strategies, and has started to inform change at the institution level.

2. Literature review & theoretical framework

General context of higher education in Australia

The last five years have seen a significant transformation in the higher education landscape in Australia. This has been due primarily to the 2012 lifting of government-prescribed 'caps' (limits) on the number of government-subsidised students that universities can enrol each year (Kemp & Norton, 2014). In effect, this policy change has meant that higher education institutions, until only recently (due to the re-introduction of a capped system), have had the freedom to set their own enrolment goals and limits. In addition, there has been a strong global and national push to increase the participation of groups currently under-represented in higher education (Mok, 2016) resulting in the increased number of students from not only culturally and ethnically diverse populations, but also from disadvantaged and minority groups (Calderon, 2018). Consequently, student enrolments across Australia have increased as has the diversity of student cohorts, particularly those from non-traditional backgrounds. However, with the re-emergence of the capped system and introduction of a performance-based commonwealth funding model, Australian universities have been directed to "take responsibility for the students they choose to enrol and ensure they have the capabilities and support to succeed" (Birmingham, 2017). Student attrition represents a loss to government, institutions, and students themselves and there needs to be a sustained effort to improve retention and completion rates. It is therefore critical for Australian higher education institutions to identify those factors that impact on student retention and attrition and build effective practices and support strategies to enhance student outcomes.

Retention and attrition

In broad terms, retention refers to students who continue in higher education from one year to the next, to the point of course completion, whereas attrition is about students who leave higher education prior to completion of their studies. Specific definitions and calculations of retention and attrition rates are slightly more complicated, and methodologies vary around the world. In Australia, the Government Department of Education and Training (DET, 2018) defines retention rate as the proportion of commencing students who were enrolled in a course in a given year and did not complete in that year and continued in their course the following year, while attrition rate is defined as the proportion of students commencing a course of study in a given year who neither completed the course in that year or the following year, nor return to study in the following year. More recent DET calculations have also used 'adjusted' retention and attrition rates, which takes into account student transfers between courses and institutions (DET, 2018).

One approach to understanding student retention and attrition focuses on 'at risk' student cohorts that have a higher likelihood of failure and the identification of demographic and personal factors that contribute to the likelihood of students dropping out, for example: having a low socio-economic background (SES), living in regional and remote locations, being members of Indigenous populations, having a disability, being of mature age, and being first in the family to attend HE study (e.g. Roberts, 2011; Rose-Adams, 2013; Yorke & Longden, 2008). Personal factors, often related to one or more of the demographic factors, that place students at high risk of withdrawing from their studies, include: financial difficulties, family and caring responsibilities, paid employment commitments, low self-confidence, and mental health issues. Certain enrolment characteristics have also been identified as risk factors, including students who study part-time, those who study via distance or external education and enrolment choices (i.e., degrees, subjects) that students make when in higher education (e.g. Bawa, 2016; Lee, 2017).

Another approach to understanding student retention and attrition is to focus on the student experience, the quality of students' institutional experiences, and their level of integration into the academic and social systems of the institution. Lizzio and Wilson (2010), for example, identified five areas of student need that contribute to students' satisfaction, engagement, and persistence in higher education, what they termed the 'five senses of successful transition': a sense of capability, connectedness, purpose, resourcefulness and culture. Students well prepared in this regard are more likely to be successful learners and persist with their studies compared to their counterparts. Related to this approach is Tinto's (1993) Student Integration Model which addresses institutional conditions for student success and proposes that the more engaged and assimilated a student

is in their institution's academic and social environment, the more committed they will be to the institution and to their own academic goals and study. These commitments, in turn, are perceived to have a strong positive influence on student persistence and retention. These approaches provide useful lenses through which to understand and analyse the higher education student experience and to conceptualise factors that may act as enablers or barriers to student retention and success.

Growth in distance learning

Distance learning in HE has seen significant worldwide growth in recent years as HE institutions seek to extend their reach to students located outside of local geographic areas and students seek more convenient, flexible, and self-paced options for study. In the United States, for example, Seaman, Allen & Seaman (2018) report that the number of distance students increased by roughly 17 percent across the years 2012 to 2016, with the year-to-year percentage growth also increasing over this period (3.3 % for 2012/2013 to 5.6 % for 2015/2016). A total of 6,359,121 students commencing study in 2016 engaged in distance education in the USA, which was 31.6 percent of all student enrolments. Nearly half (47 %) of those students took exclusively distance education courses, while 53 percent engaged in blended study, a combination of distance and campus-based courses. A similar pattern of distance education growth has been reported across many countries in Asia, Africa and the Middle East (Zawacki-Richter & Qayyum, 2019), Australia (DET, 2018; Stone & O'Shea, 2019), Canada (Donovan et al., 2018) and Europe (Carlsen et al., 2016). Further, recent statistics in Australia (DET, 2018) and the US (Allen & Seaman, 2010), indicate that growth in the number of higher education students engaging in distance learning is increasing faster than for those studying on-campus. This rapid growth in distance education, while extending the possibility of higher education to more diverse student groups, presents many transformational challenges to institutions in the ways in which they strategically plan for, develop, resource and deliver education that meets the changing needs and preferences of today's higher education students.

