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BOOK REVIEW

AUSTRALIAN JOURNAL OF ADULT LEARNING

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AUSTRALIAN JOURNAL OF ADULT LEARNING

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Adult Learning Australia

AUSTRALIAN JOURNAL OF ADULT LEARNING

The *Australian Journal of Adult Learning* (AJAL) has been published on behalf of Adult Learning Australia for over 58 years, and is now recognised as the leading journal in Australia on adult education. The Journal is widely regarded internationally in the discipline of adult education.

AJAL is concerned with the theory, research and practice of adult learning and adult community education. Its purpose is to promote critical thinking, research and practice in this field.

While the prime focus is on Australia, the practice of adult education and learning is an international field and Australia is connected to all parts of the globe, and therefore papers relating to other countries and contexts are welcome. Papers in the refereed section have been blind reviewed by at least two members from a pool of specialist referees from Australia and overseas.

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Refereed articles

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Australian Journal of Adult Learning
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From the Editor's desk

Dr Tracey Ollis

Welcome to 2018 and the 58th edition of the *Australian Journal of Adult Learning (AJAL)*.

AJAL and its former incarnation *(Australian Journal of Adult Education)* is the longest running journal in adult learning in Australia. It has a proud history of supporting the scholarship, theory and practice of adult education, and ensuring adult learning research and praxis are theorised and documented for academics, scholars and adult educators in Australia and the Asia Pacific. As the new editor for the Journal, I take up the mantel from Tony Brown who edited the Journal for 5 years, before him Roger Harris edited the Journal for almost 23 years and prior to this Barrie Brennan. In my early days as an academic, AJAL was the Journal in which I published my first paper as an emerging academic in the field of adult learning. AJAL continues to support new and emerging scholars and established academics to publish research that supports the scholarship of adult learning and documents changing pedagogy and practices in adult and lifelong learning.

The adult education landscape has changed in recent years. Neoliberal policies of privatisation and managerialism are now the new norm and

have impacted on the provision of adult learning (Wheelahan, 2007, 2009). There are fewer adult education departments in universities, delivering fewer courses and research programs, but more centres for teaching and learning focussed on learner outcomes and the learner experience in Higher Education. The VET sector in Australia has changed dramatically through privatisation programs and agendas seeing the growth of private registered training organisations at the cost of publicly funded TAFE. Opening the VET system to privatisation created a new market with unfettered demands in a largely unregulated system. The recent McKenzie review of the TAFE system has noted the unscrupulous practices of private providers have placed the VET system at risk (Mackenzie & Coulson, 2015). This is compounded by the massification of Higher Education with universities taking more access and equity students, consequently impacting on VET student numbers.

Our understanding of adult learning has also changed, we now know that learning occurs in workplaces, in higher education, in vocational education and training (VET), in adult community education (ACE), in local communities and in social and popular education movements. We also know that a great deal of adult learning is incidental, informal and happens through socialisation with others (Marsick & Watkins, 2001). The ACE sector has always played an important role in adult education, particularly for access and equity groups. ACE's model of flexibility, inclusive pedagogy, practices, and curriculum reflects adult learning principles introduced many years ago by Malcolm Knowles, who acknowledged that adult learners had unique ways of knowing that required a curriculum and pedagogy that recognised their agency in learning, offering applied and experiential pedagogies to engage learners. Central to his development of adult learning principals was the understanding that adult learners brought their existing knowledge into the classroom (Knowles, 1994).

The content of the Journal is in many ways an archive of the changing practices of adult learning and has documented the policy context of adult education, which has a rich history. It is timely as the new editor of AJAL to revisit this history for our readership – a history that is embedded in social movements and popular education struggles, for women, workers (unions), migrant, refugees and others, long before adult education became a profession, a research discipline and a

sector of education[1]. However, it is important to acknowledge first that Australia's Aboriginal and Torres Strait Islander (ATSI) people have taught and learned about community, sustainability and connection to land long before Australia became a nation state. ATSI intellectual traditions and ways of knowing continue to this day.

Early forms of adult education in the 'Australian colonies' were targeted towards 'reforming' the convicts and at 'saving' the Aborigines (Tennant & Morris, 2008). An Australian version of the Scottish Mechanics Institutes' movement, which aimed to educate the working class, emerged in Hobart in 1827, followed by Sydney in 1833, Melbourne in 1839 and Ballarat in 1859. Institutes, schools of art and athenaeums delivering adult education classes were established all across Australia, but growth was most prolific in Victoria.

In the 1920s, the Communist Party of Australia ran adult education programs for a small fee at Workers' Education Associations and Marxist Schools. Here people came to learn about the history of the workers' struggle and to study historical materialism and capitalism, in effect they came to study Marxism (Boughton, 2005). Another adult education institution, the Council for Adult Education (now the Centre for Adult Education), was established in 1947.

Post-war migration saw a volunteer support service for new arrivals formalise with the establishment in 1951 of the Adult Multicultural Education Services (AMES Australia). Then in the 1970s, the first community learning centres that identified as Neighbourhood Houses emerged (Golding, Kimberley, Foley, & Brown, 2008). ACE was supported further by the Whitlam Government's Australian Assistance Plan (AAP). The AAP was funded to promote community development and community consultation through local community services in regional areas. The initial intention of the AAP was to devolve responsibility for decision making about local community needs to the people in local communities themselves. Under this program, an expansion of community education services including libraries, Neighbourhood Houses and other community services occurred (Spindler, 1994).

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[1] Adapted from Ollis, T (2016). Adult, Community Education - Connecting health, wellbeing and lifelong learning. Keynote Mental health and Adult Learning Symposium 14/10/16

In the 1980s, adult education issues "regarding lifelong learning, re-training, reskilling, second chance learning, access and equity – came together to create a positive environment for adult education" (Tennant & Morris, 2008, p. 472).

ACE was formally recognised in legislation in Victoria with the establishment of the first Adult, Community and Further Education Act 1991 (Kosky, 2014). The 2008 Ministerial Declaration on Adult Community Education (Education, 2008) acknowledged the potential of the ACE sector to support the national agenda on skills and workforce development, because of its ability to respond to changes in "industrial, demographic and technological circumstances" (Education, 2008). The Declaration emphasised the important role played by ACE in building the "knowledge, understanding, skills and values" essential for an educated and just society and its contribution and provision of educational opportunities for second chance learners (Borthwick, Knight, Bender, & Loveder, 2001, p. 9).

Today adult education includes services and education programs conducted through VET in publicly funded TAFE and private and community-based registered training organisations. It also includes adult and community education programs run in adult education institutes, neighbourhood houses, community centres, community colleges, Learn Locals, Universities of the Third Age, libraries and Men's Sheds, and through professional learning programs run in workplaces and organisations. The adult education landscape also includes other places and spaces of learning such as museums, community gardens and art galleries. Learning occurs in community campaigns, public protests and social movements, which are all sites of adult learning, although not always widely recognised as such. These public pedagogies often reflect a collective commitment to social change and to education outside of the confines and limited spaces of formal institutions.