Technology and distance education

Unlike the traditional campus-based, classroom model, in which learning typically occurs in a specified location and fixed timeframe, distance learning affords students flexibility with respect to both space and time. The contemporary paradigm for distance education is e-learning (also known as online or digital learning), which uses online tools and networking mechanisms to "create, foster, deliver and facilitate learning, anytime and anywhere" (Liaw, 2008, p. 864). Email communications, videoconferencing, whiteboards, chat rooms, blogs, wikis, and podcasts, are all part of today's distance education, providing students with opportunities for both real-time (synchronous) and asynchronous learning experiences outside of a physical classroom. The increasing use and range of available online technologies can provide high-quality distance learning that is engaging, interactive and increasingly personalised.

The distance education student population

Distance education has been an important mechanism for widening access and participation in higher education for a diverse range of students, particularly those previously under-represented. Many of these students are juggling multiple responsibilities such as employment commitments and/or caring responsibilities, in addition to pursuing their education. Students who live in rural and remote areas, from low socio-economic backgrounds, living with a disability, Indigenous, mature-aged, and students who are first in their families to enter HE are all strongly represented in online distance courses (Stone, 2016; Stone & O'Shea, 2019). There is a large body of evidence showing that non-traditional students often lack the academic persistence to persevere with their studies and tend to drop out of academic programs prior to completion at a greater rate than their mainstream counterparts (Brubacher & Silinda, 2019; DET, 2017; Simpson, 2013). In Australia, distance education students are around two and a half times more likely to withdraw from higher education than campus-based students (DET, 2017a, 2018), which has been related, at least in part, to the composition of the distance education student cohort (Stone, 2016).

Challenges

Distance education is both an enabler and a challenge to both higher education institutions and students. While it enables universities to reach widespread and diverse student populations, it also affords many challenges, particularly in relation to creating a culture and providing infrastructure that enables and supports distance education, and adjusting curriculum, pedagogy and academic policy to meet student needs and expectations and provide equitable learning opportunities across the different delivery modes (e.g. Moore & Greenland, 2017). Other significant challenges for higher education institutions include keeping pace with technological advances in e-learning, providing effective and equitable curricular and co-curricular support and development opportunities to students who rarely or never connect on-campus, and accommodating and retaining the diverse student groups that are attracted to distance education.

For students, the first challenge is often one of digital literacy – which can significantly add to the cognitive load of also learning a new discipline. Concurrently, distance learning means taking responsibility for your own learning and developing a strong sense of autonomy (Peters, 2010), without which students can struggle and drop out (Rush, 2015). One of the most reported challenges is the feeling of isolation, and the difficulty in developing a sense of belonging and connectedness to other students, staff and the wider institution, particularly for students from non-traditional backgrounds (Kember et al., 2019; Lambrinidis, 2014; Tinto 1975, 1987). This sense of isolation is directly related to the 'flexibility' offered by distance learning, rated in one study as the worst and the best aspects of distance learning respectively (Rush, 2015). Croft et al. (2010) importantly identify another form of isolation - intellectual isolation – occurring through a lack of real contact with staff and other students to progress ideas, explore and reflect on

knowledge. Students attracted to the flexibility of distance learning, often choose to study part-time, which is another known risk factor for attrition (Cherastidtham et al., 2018; Norton et al., 2018). The difficulty in balancing part-time university studies with other responsibilities is exemplified in the Quality Indicators for Learning and Teaching National report (QILT, 2019). For undergraduate students, after health or stress reasons, for which 45 percent contemplate leaving, the next most common reasons are study/life balance (30 %) and the need to engage in paid work (27 %: QILT SES National Report, 2019, p. 21-23). In undergraduate health programs, it has been demonstrated that paid employment of more than 16 hours per week is detrimental to academic performance, results in missing scheduled classes and correlates with poorer engagement (Reyes et al., 2012; Rochford et al., 2009; Salamonson et al., 2012). Students' abilities to manage these challenges can greatly influence their learning experience, academic achievement, and subsequent persistence in higher education (e.g., Greenland & Moore, 2014; Tyler-Smith, 2006).