Adult education addresses national priority areas of increasing Australia's literacy levels, supporting an adaptable and highly skilled workforce through accredited and non-accredited training (Tennant & Morris, 2008). It offers opportunities for second chance learners, for workers who are reskilling and re-training and for migrants and refugees through English as a second language programs (ESL). Throughout its history in Australia, adult education has largely operated without the benefit of

legislation or policy enshrining its purposes (Tennant & Morris, 2008). Australia still does not have a lifelong learning policy and calls for a new ministerial statement on ACE remain unheeded, with successive governments believing that adult education is "a good idea as long as the demand on public funds are small" (Tenant & Morris 2008, p. 473).

The *Australian Journal of Adult Learning* has been published on behalf of Adult Learning Australia for over 58 years and is now recognised as the leading journal in Australia on adult education. The Journal is widely regarded internationally in the discipline of adult education and has received article submissions from leading scholars in adult and community education from the United Kingdom, United States, Canada, South Africa and the Asia Pacific.

AJAL continues to embrace a range of adult learning contexts and situations, with this issue focussing on adult education in three distinct areas of learning. We commence with the higher education space with an article on enabling mathematics and science learning in a pre-university enabling program. Another article focusses on curriculum development and the process of building a new course for psychology students. From there, we examine adult learning in workplaces through newly employed academics learning to work in universities. The final articles focus on older adult learners embracing the challenges of digital learning, and differently an article that focusses on older learners and the joys of learning music in a University of the Third Age group.

Author(s) **Joanne Lisciandro, Angela Jones, Peter Geerling's** article *Enabling learners starts with knowing them: aspiration and anxiety towards science and maths learning in an Australian pre-university enabling program*. In the article, the authors draw on empirical research conducted in Australia in a pre-university enabling program. Students were asked about their attitudes, aspirations and emotions about the study of mathematics and science. The study found there was a disparity between student expectations of what their future study would involve, and the realities of the degrees they chose and their career aspirations. The findings of the research suggest that previous negative experiences of maths and science education have impacted on students' career choices. The study argues for attention to learners' 'affective' needs through social and emotional learning, and teacher training that better prepare students for their transition to university studies.

Author(s) **Brett Furlonger, Tristan Snell, Michael Di Mattia, Andrea Reupert's** article *What should be considered when designing and developing a counselling course for adults from diverse professional and cultural backgrounds?* This article uncovers the course design choices that academics make in building a curriculum and program design for a counselling course for adults from diverse cultural and professional backgrounds. The blended learning program was planned to be delivered in Australia, Singapore and Hong Kong, with a significant online learning component to the program. It charts the journey of building a curriculum with the right balance of theory, pedagogy and professional practice that is needed for any profession, including striking a balance between industry requirements, accreditation and the skills needed to be effective as counselling professionals.

Author **Özlem Ünlühisarcikli's** article *Informal workplace learning experiences of graduate student employees*. This qualitative research draws on the experiences of 14 PhD students who gained employment at their universities. It examines the informal learning processes that take place as they learn to become academics. The article claims that academics' learn new skills and this occurs through the interaction between an individual, an activity and a context. The article affirms current understandings of workplace learning; that learning is embodied and embedded in the everyday practices at work.

Author(s) **Valeria de Palo, Pierpaolo Limone, Lucia Monacis, Flavio Ceglie, Maria Sinatra's** article *Enhancing e-learning in old age*. The phenomenon of e-learning for older adults is addressed in this article from Southern Italy on older learners' engagement with new technologies in a University of the Third Age. The authors argue "… the rapidly growing older population has led researchers to further investigate cognitive domains of intelligence, learning, memory and attention, which normally change during ageing". They believe e-learning content needs to be adapted to older adults cognitive styles including understanding older learner's intrinsic motivations, meta cognition and self-regulated learning.

Bronwyn Ellis's article, *Music learning for fun and wellbeing at any age* is situated in another U3A in Whyalla in South Australia and focusses on older adult learners as they learn to play the ukulele. Music has been shown to have benefits for all age groups, with music therapy

being used in a wide variety of educative settings. The research found older learners indicated their enjoyment in learning something new, socialising with others and being a part of a group of learners. The author argues the benefits for older learners in terms of their wellbeing is less social isolation and increased wellbeing as well as learning a new skill. Ellis claims "Health in the later years of life will enable continued contribution to our communities and nation; engaging activities that promote social engagement is a vital part of a healthy lifestyle".

Practice article and book review

Adult literacy and socio-cultural learning at *Pina Pina Jarrinjaku* (Yuendumu learning centre) by **Ros Bauer** is a practice article focussed on the provision of an adult literacy program in a remote Indigenous community.

Gayle Jenkin reviews a new book titled *Continuing professional education (CPE) in Australia* by Barrie Brennan, and claims "… his narrative of the evolution of Professional Development (PD) in Australia presents the reader with a provocation, very aptly alluded to in the small print of the book's title 'A Tale of Missed Opportunity'". This timely book provides an extensive history of CPE in Australia, from the early days where practitioners reflected on their own practices, through to the lucrative industry it is today.

AJAL changes

A new Journal editor provides an opportunity for renewal and refreshing the editorial board and I am delighted to welcome several new members from Australia, the United Kingdom and South Africa, a sub editorial group and a new book editor. For the last 57 years, the production, reviewing and editing of AJAL has largely been done manually. In the last 6 months, we have introduced a new online journal management system, which makes the submission, reviewing and production process less time intensive. The AJAL is supported by the brilliant editorial and production assistance of Catherine Devlin.

Dr Tracey Ollis

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Australian Journal of Adult Learning

Call for papers for a special issue on: Lifelong learning and sustainable development

Adult Learning Australia (ALA) has declared 2018 to be a Year of Lifelong Learning. This raises many questions about why lifelong learning should be a priority. How might policy to promote lifelong learning develop? Are there particular outcomes that should be anticipated from a year focussed on lifelong learning? How can we get the various stakeholders for formal, non-formal and informal learning across various age levels to work together to promote a more coherent and engaged framework for all people to see themselves on a lifelong learning journey?

As part of its campaign for a national lifelong learning policy, ALA will devote the November issue of the *Australian Journal of Adult Learning* to this issue. The issue will be edited by guest editors, Mike Osborne (Glasgow University) and Bruce Wilson (RMIT University).

We invite academics, policy makers and practitioners to contribute articles on these and many other questions that might address the importance of lifelong learning, and its personal and social importance. Contributors might like to consider the importance of the Sustainable Development Goals (SDGs, the Agenda to 2030) when writing their article. Not only do the SDGs include a priority on promoting lifelong learning (in Goal 4, Education), but their achievement in relation to all

17 Goals depends on the effectiveness of lifelong learning in enabling citizens in all countries to understand the context and issues of all Goals, and also to enhance their capacity to act.

We are interested in contributions related to learning in any context, providing that their evidence and analysis contributes to understanding about the design or implementation of lifelong policy and its implementation.

We look forward to your contributions.

Guest editors:

- Bruce Wilson (European Union Centre, RMIT University);
- Michael Osborne (University of Glasgow).

Notes for prospective authors

Submissions for inclusion in the AJAL Special Issue should be between 6,000 and 7,000 words and conform to the AJAL Style, details of which can be found at: https://www.ajal.net.au/peerreview/index.php/ajal/about/submissions.