In the Australian context, but applicable elsewhere, Stone (2016, 2019) published a research report that articulates 10 National Guidelines for Improving Student Outcomes in Online Learning, with the aim of improving the sustainability of online learning as a viable and inclusive model of education. The 10 guidelines can be thematically organised into four key areas: (1) purposeful online learning design (guidelines 4, 5 and 6), (2) tailored student support for and communication with distance students (guidelines 7 and 8), (3) comprehensive knowledge and understanding of the diversity of online cohorts (guideline 1), and importantly, a shift in (4) institution-wide change and adaptation for education delivery for distance students (guidelines 2, 9 and 10). Each guideline articulates key principles and includes practical examples of how higher education institutions can translate each guideline into action.

The University of Tasmania context

The University of Tasmania holds a unique and distinctive position in an Australian higher education context in that it is the only university in an island state of Australia. This has afforded the University certain benefits and also distinct challenges. Tasmania comprises a regional and dispersed population, with some 58 percent of the population living outside the greater capital city area. Recent estimates indicate that less than 60 percent of young Tasmanians complete the 12th year of secondary education, compared to the Australian average of around 80 percent (ACARA, 2019; TASC, 2017). These demographics have presented the University with the enduring and fundamental educational challenge of attracting and retaining students.

The number of students enrolled at the University of Tasmania has increased steadily over recent years, from just under 27,000 students in 2012 to 36,326 in 2019, concurrent growth has occurred in the number of courses (undergraduate and postgraduate degrees) and units (subjects) offered. Most significantly, the commencing student population increased more than 50 percent over this eight-year period and includes students from traditionally under-represented groups (as described above). Accompanying this is an increase in demand for distance learning. In 2015, for example, 39 percent of student course enrolments were via distance which increased to 46 percent in 2019. In some disciplines, distance education has now become the dominant form of learning. In 2019 for example, 72 percent of all course enrolments in the College of Health and Medicine and 52 percent of course enrolments in the College of Arts, Law and Education were via distance mode, with a further 25 percent of course enrolments in Arts, Law and Education being via blended learning (combined distance and on-campus study). Interestingly, and not surprisingly, this increase in distance enrolments has coincided with a progressive decline in the University's student retention and an increase in attrition rates that remain well above the national average.

Inevitably, institution-wide change and adaptation to trends such as distance learning can be slow to develop and implement, often associated with pilot phase testing and protracted, stepwise implementation. Indeed, with competing priorities and fixed resources, student attrition is but one priority amongst many, such as growth, research excellence and internationalisation. In the meantime, staff is presented with opportunities to respond to attrition in their own programs. These responses are often at a smaller scale and include targeted interventions to increase student engagement and retention in particular student cohorts. The challenge then becomes how to collect and coordinate this bottom-up approach, to inform institution-wide change. For the past decade, much has been written about the creation of professional communities of practice as a vehicle for establishing collegial relationships and for building capacity for change. Wenger-Trayner and Wenger-Trayner (2015) describe communities of practice (CoP) as "groups of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly" (p. 1).

While the concept of community of practice has been around for a long time, in recent decades such professional learning communities have found a range of practical applications in business, organisational design, government, education, professional associations, and civic life. Across all applications, the CoP model has been promoted for its potential to bring together diverse groups of people, inspire cross-disciplinary learning, and to enable grass-roots level change in an institution or organisation. In the context of HE, the use of the CoP model has extended across academic teaching groups, research groups, organisational change initiatives, and professional learning and development (e.g., Pharo et al., 2014; Warr Pedersen, 2017). While sometimes represented by different terminology, including teacher networks, faculty learning communities and communities of interest, the sentiment of the CoP model as a collaborative learning experience has permeated the breadth of approaches used.

3. Method

We applied a CoP approach using semi-structured discussions (context, challenges, approaches/interventions, evaluation) to probe different case studies that address student attrition in online programs across the University

of Tasmania. Members of the CoP came from different disciplines (Nursing, Dementia Care, Education, Arts, central academic division), campuses (four), and held a variety of appointment types and levels in both professional and academic roles. Over 10 weeks a series of 90-minute discussions were held, using Skype for Business software, to probe the context and challenges of addressing student attrition in different academic and professional capacities, across diverse degree programs. Thematic analysis (Braun & Clarke, 2006), was used to theme data to identify key challenges and potential solutions that could be shared institution-wide, to address student attrition. This was followed by several workshops and meetings with academic and professional staff across the university, including key senior leadership staff, to disseminate our findings, with the intent to drive institutional change to reduce student attrition in online degree programs.

Case studies were drawn from fully online and blended (mixed mode) programs including the Bachelor of Education, Bachelor of Dementia Care, Bachelor of Arts, Bachelor of Education, and a collection of Postgraduate Nursing programs. Within specific case studies, data included were drawn from large, de-identified student cohorts across multiple programs and offerings. Student numbers and/or demographics are identified at the time of discussion of each case, where relevant. Bachelor of Dementia Care and Bachelor of Education student progression data has ethical approval for research purposes, via the University Social Sciences Ethics Committee (Reference numbers H0013822 and H0017932).

4. Analysis and Discussion

Historically, in the second half of the University's academic and calendar year, strategies are implemented to support the return and engagement of un-enrolled students who commenced their studies in the previous year. Depending on the size and nature of the degree program, 'attrition lists' of students can be of variable length. In one undergraduate health degree, one such list contained 511 names. In June one year, all 511 were emailed and encouraged to enrol in Semester 2 offerings. The list was triaged and the 128 students who had successfully passed a subject in the previous calendar year were also phoned. Three contact attempts were made, and unsuccessful contacts followed up with a final email. This activity took four full days for one staff member to carry out; most students did not answer the phone on the first call, 25 students thought they had withdrawn from the program, 100 appreciated the contact but there was no clear outcome. Reasons cited for no further enrolment included illness, change of employment, or not the right degree at the right time. In all, 10 students went on to enrol in Semester 2 of whom only 5 were actively engaged in their study half-way through the semester (Figure 1).

This approach, whilst targeted in nature, proved to be an inefficient, ineffective strategy to reduce attrition in the degree program. By the time students had their names added to this 'attrition list', it was too late. This case exemplified the collective thinking of the CoP – student attrition needs to be reframed as an early intervention activity. Using case studies across the institution, we identified four key challenges to reduce student attrition in online degree programs at our University that can be used to inform institutional change and direction: (1) the importance of knowing your students, (2) the difficulty in getting reliable data, (3) the need for 'belonging' for online students and early, meaningful early engagement and (4) student access to 'known' academics.

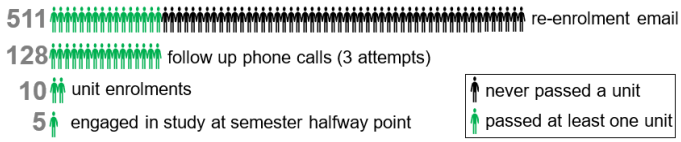

Figure 1. Communication strategy to target students on an attrition list in an undergraduate degree program.

Knowing your students

Established models of retention and progression in university study highlight the importance of a range of measures including personal and family characteristics, academic performance measures, institutional and course factors, and factors associated with student engagement with study. Most attrition models focus on known factors at the time of commencement of study, however, it is becoming increasingly appreciated that 'in semester' factors also contribute to attrition, with acknowledged complexity of associations between these factors (Cherastidtham et al., 2018; Kember et al., 2019).

Recent business intelligence strategies to probe attrition at the University of Tasmania, have involved institution-wide analytics of student progression and retention (Nathalie Henning, personal communication, August 2019). Five key indicators of attrition were identified in undergraduate students who had recently left the university: studying by distance, part-time enrolment, increased age, low or no ATAR (university entrance score based on school completion) and being enrolled at a smaller, regional campus on the northwest coast of Tasmania. However, at the degree program level, the apparent risk profile of students may differ markedly from national or institutional averages. For example, within the Bachelor of Arts (BA) cohort at the University of Tasmania (2015-2017), higher ATAR on-campus students consistently had an attrition rate of approximately 21.5 percent in the first year of study, as compared to a rate of 9.3 percent for the mixed-mode cohort. Responding to the phenomenon of attrition for this cohort requires exploring the particular pressures faced by fully on-campus students in this course, the specific teaching framework in place in first year Arts units, and tailoring engagement programs to these very local factors as much as to generally recognised factors of higher risk. Another example is provided by the Bachelor of Dementia Care (BDemCare) at the University of Tasmania. This course was designed with the non-traditional learner at the fore, is front-ended with foundation level 'skill building' units, included student-led curriculum development from the outset to identify skills and knowledge gaps, contains flexible assessment strategies including both soft and hard

assessments, and multiple exit points (Diploma, Associate Degree) to support this cohort in the transition to Higher Education (Canty et al., 2015; Goldberg et al., 2015; Kelder et al., 2013). This large enrolment course has a predominantly non-traditional student cohort - markedly different to school leaver demographics – with 77 percent aged over 40 years, 93 percent female, 91.2 percent studying part-time, 21 percent of student from low SES backgrounds and 41 percent from regional/remote areas. Despite considered learning design and tailored approaches, attrition remains above the institution average in this program. Analysis of student progression in foundation level units found a 'critical path' phenomenon with a particular unit in the first semester of study, with 90 percent of students passing that unit then continuing to pass the remaining seven first year units, as compared to 7-30 percent completion for students who failed that unit. Here general risk factors are much less important as guides to action than close examination, revision, and support of that pathway.