Submissions must be made online at www.ajal.net.au/peerreview before 31 May 2018 for publication in November 2018.

Further information about the special issue can be obtained by contacting Bruce Wilson at bruce.wilson@rmit.edu.au

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Enabling learners starts with knowing them: Student attitudes, aspiration and anxiety towards science and maths learning in an Australian pre-university enabling program

Joanne G. Lisciandro, Angela Jones, Peter Geerlings

Murdoch University

Pre-university enabling programs provide an important pathway to university for underprepared and disadvantaged students. In order to adequately prepare students for their university journey, enabling educators need to understand and respond to the evolving needs of their learners; not only their academic disparity, but also their past learning experiences and perceptions towards particular subjects. In the current study, students entering an Australian enabling program, 'OnTrack', were surveyed on their attitudes, emotions and aspirations towards the study of science and mathematics. Responses were associated with student perceptions of their past science and maths learning experiences. There was incongruity between student expectations of what future study would entail and the realities of their degree choices and career aspirations. This study suggests the need for social and emotional learning and teacher training. Greater attention should be given to both student's affective needs and their understanding of future course content during their enabling education experience to

redress negative emotional learning experiences and safeguard student expectations, satisfaction, and retention in the future.

Keywords: *enabling program, affective domain, attitudes, emotion, science, mathematics*

Introduction

Background

Over the past several decades, Australian universities have undergone significant transformation. Historically, a university education was reserved for the elite minority, however contemporary universities now provide more accessible tertiary qualifications for an increased proportion of the community and from a broader socio-cultural spectrum. This was, in part, driven by the Federal Government's widening participation agenda (Bradley, Noonan, Nugent & Scales, 2008) and the rise of non-traditional pathways to access university, including government-assisted enabling programs (Gale & Tranter, 2011). The Higher Education Support Act (2003), defines an enabling course as 'a course of instruction provided to a person for the purpose of enabling the person to undertake a course leading to a higher education award' (DotAG, 2003, p. 215). For universities, this describes pre-university courses originally designed to prepare mature-age and disadvantaged student groups for degree-level courses. However, an increasing number of students of school-leaving age are now also entering universities via enabling programs. Interestingly, these younger people include those who have not completed secondary schooling due to socio-cultural reasons (Ross & Gray, 2005), and those that Hodges, Bedford, Hartley, Klinger, Murray, O'Rourke and Schofield (2013, p. 16) suggest are 'becoming somewhat strategic and selecting enabling programs as a legitimate pathway for Higher Education'. Indeed, enrolments in *OnTrack*, the principal enabling program at Murdoch University in Perth, Western Australia, have increased steadily and considerably since its inception in 2008 (Lisciandro & Gibbs, 2016).

In parallel with increasing enrolments, the aspirations and undergraduate study choices of *OnTrack* pathway students also

diversified over time, with a higher proportion of students choosing to undertake undergraduate study in a variety of science, technology, engineering and mathematics (STEM) disciplines, instead of predominantly the arts and social sciences (Lisciandro & Gibbs, 2014). This is paradoxical given recent national trends indicating declining numbers of students pursuing STEM-related careers and tertiary study more broadly (Dobson, 2006). Similarly, the number of students taking non-compulsory secondary school science has also fallen in recent decades (Hassan, 2008). According to the 2006 Programme for International Student Assessment (PISA) report on scientific literacy in Australia, 'fewer students reported that they will use science when they are an adult' or believe that science has applications in their everyday lives (Thomson & De Bortoli, 2008). Mathematics is intimately entwined in science and technology, yet for years concerns have been raised about Australia's diminishing ability in maths and statistics, and there have been desperate calls for action to reverse a 'fatal course' for mathematical sciences in this country (Hughes & Rubenstein, 2006, p. 1). Indeed, the number of secondary school students choosing to study maths in their senior years has fallen over the last 20 years, and pre-requisite subjects have been removed as a barrier to degree choice at many Australian universities (Nicholas, Poladian, Mack & Wilson, 2015, p. 38).

It is incumbent that enabling programs prepare students for their chosen undergraduate studies, including STEM related courses. However, in order to adequately prepare students for the tertiary curriculum ahead, as well as design engaging and effective learning experiences during the enabling program, it is crucial that educators first know and understand their learners, and their learning needs (Hattie, 2009; Jones, Olds & Lisciandro, 2016b). Recognising and fulfilling the needs of learners may be complicated by large differences in student demographics, educational background, aspirations, interests and motivations (Hodges et al., 2013; Lisciandro & Gibbs, 2014, 2016). Further, enabling students arrive with diverse past learning experiences, some of which may have been negative or even traumatic, influencing student confidence, self-efficacy, beliefs, attitudes and anxiety around learning (Haylock & Manning, 2014; Klinger, 2008a). For example, some earlier research found that adult learners commencing enabling education had lower self-efficacy, negative attitudes and raised anxiety levels related to maths learning than commencing undergraduate students, 'manifesting in lack of confidence, apprehension,

and behaviours associated with reduced engagement with maths learning opportunities' (Klinger, 2008a, p. 204). This was linked with both negative past learning experiences and a history of educational disadvantage.

Addressing aspirations, attitudes and emotions amongst enabling program students

The *OnTrack* program is offered as a full-time, on-campus 14-week program delivered biannually across all regional and metropolitan campuses of Murdoch University. It comprises a single, fully integrated and multi-disciplinary curriculum that aims to develop student academic, transitional and socio-emotional learning skills (Jones, Lisciandro & Olds, 2016a). Over time, the program has been shaped in response to the changing needs and evolving demographic of commencing students (Jones et al., 2016b; Lisciandro & Gibbs, 2014). Notably, understanding our learners not only includes understanding their academic disparities, but also their past experiences and perceptions towards subjects, in order to develop and teach curriculum to redress negative emotional learning experiences.

Research shows that attention to student's affective needs is crucial to their learning. The affective domain includes 'feelings, emotions, attitudes, motivations and values' (van der Hoeven Kraft, Srogi, Husman, Semken & Fuhrman, 2011, p. 72) and forms a part of Bloom's Taxonomy of Educational Objectives (Savic & Kashef, 2013). The term 'attitude' refers to 'the tendency to respond to an object or situation in a favourable or unfavourable way' (Parnis & Petocz, 2016, p. 554). According to Osborne, Simon and Collins (2003, p. 1053), attitudes towards science encompass the 'feelings, beliefs and values about an object that may be the enterprise of science, school science, the impact of science on society or scientists themselves'. It has also been defined as the perceived usefulness of science, aspirations towards science as a career, and feelings towards having to study science in the curriculum (Hassan, 2008). Research suggests that a student's attitude towards a subject may affect their academic success by influencing behaviour, including effort regulation (Li, 2012; Parnis & Petocz, 2016). Further, emotions experienced by students in academic settings may affect student motivation, cognitive processes and academic performance, as well as students' psychological wellbeing (Pekrun, Goetz, Titz & Perry, 2002). Larkin and Jorgensen completed a study into primary school

mathematic experiences contending that 'having negative emotions or attitudes towards mathematics in these formative years may be creating potential for students to create a mathematics habitus that is not conducive to positive experiences of mathematics' (2016, p. 926). Their research stemmed from studies demonstrating that negative experiences with mathematics are linked with negative emotional responses such as anxiety, fear and embarrassment, consequently affecting student outcomes (Frenzel, Pekrun & Goetz, 2007a; Larkin & Jorgensen, 2016; Prawat & Anderson, 1994). Certain demographic characteristics such as female gender and increasing age are also associated with a higher likelihood of negative affective dispositions towards maths (Hill, Mammarella, Devine, Caviola, Passolunghi & Szűcs, 2016; Maloney & Beilock, 2012). In the university context, mature age students are more likely to experience lower levels of maths self-efficacy and increased maths anxiety than traditional school-leavers (Jameson & Fusco, 2014). Since early success in developmental and remedial mathematics courses at university influences student persistence, the importance of addressing affective factors as part of these student outcomes has been increasingly recognised (Benken, Ramirez, Li & Wetendorf, 2015).

The aim of the current study was to characterise the range of past learning experiences, attitudes, emotions and aspirations towards science and maths learning amongst a cohort of students entering an Australian pre-university enabling program. While this has been studied in other contexts (e.g. K-12 school students), affective dispositions towards science and maths learning in enabling contexts requires further attention. Additionally, strategies that address student affective needs, for example through incorporating opportunities for social and emotional learning, are also explored herein. Given national trends in science and maths literacy, understanding students' affective as well as cognitive needs, particularly amongst enabling student cohorts that are likely to have experienced educational disadvantage, will better inform future curriculum design as well as teaching and learning practices in this and similar programs across Australia.

Methods

Study design

Permission was granted by the Human Research Ethics Committee at Murdoch University (Approval No. 2014/032) to conduct a paper-based

survey with all *OnTrack* students who enrolled in the program during its two iterations in 2014. The purpose of this survey was to ascertain pre-existing student attitudes, emotions, aspirations and motivation towards studying science and numeracy upon entering the *OnTrack* program. The survey was checked for face validity (ease of use, clarity and readability) before administering.

The anonymous survey was conducted early in the 14-week program (Week 3) and prior to student exposure to any science or numeracy content. The survey was voluntary and no *OnTrack* staff or researchers were present in the room during the process to minimise risks related to non-consent. Completed surveys were collected by a student representative from each class and deposited into a secure assignment box on campus for later retrieval by researchers. Survey responses were transcribed into an electronic database (Microsoft Excel).

Data analysis

The surveys collected nominal and ordinal data (quantitative information), and qualitative responses. All statistical analyses of quantitative data were undertaken using Statistical Package for Social Sciences (SPSS), version 24.

Negative past learning experiences were defined as those rated as 'not good' or 'horrible', neutral past experiences defined as those rated as 'ok', and positive past experiences were defined as those rated as 'good' or 'excellent' by respondents. A semantic approach using Braun and Clarke's (2006, pp. 87-93) first five (of six) phases of thematic analysis was selected to qualitatively examine the language used to describe the reasons for student ratings of their past experiences. A 'semantic' approach rather than 'latent' was utilised, as the focus of this analysis was on student comments (Braun & Clarke, 2006, p. 84). A research assistant who was not involved in the original research collection phase conducted the first three analysis phases to avoid research bias. This involved reading and re-reading the student survey answers (phase 1), and coding the language features (phase 2). Qualitative responses were classified into categorical data where appropriate using NVivo (version 11), and a word frequency query was run to determine frequently used terms, which could then be categorised into loose themes. Synonyms for these terms were used to expand the list of terms. The responses were

then re-read for themed terms and coded. From here the coded data was grouped into more refined key themes (phase 3). The research assistant and researchers then mapped and reviewed themes and coding (phase 4), and finally themes were named and defined (phase 5) before a final report could be written.

Commencing *OnTrack* students were asked about their feelings regarding the prospect of future science and maths learning as an indicator of pre-existing attitudes and emotional responses towards science and maths education. Students could nominate as many terms that captured their feelings, or write down others not listed. Correlating response patterns (see Tables 1 and 2) suggested that students could be broadly categorised into three main groups which were not necessarily mutually exclusive: (1) those expressing negative attitudes by indicating that they were 'not interested', 'unhappy' and/or 'uncomfortable'; (2) those expressing positive attitudes by indicating that they felt 'motivated', 'interested', 'happy' and/or 'excited'; and (3) those expressing an anxiety/fear/stress response by indicating that they felt 'scared', 'anxious' and/or 'overwhelmed' by the prospect of future science or maths learning. Negative attitude response patterns generally correlated with anxiety/fear/stress response patterns, and inversely correlated with positive response patterns. These correlating response patterns indicate the reliability (i.e. degree of internal consistency and repeatability) of this measure.

Table 1: *Feelings towards the prospect of future science education in commencing* ***OnTrack*** *students: correlating responses reveal "negative" and "positive" attitude, and "anxiety/fear/stress" response patterns*

Correlations between responses[1,2]	Student responses to the question: *"In general, what is your overall feeling/s towards the prospect of studying science? (tick as many of the responses that apply to you)"*										
	Motivated	Interested	Happy	Not interested	Unhappy	Uncomfortable	Scared	Anxious	Overwhelmed	Don't care	Not sure
Excited	0.525***	0.351***	0.431***	-0.227***	-0.149**	-0.194***	-0.023	0.063	-0.048	-0.214***	-0.211***
Motivated	X	0.344***	0.381***	-0.244***	-0.150**	-0.195***	0.023	0.025	-0.032	-0.216***	-0.241***
Interested		X	0.302***	-0.475***	-0.258***	-0.299***	0.005	0.120*	-0.043	-0.295***	-0.243***
Happy			X	-0.182***	-0.087	-0.157**	0.007	0.029	-0.015	-0.083	-0.149**
Not interested				X	0.214***	0.183***	-0.032	-0.017	0.117*	0.226***	0.055
Unhappy					X	0.333***	0.266***	0.155**	0.180***	0.078	0.045
Uncomfortable						X	0.266***	0.270***	0.182***	0.044	0.048
Scared							X	0.352***	0.316***	-0.047	0.005
Anxious								X	0.267***	-0.071	0.029
Overwhelmed									X	0.051	0.056
Don't care										X	0.154**
	Positive attitude response pattern			***Negative attitude response pattern***			***Anxiety/fear/stress response pattern***			*Other responses*	

[1] Significant associations at the p<0.05 level are highlighted in grey; dark grey indicates a positive correlation and light grey indicates a negative/inverse correlation. Note: not corrected for multiple comparisons, thus exercise discretion in the interpretation of results.
[2] Phi correlation coefficients are reported in order to assess the relationship of dichotomous with other dichotomous variables. Association data not replicated on the bottom left of the table.
* indicates 2-sided p-value <0.05
** indicates 2-sided p-value <0.01
*** indicates 2-sided p-value <0.001

Table 2: *Feelings towards the prospect of future maths education in commencing OnTrack students: correlating responses reveal "negative" and "positive" attitude, and "anxiety/fear/stress" response patterns*