Even where local results reflect the patterns of risk identified in wider studies, care has to be taken in interpreting and acting on this. The courses considered by this CoP have online cohorts (and in some cases are entirely online), and many have significant mature age student cohorts too. Study mode and age are regarded as factors of higher risk both in national studies (DET, 2017) and our own institutional analyses, but in our experience of these students, their difficulties do not necessarily stem from trouble with time management, difficulty with technology, trouble with integration, or other commonly cited factors that broadly point to a loss of agency in dealing with university and online study. In conversations, including some structured interviews with selected students in the BA, it is clear that students are often well acquainted with tertiary study, yet lead busy lives, and consider current studies as a form of enrichment akin to other forms of social or personal engagement. In such cases, withdrawal from the course need not be accompanied by a subjective feeling of failure or dissatisfaction, but rather is simply an act of autonomous decision. Similarly, for BDemCare students, personal motivation to study is high - most often attributed to current employment in the aged care industry, or as unpaid family carers. Students in this course tend to select individual study pathways, and when personal circumstances change, or a sense of fulfilment for study is reached, they no longer continue to study, irrespective of defined completion points in their degree. For these, and similar cohorts, it becomes important to consider the definition of 'success' in HE – where success is more closely linked to learning, unit completion, and personal satisfaction rather than reaching defined exit points or degree completion. We note that this phenomenon is acknowledged in some national studies of attrition (e.g., Norton et al., 2018), and it suggests some caution about moving immediately to a deficit model to explain the causes of higher risk cohorts. In this case, for instance, courses with especially large numbers of students fitting the profile of the autonomous learner are likely to see limited improvement in attrition statistics if measures focus on teaching design and skill development; instead, it would appear that a focus on true flexibility of online study (including flexibility in semester dates and due dates) would be more likely to enable students to remain engaged in Higher Education.

In 2019, professional staff in the central academic division 'Student Success' team paired with academic staff to deliver a coordinated early intervention program across the institution. Using Business intelligence reports to identify units with large numbers of 'at risk' students, or units with high failure rates, professional staff met with relevant academic staff to hold conversations to identify critical points or 'hotspots' in the unit. Working together, professional and academic staff generated a suite of phone interventions for targeted units, aimed at students considered 'at risk' due to behavioural factors such as non-attendance, failed assessment, failure to submit. As such, the nature and timing of the phone intervention were tailored for specific cohorts within defined units and courses. A total of 11 interventions across 75 units of study targeted 3 715 'at risk' students, with 52 percent of students being successfully contacted by phone to offer supportive advice and appropriate referrals. More students (11.2 % more) who engaged with the Student Success Unit Interventions passed their unit and fewer (11.0 %) failed their unit compared to students who did not engage with the interventions ($\chi 2$ (1, 3,799) = 69.63, $p < 0.01$, $\varphi = 0.135$). This forms a good example of a collaborative intervention between professional and academic staff that is student-centred, and finely tuned to distinct student groups.

Difficulty in getting reliable, institution-wide student data

Central to the clear need to understand individual student cohorts is the need to be able to easily and efficiently access reliable data to inform interventions. The University of Tasmania is not atypical in that a collection of bespoke software programs are used to collect student data across the student life cycle – stretching from separate software used to receive and process applications for study, student management systems that house course progression data, client relation managers (CRM) used to electronically track and monitor communications, the learning management system called 'MyLO' (My Learning Online) through which students access their course materials with embedded learning analytics functionality, and then an array of email correspondence with academic and professional staff and teaching records that may exist offline in word or excel files on individual staff computers. In general, it would be fair to say that these systems are not well integrated, and whilst fit for purpose in some ways, institution-wide data becomes siloed where better integration of all systems if connected, could better inform the puzzle of student retention.

There are established and emerging models of student retention that can calculate a student's risk profile for success, all of which depend upon reliable data collection. One example is at the Open University in the United Kingdom, where OU-Analyse software has been developed that integrates over 70 identified 'key factors' – both static factors (identified at the time commencing study) and changing factors during the academic year that can predict, with alarming accuracy, the outcome for students in different programs (Herodotou et al., 2020). Efforts at the University of Tasmania to achieve a similar, nuanced approach to understand specific student cohorts, that aim to significantly

impact university retention rates, are also understood and need to be institution-wide in scope, probing all levels of collected data. They need to be informed by hard data in both the detection of students at risk and in evidencing impact. To realise this efficiently, interventions must be underpinned by (1) quality, early risk indicators, deliberately structured into the curriculum; (2) large scale, centralised, real-time data collation at the student level to facilitate proactive, holistic intervention of those at risk of attrition or poor academic progress and (3) a common means of viewing previous and recording current interventions across all staff undertaking them, to facilitate coordination and enable consistent evaluation and quality improvement.

An example of where methodical data collection from a range of data sources has proved fruitful is in the analysis of student cohort success in the BDemCare. In this example, large spreadsheets were collated using data from the student application systems (demographics) student management (course progression) and MyLO (learning management system) which was then mapped to a database housing student consent to participate in research. The purpose was to establish if there was any evidence for the accessibility in learning design of the online degree in catering to a diverse cohort of students, with and without previous learning experience. The success of 65 students from the first student intake into the program was investigated after completing 15 units of study (approaching the completion of year two of a three-year degree). All students resided in Australia and were evenly spread between major cities, inner regional areas, and outer regional areas. All but two were female and most were over the age of 40. These students formed two even groups – those with experience of University study and those without. All students passed each of the units they completed on their first attempt, some making use of soft assessments offered in their foundation units (a second chance to meet the learning outcomes). There was no statistically significant difference in final unit grades between students with previous university-level experience compared to those with no university experience in 12 of the 15 units. Students with university experience performed statistically better in three units (in units 7, 8, and 13 in sequential order, final grades 5.4 ± 0.89 % higher). The equivalence of final grades for both student groups confirms a program of study that enables success for non-traditional students (Goldberg et al., manuscript in press).

In the absence of more streamlined data collection and access, the efforts of our CoP have been to short circuit the wider institution, and to design and present early, meaningful activities that are used to welcome students and generate a sense of belonging in their course, and which can also provide an early point for identification of struggling, or non-engaged students, within the context of the course that they are enrolled.

Early meaningful engagement and sense of belonging

Quality teaching practices in fully online courses include activities that promote engagement in the learning environment at a unit level, without ignoring what the broader university learning environment can offer. The learning approach supports student retention through 'constructions of capability to belong' (Burke et al., 2016, p.19) which builds confidence and competence (Carroll-Meehan & Howells, 2018). Capability attainment in online learning environments support a sense of belonging when students have greater awareness of their strengths within a curriculum, and social relations are established. Transition into a university is important in the student lifecycle and requires well-constructed orientation, teacher, and professional support linked to the psychological and sociological aspects of wellbeing (Vayre & Vonthron, 2016). First-generation university attendees may lack the cultural practices to successfully manage transition to higher education (Carroll-Meehan & Howells, 2018) with those beyond the transition period continuing to require human contact which may be lacking in fully online units of study. Learning designs, therefore, need to address engagement pre-commencement of the degree and during the semesters of study.

The School of Nursing, University of Tasmania provides a very successful distance orientation space for its postgraduate students. It is offered within the same learning management platform (MyLO) which students subsequently use to complete their studies. The unit is available two weeks before the start of the semester and is accessed by a proportion of newly commencing students. In this 'low stakes' space, free from formal assessment, the learning community is established early and continues through transferrable learning design activities embedded in core units across the semesters. The unit is minimally staffed, and interactive activities are provided, including social spaces for online discussion, academic writing development support, and the opportunity to submit a short, written assignment and receive feedback using online mechanisms typically used in the upcoming core units. Despite being very time-intensive in terms of 'staff hours', this space provides a valuable welcome to new students and provides the opportunity to meet fellow classmates ahead of the first day of study.

Similarly in the BDemCare, a year-long MyLO unit called 'Your Common Room', designed and run by student support staff, serves as both an orientation space and offers on-going student advice (course progression, discipline-specific how to guides, etc), learning skills resources (academic skills videos, quizzes, interactive activities, etc) and access to staff. Students are invited to access this space at the time of accepting their offer to study. Scheduled announcements and resources are highlighted at different times of year, such as online orientation webinars using virtual classroom software, enrolment advice, academic integrity games and videos early in the semester, help with essay writing skills prior to due dates for academic essay assignments and graduation ceremony dates. Resources and links from 'Your Common Room' are also embedded within the degree units during the semester, offering students relevant and timely assistance in their studies in line with the subject materials and assessments. Similarly, student support staff are sometimes 'embedded' within the teaching space, seated alongside academic staff in virtual classroom sessions where they contribute to discussions of assignment expectations and relevant skills development.

Both examples highlight the approach of using the learning management platform to offer relevant online orientation and support within the discipline, contributing to a sense of belonging for online students. What they don't offer is a more general sense of belonging to the wider University community. Orientation activities for campus-based students differ in that they are focused outside of the classroom spread across campus in the library, social spaces, clubs, societies, bars and eating areas with multiple opportunities to meet other students and staff. Without a designated 'distance or cloud campus', generating this sense of connection for distance students, to the University campus and community, is challenging.

In late 2019, the Student Success and Retention team developed an institution-wide online orientation site embedded within the university website, for all distance students at the University of Tasmania. The collaborative sharing from our CoP, ensured that this site embedded and linked to the degree- and College-specific online orientations that were already in place, and also provided examples for other disciplines to build similar offerings. This is an important first step to welcome and integrate distance student cohorts into the wider University community.