Correlations between responses[1,2]	Student responses to the question: *"In general, what is your overall feeling/s towards the prospect of studying mathematics? (tick as many of the responses that apply to you)"*										
	Motivated	Interested	Happy	Not interested	Unhappy	Uncomfortable	Scared	Anxious	Overwhelmed	Don't care	Not sure
Excited	0.504***	0.336***	0.409***	-0.208***	-0.131**	-0.173***	-0.027	0.011	-0.030	-0.162**	-0.142**
Motivated	X	0.332***	0.373***	-0.249***	-0.185***	-0.226***	-0.001	-0.010	-0.045	-0.171***	-0.163**
Interested		X	0.320***	-0.401***	-0.276***	-0.272***	-0.102*	-0.023	-0.089	-0.196***	-0.147**
Happy			X	-0.157**	-0.151**	-0.201***	-0.130**	-0.217***	-0.044	-0.022	-0.157**
Not interested				X	0.415***	0.247***	0.091	0.048	0.137**	0.243***	0.006
Unhappy					X	0.487***	0.263***	0.129**	0.271***	0.064	-0.073
Uncomfortable						X	0.338***	0.260***	0.367***	-0.025	-0.060
Scared							X	0.378***	0.355***	-0.123*	0.003
Anxious								X	0.331***	-0.156**	0.005
Overwhelmed									X	0.027	-0.046
Don't care										X	0.044
	Positive attitude response pattern			***Negative attitude response pattern***			***Anxiety/fear/stress response pattern***			*Other responses*	

[1] Significant associations at the p<0.05 level are highlighted in grey; dark grey indicates a positive correlation and light grey indicates a negative/inverse correlation. Note: not corrected for multiple comparisons, thus exercise discretion in the interpretation of results.
[2] Phi correlation coefficients are reported in order to assess the relationship of dichotomous with other dichotomous variables. Association data not replicated on the bottom left of the table.
* indicates 2-sided p-value <0.05
** indicates 2-sided p-value <0.01
*** indicates 2-sided p-value <0.001

In order to measure the degree of correlation between two binary variables, phi correlation coefficients were used. Where frequency data are reported, Pearson Chi-square ($\chi 2$) analyses were undertaken to investigate associations. Associations were considered statistically significant if p-values were less than 0.05.

Findings

Cohort demographics and student response rate

Of the students enrolled in the *OnTrack* program at the point of administering the survey, 59% (300/509) were female and 38% (185/509) attended one of the university's regional campuses. Fifty eight per cent (296/509) of students were aged 19 years or younger, 29% (147/509) were aged 20–29 years, 6.5% (33/509) were aged 30–39 years, and 6.5% (22/509) were aged 40 years or older. Thirty per cent (153/509) of the cohort were from low SES backgrounds and 9% (47/509) were from non-English speaking backgrounds.

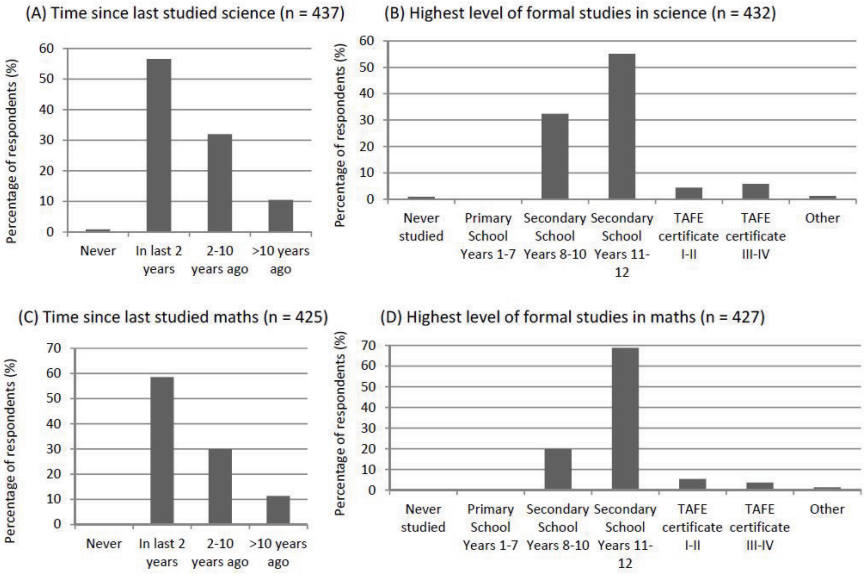
The response rate to the surveys was 89% (287/324) in the first iteration, and 82% (152/185) in the second iteration of the program during 2014. The response rate overall was 86% (439/509).

Past learning experiences of the respondents

The past educational experiences of students in relation to science and maths learning were diverse, as shown in Figure 1. More than half of students had studied science or maths in the two years that preceded their *OnTrack* enrolment, whilst approximately one third of respondents indicated that they had not studied these subjects for more than 2 years (but less than 10 years) and around a tenth of the respondents had not studied these subjects for more than 10 years. A small number of respondents (less than 1%) indicated that they had never studied science or maths (Figure 1a/c).

In terms of highest level of formal studies in science or maths (Figure 1b/d), most respondents indicated that they had studied science and maths in secondary school. However, 32% and 20% of students had ceased studying science and maths, respectively, between Years 8–10. Approximately one tenth of respondents indicated that they had studied science or maths in Technical and Further Education (TAFE), and a small number (approximately 1% or less) had either never studied or had not progressed with their studies beyond primary school.

Figure 1. The diversity of past educational science and maths experiences of *OnTrack* students



Respondents were also asked to rate their past learning experiences (Table 3). In relation to past science learning, 17% of respondents indicated that they had negative experiences (rated as 'horrible' or 'not good'), 41% perceived their experiences as positive (rated as 'good' or 'excellent') and 41% rated their past learning experiences as 'ok' (i.e. neutral). Regarding past maths learning, 26% indicated their experiences to be negative, 41% indicated positive experiences and 32% rated their experiences as 'ok' (neutral).

Table 3. *Student ratings of past science and maths learning experiences*

	Rating by respondents*					
	Horrible	**Not good**	**Ok**	**Good**	**Excellent**	**N/A**
Past science learning	22 (5%)	53 (12%)	176 (41%)	135 (31%)	44 (10%)	5 (1%)
Past maths learning	38 (9%)	73 (17%)	139 (32%)	139 (32%)	38 (9%)	2 (1%)

**Counts and row percentages are shown*

Students were asked open-ended questions about the reasons for rating their past learning experiences as negative, positive or neutral. The themes emerging from the thematic analysis were: 'teacher quality', 'interest level', 'enjoyment level', 'academic outcomes', and 'conceptual understanding'. These were then analysed in relation to student ratings of past experience in both science and maths (Table 4). The dominant theme of 'teaching quality' was apparent in the analysis of responses to past experiences in science, and was most prevalent in those responses from students with 'positive' past experiences. There was also a correlation between students who cited a positive 'teacher quality' – namely good or quality teachers – with a theme of 'enjoyment' (n=15). Many of these responses cited teacher engagement and the teacher making the topics fun and enjoyable: *'Exceptional teacher. Thorough explanations – yet simple to understand. Didn't rush students along'* (Respondent (R) 154); *'Teachers made it fun, interesting and relevant'* (R329) and *'Fun teachers, hands on and interesting'* (R165). Additionally, there were students who fell into the 'neutral' experience category and cited reasons such as the subject was 'hard' or 'difficult' but they also noted that it was the teacher who helped them to get through. For example: *'hard to understand but passed due to good teacher'* (R275). Both poor teaching and students' conceptual understanding of science was cited by a subset of students (n=8), with respondents commenting: *'The teacher I had*

did not care if people in the class were falling behind, he wouldn't slow down or stop if you missed something or didn't understand' (R70) and *'I never really understood it and it wasn't really taught to me properly. I was in a big class in high school and there was a selected few the teachers were willing to help'* (R361). 'Interest' in science was the second dominant theme, and while there were some students who suggested this was influenced by their teachers (positively n=9 and negatively n=1), this theme was dominated by general student interest in the area. The most significant finding in this analysis is the impact of teacher quality on student experiences and their perceptions of science. Notably, academic outcomes did not feature prominently as a rationale for negative or positive ratings of past experiences in learning science.

Table 4: *Student ratings of past science and maths learning experiences, and associated reasons provided**

	Main reasons indicated					
Rating of past *science* learning experiences	Teacher quality	Interest level	Enjoyment level	Academic outcomes	Conceptual understanding	Total respondents
Negative	16 (26%)	11 (18%)	13 (21%)	5 (8%)	15 (25%)	61
Neutral	21 (16%)	23 (18%)	31 (24%)	3 (2%)	23 (18%)	131
Positive	49 (33%)	40 (27%)	65 (43%)	6 (4%)	21 (14%)	150

	Main reasons indicated					
Rating of past *maths* learning experiences	Teacher quality	Interest level	Enjoyment level	Academic outcomes	Conceptual understanding	Total respondents
Negative	13 (22%)	8 (14%)	16 (27%)	3 (5%)	32 (54%)	59
Neutral	20 (33%)	9 (15%)	20 (33%)	7 (11%)	22 (36%)	61
Positive	19 (21%)	9 (10%)	31 (34%)	9 (10%)	21 (23%)	92

**Counts and row percentages are shown. Note: more than one theme may have been identified in student responses. The total number of respondents is also shown.*

In regards to past learning experiences in maths (Table 4), 'teacher quality' and 'enjoyment' levels were dominant related themes across all student responses. There was a closer relationship between the themes of 'interest', 'enjoyment' and 'conceptual understanding' for students who had negative or neutral past experiences, with significantly more students noting 'struggles' or 'difficulties' with 'understanding' the topic and 'concepts'. Student responses included such remarks as *'Find maths hard'*

(R261), *'Mathematics was one of the subjects I wasn't fully successful in and found it hard to understand'* (R364), and *'It becomes confusing if you don't fully understand the concepts'* (R108). Teacher quality was again a significant theme in this analysis, with responses indicating that the teacher was 'boring', or did not explain the subject matter. For example: *'Was never great at understanding it. Teacher didn't help at all'* (R184), *'Teachers weren't explaining things properly throughout my high school experience which made it that little bit harder to focus and understand'* (R156), or *'Not a great teacher, could not explain information in alternative ways. Teacher not available for clarification or extra time'* (R331). Another student stated *'When it comes to maths teachers really need to be willing to put time and effort into making sure students understand how things work. Teachers often don't do this, possibly because they have a lack of time or motivation'* (R80). The most significant theme from those who had a positive learning experience in maths came from those who noted personal enjoyment from maths.

Associations between past learning experiences and attitudes, confidence and aspiration in commencing OnTrack students

Respondents were asked to specify their overall feelings towards the prospect of studying science or maths in the future, as an indicator of existing attitudes and emotions around science and maths learning amongst the entering student cohort. Students could select as many responses that captured how they felt, or specify others not listed. Generally, student replies to this question revealed correlating response patterns, which could be broadly classified as suggesting 'positive attitudes', 'negative attitudes', 'anxiety/fear/stress' and 'other' (see Tables 1 and 2). These response patterns were compared with student ratings of past learning experiences (Table 5). Negative perceptions of past science and maths learning experiences significantly correlated with current negative attitudes and anxiety/fear/stress responses to the prospect of future science or maths education. Conversely, students who rated their past maths and science learning experiences as positive were more likely to have indicated positive attitudes, but not negative attitudes or anxiety/fear/stress responses towards the prospect of future science or maths learning. In summary, past science and maths learning experiences appear to be associated with existing student attitudes and anxiety about the prospect of studying these subjects again in future.

Table 5: *Attitudes and feelings towards the prospect of future learning correlates with ratings of past learning experiences in commencing* ***OnTrack*** *students*[1]

	Attitudes towards the prospect of future science learning		
Rating of past *science* learning experiences	Negative	Positive	Anxiety/fear/ stress response
Negative	**0.382*****	**-0.342*****	**0.238*****
Neutral	0.022	-0.089	-0.045
Positive	**-0.315*****	**0.351*****	**-0.138****

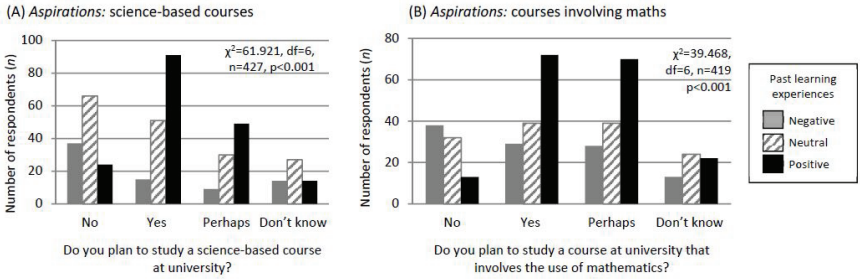
	Attitudes towards the prospect of future maths learning		
Rating of past *maths* learning experiences	Negative	Positive	Anxiety/fear/ stress response
Negative	**0.428*****	**-0.343*****	**0.306*****
Neutral	0.023	-0.093	0.080
Positive	**-0.402*****	**0.393*****	**-0.348*****

1 Phi correlation coefficients are reported (n = 420-422). Correlations significant at the 5% level are highlighted in boldface.
*** indicates 2-sided p-value <0.01*
**** indicates 2-sided p-value <0.001*

Students were also asked about their aspirations for future study and whether they planned to study a science-based course or a course involving maths at university. Thirty per cent (127/427) of students indicated that they did not have science in their plans for future study, 37% (157/427) indicated that they did plan to study science and the remaining 33% indicated that 'perhaps' they will study science (88/427) or that they did not know (55/427). Students who perceived their past science learning experiences as negative were significantly less likely to have science in their future study plans (10% or 15/157 respondents), than students who had positive past learning experiences (58% or 91/157 respondents; Figure 2a).

When asked whether their future study plans involved the use of maths, 20% (83/419) of respondents answered 'no', 33% (140/419) answered 'yes', 33% (137/419) answered 'perhaps' and the remaining 14% (59/419) indicated that they did not know. Similar to the trend observed for science aspiration and past experiences, student perceptions of prior maths learning experiences too were significantly associated with aspirations for courses involving the use/study of maths in future (Figure 2b).