In 2017 the University of Tasmania mandated the use of two 'student engagement activities' in every subject by week 4 of the semester, for both on-campus and off-campus students. Completion of these activities needed to be recorded in the online grade book, with the intention that these activities could be monitored centrally, and across the institution. Teaching staff was responsible for implementing the activities and monitoring completion. Students who did not complete these activities were targeted for extra support and communication. This strategy has worked to varying degrees and can identify and proactively contact non-engaging students at risk of failure or dropping out. It is most successful when activities are meaningful and authentic and not perceived by students as hoop-jumping exercises. The main challenge has been in being able to centralise data collection in a systematic and standardised way. Other strategies that we have used as a CoP include personalising aspects of student learning within the curriculum so that students can retain their identities as individuals and feel connected to teachers and the broader community of learners. Examples that have been used include, contacting students who received low grades in assessment tasks or did not submit work offering support, using learning analytics to identify struggling students, and scaffolding early low stakes assessment task. Some staff offers flexibility in choosing assessment topics and even assessment formats, allowing students to work to their strengths whilst still meeting intended learning outcomes in both knowledge and skills. Others facilitate the process of sharing first assignments with a peer, for peer feedback ahead of final submission which helps to create a bond between students. Voice or video-recorded feedback against assessment tasks is also used to personalise learning, however, it is an example of unidirectional information transmission rather than dialogue (Mahoney et al., 2018).

One graduate of Education recounts her online learning experience, enjoying the flexibility to study around her life and work and importantly she describes her units as being "built around peer support, and people that I 'met' in that course, (they) were people that continued to work with me throughout the following units, and we built a community, we had a community of practice within the online platform. Those people became my peers, my friends, my colleagues." (Mackenzie; Life Matters, 28th February, 2020). This level of positive experience can be pivotal in making students feel welcome, part of a community, and motivate them through to degree completion.

Access to 'known academics'

Students need to feel part of an educational workplace culture that values them, their instructors, instructional designers, and administrators - all working together to facilitate a successful online learning experience (Roby et al., 2013; Stevens, 2013; Yoo & Huang, 2013). It is important therefore that online students feel a sense of connectedness with not only other students but also their teachers. Online students should be offered the opportunity to get to know teaching staff in a way that emulates drop-in sessions after on-campus lectures, or open-door appointment times. Generating a rapport in this way, between teacher and student, builds a relationship of trust and respect, and should be considered vitally important to maintain motivation and engagement with online study. One way to establish this relationship is by using video. As an alternative to in-class lecture recordings, or 'talking PowerPoint' lectures, a small investment in videography equipment and software can lead to the generation of laboratory, workshop, or 'on location' recordings of teaching sessions that allow students to see, hear and learn from known academic staff. For example, in a neuroscience unit in the BDemCare, a variety of filming sessions, including in laboratory and museum settings, were created to enhance the online learning experience (Figure 2). As effective representations of the live classroom (Smith & Boyer, 1996) these vignettes can elicit discussion, develop knowledge, challenge thinking, foster problem-solving, promote decision making, and initiate reflection (Herbst & Chazan, 2015). With careful planning, and avoiding reference to time and specific dates, these resources can be used across multiple offerings of the unit. Where units of study move between staff, short, regular 'talking head videos' can be used for 'housekeeping' announcements and reminders, audio feedback provided for assessments and live virtual classroom sessions offered to allow for interactive communication sessions – all of which offer opportunities for current teaching staff to establish a personal presence in the online space. Student advisors and learning skills staff can be invited to participate in these sessions, sitting alongside the discipline expert, giving students the impression of a team approach to teaching, making it easier to reach out for help to a familiar face when needed. Students respond positively to the inclusion of varied video formats"…the personal contact in the interview conversation seems to make learning very much easier for me" and "…very impressed with the museum visit! This especially cemented some of my learning as I could see the actual diseases/issues that we have been studying and hear these described in the

language we are learning…I felt like I was really there." (Canty et al., 2015). End of semester anonymous student surveys indicate almost unanimous agreement (via Likert scale) to the statements, including: 'the learning experiences (98.36 % agreement) and resources (98.33 % agreement) help to achieve the learning outcomes' and 'the quality of teaching helps to achieve learning outcomes' (98.33 % agreement; unit CAD004, 51 % student response rate, 61 responses).

Figure 2. Examples of different video formats that create a personalised learning space and effective teacher presence in an online subject about the nervous system. Examples include teaching with plastic models of the body, collegial discussions with potted specimens in a museum setting, outdoor 'on location' filming, discussion in the laboratory, sharing 'neuroscience art in pictures or in the gallery setting (top-bottom, left-right).

At the conclusion of each semester, the University of Tasmania Academic Progress Review (APR) evaluates the academic results for all students providing a mechanism to reach out to underperforming students. Students are placed into one of four categories: Good Standing, Supported (as a first intervention point), Conditional (with enhanced support) and finally Exclusion. The University strives to have all students achieve and maintain Good Standing but recognises that factors such as life circumstances and unexpected events out of student control can impact study. In general, centrally managed professional staff manages the process of contacting students who have left Good Standing to offer an appropriate level of support. For example; in one undergraduate health degree, 31 students identified as 'Conditional' were emailed by student advisers and invited to complete a questionnaire to help inform a personalised support plan. In this example, only four students responded (12.9 %).

A more targeted approach, with evaluated positive effects, is used in the School of Education which focuses on 'Conditional' students with a 'four-step process', underpinned by the key elements of personalisation (Step One: Winters, 2014), mutual understanding and agreement (Step Two: Mercer-Mapstone, Marquis, & McConnell, 2018), accountability (Step Three: Carpenter, 2013; Cook-Sather, 2010) and monitoring of progress (Step Four: Lieutenant, 2018). Step One includes a personal email from an academic staff member known to the student, inviting the student for a conversation. This deliberate approach helps to demonstrate care for the student, increases the likelihood that the student knows who is making contact with them, and ensures staff has an in-depth understanding of the degree program (Crosling et al, 2009). If there is no response, a follow up email and personalised SMS text message are sent. A phone call is used as a final contact attempt.

Step Two includes a face-to-face meeting between student and staff, with a willingness of the academic staff member to travel to meet each student in person. Where this is not practical, phone or Skype meetings are arranged. The primary focus is to offer the student an opportunity to share their perspective and discuss contributing factors to their current academic status. Importantly, the meeting allows a supportive, educative approach to encourage the student to return to Good Standing. Through discussion, the student and academic work towards a realistic plan for the upcoming semester (i.e. reduced study load, monthly meetings, a period of leave, change from online to face-to-face study mode). The student is asked to prepare and share an individualised study plan that reflects their commitment and fosters positive study behaviour. This is the first stage of accountability and represents Step Three. In doing this, the student demonstrates willingness and commitment to their studies and improving their academic status - often the largest challenge (Lather et al, 2015). Step Four involves tailored, periodic monitoring of progression during the semester undertaken by the known academic staff member.

This four-step approach has been trialled, modified, and established between 2017 and 2019. A total of 350 students have participated in this process, with approximately 170 returning to either a Supported or Good Standing status (49 %), and approximately 35 being excluded. Overall the process has confirmed two critical components related to student engagement and retention: 1) students benefit from proactive invitations for open and professional discussion with a known academic in which they feel valued and respected, and 2) it is important to provide genuine assistance and support, to foster and facilitate approaches and strategies for students to use in their studies.

5. Conclusions and recommendations

Following the identification of the key challenges in student retention for our distance students, and discussion of case study solutions, we sought to reach out to the wider university community. Within 6 months of forming, our CoP shared our findings at a University of Tasmania 'Teaching Matters' conference and we arranged individual conversations with a number of senior academic staff in institution leadership roles. Despite these efforts, the more immediate impact has been in the organic transfer of practice and culture at the individual unit, School, and College level. By continuing our conversations within our own areas of the university, demonstrable transfer of practice has already occurred. New discipline-specific MyLO Orientation units are being built, and a new website-based Orientation for all distance students at the university is grounded in the successful principles of those in Postgraduate Nursing and Dementia Care. Similarly, a newly formed institution 'Student Retention Taskforce' has incorporated some of the principles

of including 'known academic staff' for student touchpoints during the semester and has also drawn on our collective experience of effective implementation of initiatives at the College or discipline level.

Clearly missing from our discussion of identified challenges, is the student voice. Whilst included in some of the case studies, additional student perspectives have the potential to further shape the success of initiatives and approaches to student engagement/retention for distance students. Another valuable addition to this work would be longitudinal data that could quantify the impact of initiatives over time.

In summary, we describe our experience of how a CoP approach can be used to inform and drive change in HE from below, in contrast to top-down implementation of initiatives at the institution level. Collectively, we did not find a single approach that could address student attrition in online programs. Instead, we describe a collection of case study examples that demonstrate (1) the importance of knowing your students, (2) the difficulty in getting reliable data, (3) the need for 'belonging' for online students and early, meaningful early engagement and (4) student access to 'known' academics all of which can be used to address student attrition in online programs across diverse cohorts. Whilst these four identified factors are specific for our own, unique student cohorts at the University of Tasmania, and emerged only after a 'deep dive' into understanding our student demographics and learning habits, they are relevant to other distance cohorts in both regional and metropolitan universities. Additionally, the value of the methodological approach used to understand and address the challenges faced by online students at this university could be successfully applied in the context of any other institution or distance cohort.

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