Figure 2. Past science and maths learning experiences influence student aspirations for future study



Of note, ratings of past learning experiences significantly correlated with the pursuit of science or maths education prior to student enrolment in OnTrack (Table 6). Students who had positive past learning experiences were more likely to have studied science and maths at higher levels (Secondary School Years 11–12 and TAFE) than students who perceived their past learning experiences as negative. Taken together, these results suggest a tendency towards avoidance behaviour, both in the present and in the past, for those that had negative educational experiences related to these subjects.

Table 6: *Rating of past learning experiences correlate with the pursuit of science and math education prior to having enrolled in the* ***OnTrack*** *program*

	Highest level of science studied prior to enrolling in OnTrack[1,2]				
Rating of past *science* learning experiences	Primary School Years 1-7	Secondary School Years 8-10	Secondary School Years 11-12	TAFE	Other
Negative	0 (0%)	40 (55%)	25 (34%)	6 (8%)	2 (3%)
Neutral	1 (1%)	65 (37%)	89 (51%)	17 (10%)	1 (1%)
Positive	0 (0%)	33 (19%)	122 (69%)	19 (11%)	2 (1%)

	Highest level of science studied prior to enrolling in OnTrack[1,3]				
Rating of past *math* learning experiences	Primary School Years 1-7	Secondary School Years 8-10	Secondary School Years 11-12	TAFE	Other
Negative	2 (2%)	36 (33%)	63 (57%)	7 (6%)	2 (2%)
Neutral	0 (0%)	27 (20%)	100 (72%)	11 (8%)	0 (0%)
Positive	0 (0%)	21 (12%)	130 (74%)	21 (12%)	4 (2%)

1 Counts and row percentages are shown.
2 Pearson Chi-square test statistic ($\chi 2$) = 38.846, df = 8, p<0.001; n = 422.
3 Pearson Chi-square test statistic ($\chi 2$) = 29.133, df = 8, p<0.001; n = 424.

Respondents were also asked to write down the name of the course that they planned to study. Of note, there appeared to be a substantial mismatch for some students in their answers to these questions. For example, a number of students indicated that they did not plan to study a course involving science or maths at university, but listed an undergraduate degree that was either science-based or involved learning/using maths, respectively. Furthermore, a large number of students appeared uncertain about whether their study plans involved science or maths answering 'perhaps' or 'don't know' to the question (Table 7).

Table 7: *Undergraduate course nominated versus student perceptions of whether their study plans are going to involve studying science or maths*

		Undergraduate course*				Undergraduate course*	
		Not science-based	Science-based			Does not involve maths	Involves use of maths
'Do you plan to study a *science-based* course at university?'	No	85	5	'Do you plan to study a course at university that involves the use of *maths*?'	No	40	22
	Yes	3	144		Yes	15	102
	Perhaps	17	39		Perhaps	30	68
	Don't know	14	13		Don't know	10	28

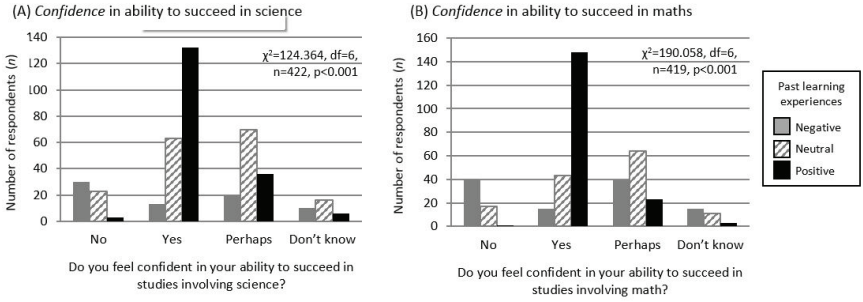
**Counts are shown. Only students who listed the specific undergraduate course that they planned to study are included here.*

For the 22 respondents who indicated that they were not intending to study a course at university involving the use of maths, but listed an undergraduate course that will, in reality, involve the use of maths, the most common courses listed were: (a) science majors (54% or 12/22) such as Biomedical Science, Animal Science, Biology, Physiology, Sports Science or Environmental Science; (b) Psychology (27% or 6/22); and (c) Nursing (9% or 2/22). Of note, negative past maths learning experiences (10/21), maths anxiety/fear/stress responses (11/22) and negative attitudes towards the prospect of future maths learning (15/22) was pervasive amongst this subset of students. This suggests that not only were their expectations inconsistent with reality, but they may be at a higher risk of being dissatisfied with, and experiencing barriers to, their future study/career plans in the longer term.

Survey respondents were also asked to self-report on whether they felt confident in their abilities to succeed in studies involving science

or maths as an indicator of their self-efficacy beliefs. More students signalled that they felt confident in their ability to succeed in science education (49% or 208/422) than not (13% or 56/422). Similarly, 49% (206/419) of respondents were confident and 14% (58/419) of respondents lacked confidence in their ability to succeed in maths education. However, a large proportion of students did not appear to be sure whether they were confident (answering 'perhaps' or 'don't know'). Student confidence levels were compared with student ratings of past learning experiences. Students who held positive perceptions of their past learning experiences were significantly more likely to feel confident in their ability to succeed in future, whilst students who reported negative past experiences were more likely to indicate that they were not confident (Figure 3).

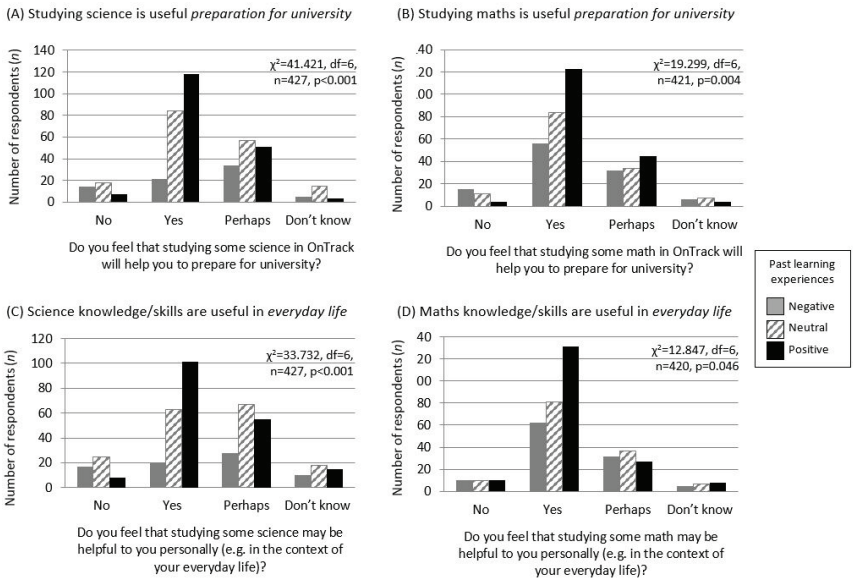
Figure 3. Past science and maths learning experiences influence student self-perceptions of confidence



Associations between past learning experiences and perceptions about usefulness of science and maths learning in commencing OnTrack students

Students were questioned about their perceptions of the value of studying science and maths during *OnTrack*, both for university preparation and for assisting them personally in the context of their everyday lives. Whilst most students felt that studying science or maths was likely to be useful or helpful to them for these purposes, perceptions of usefulness differed significantly depending on student ratings of their past learning experiences. Positive past learning experiences were associated with an increased propensity for students to identify the value of studying science or maths, whilst negative past experiences were associated with a decreased propensity (Figure 4).

Figure 4. Past learning experiences correlate with perceptions about the usefulness of studying science and maths in the *OnTrack* course for (A/B) preparation for university and (C/D) in the context of everyday life.



Discussion

Pre-university students entering the Western Australian enabling program, *OnTrack*, were characterised by diverse science and maths attitudes, beliefs, feelings, aspirations, and confidence, which appeared to stem from their past learning experiences. For example, students with negative perceptions of their early learning experiences tended towards avoidance of these subjects, expressing adverse attitudes, reduced confidence and increased anxiety. They were also less inclined to see the value of science and maths education. The opposite was true for those with positive early learning experiences. These results are in line with previous findings in both the enabling education (Klinger, 2006, 2008a) and university context (Klinger, 2008b).

The quality of the classroom teaching and learning experience appeared to be especially important and influential on how students perceived and rated their past learning experiences. In particular, students mentioned 'the teacher' frequently, and this correlated with reported levels of interest and enjoyment experienced, as well as their understanding of

concepts. These findings are consistent with research which shows that candidate teachers enter university with diverse attitudes towards maths, which they carry into their careers and propagate to the next generation of students (Philippou & Christou, 1998). This may occur, at least in part, by the transmission of emotions between teachers and students in the classroom, which consequently modulate students' 'learning-related motivation, self-regulatory efforts, activation of cognitive resources and performance' (Frenzel, Goetz, Lüdtke, Pekrun & Sutton, 2009, p. 705). Although, we have not studied the relationship between past learning experiences, student affect and demographic variables in the current study, a previous study suggests that teachers with maths anxiety may influence the maths beliefs and achievement of female but not male students (Beilock, Gunderson, Ramirez & Levine, 2010). Interestingly, although early learning experiences can have long-lasting impacts on student affect, aspiration and achievement, research shows that it is possible to successfully challenge and redress long-held negative student attitudes, perceptions and emotions (Frenzel et al., 2009; Klinger, 2006).

Implications for future teaching and learning in enabling programs: Overcoming the legacy of negative early learning experiences

Research indicates that students experience a wide range of emotions, attitudes and motivations in learning situations, yet the affective domain has traditionally received little attention when planning for teaching and learning across most disciplines, including in science and maths (Frenzel et al., 2007a). Here, we consider a variety of strategies that educators may incorporate when designing curricula and pedagogy related to science and maths that aims to address not only the cognitive, but also the affective, needs of students transitioning to university via an enabling program. Given there are known constraints that need to be taken into account when designing enabling curricula (e.g. time, resourcing, teacher expertise/training, student cohort sizes and modes of delivery), the following discussion provides ideas for consideration rather than a single approach.

Addressing attitudes and emotional reactions toward maths and science as part of a holistic curriculum that incorporates social and emotional learning (SEL) could be one way of supporting those students with negative experiences or negative perceptions of these discipline areas. Evidence shows that SEL leads to improved academic outcomes,

confidence, resilience, attitudes and motivations towards learning (Durlak, Weissberg, Dymnicki, Taylor & Schellinger, 2011; Zins, Bloodworth, Weissberg & Walberg, 2004). A method of embedding SEL within curricula is to include opportunities for transforming students' beliefs and attitudes associated with learning towards a 'growth mindset'; an idea pioneered by Dweck and colleagues (Dweck, 2009, 2010, 2012). Dweck suggests that people with 'fixed' learner mindsets believe that intelligence is an inborn trait and tend to engage in behaviour that is self-limiting for their learning, such as avoidance. People with growth mindsets instead believe that intelligence is developed and that learning requires effort and strategy (Dweck, 2010, 2012). Although the impact of explicitly teaching growth mindset practices has not been well defined in adult learning contexts, in one study it improved student motivation, resilience, self-efficacy and self-esteem, and led to higher engagement and academic achievement (Cutts, Cutts, Draper, O'Donnell & Saffrey, 2010). Further, in our own enabling program, 89% of OnTrack students reported a positive impact on their overall academic growth and development, including transformation of beliefs and attitudes towards learning, after including this in the curriculum (Jones et al., 2016a). Thus, teaching students to challenge any existing fixed mindsets and cultivate a growth mindset may be one strategy to successfully shift negative attitudes towards maths and science, and boost their self-concept and self-efficacy. Notably, it is also important to provide training for teaching staff on learning mindset theory to increase self-awareness of their own mindsets and attitudes towards maths and science, so they do not inadvertently propagate their own negative perceptions. Other SEL interventions that have been found to be effective include fostering students' metacognition (Ee, 2009), emotional intelligence, reflective capacity and self-awareness (Jones et al., 2016a; Lisciandro, Jones & Strehlow, 2016), introducing students to strategies for developing resilience/'grit' (Duckworth, Peterson, Matthews & Kelly, 2007) and managing stress/anxiety through techniques like mindfulness (Langer, 2016). Notably, this is not assuming that students are operating from a deficit model, but recognises that reminding or upskilling all students and practitioners in these practices is one technique that is showing positive impact.

Of all disciplines of study, mathematics appears to elicit the strongest emotions amongst students, particularly anxiety, and this is associated

with the perceived amount of difficulty or confusion experienced during previous learning experiences (Frenzel et al., 2007a; Prawat & Anderson, 1994). Prawat and Anderson (1994, p. 219) suggest that this 'points to a problem which may be endemic to how we teach mathematics: a strong performance orientation'. Similarly, Klinger (2011, p. 10) suggested that traditional forms of instruction and conventional pedagogies 'echoing negative early encounters in the mathematics classroom' are ineffective for adult learners and only 'serve to validate the student's poor perceptions'. In implementing a 9-week mathematics foundation course as part of an enabling program, Klinger (2006, p. 166) demonstrated that pervasive negative perceptions towards maths can be successfully challenged when teaching and learning experiences are constructed 'from a deliberate ethos that anticipates negative attitudes, low self-efficacy beliefs, and some level of mathematics anxiety'. This included seeking to change the relationship students have with maths by; (a) explicitly addressing maths anxiety and the pre-conceptions that underpin negative self-efficacy beliefs, (b) demonstrating maths learning as a *process*, and (c) demystifying the 'doing' of maths by emphasising maths as a *language*. Further, he stresses that careful selection of empathetic and enthusiastic staff, and provision of a supportive learning environment where students can risk making mistakes without shame or judgement, is essential (Klinger, 2006). Indeed, research shows that the perceived learning environment significantly influences student emotion, value beliefs, motivation and achievement (Frenzel, Pekrun & Goetz, 2007b; Meyer & Turner, 2006) and requires significant attention in order to overcome barriers to learning, such as fear, for those who previously experienced trauma during their learning (Perry, 2006). Further, teacher enthusiasm can mediate the transmission of positive emotions like enjoyment to the student, independent of whether the student enjoyed maths in the past (Frenzel et al. 2009). Therefore, focussing on student mastery rather than performance, and cultivation of a positive and supportive learning environment, may serve to halt negative student perceptions and emotions carried into their enabling education experience as a result of past learning. This has some implications for practice in enabling programs, particularly those with interdisciplinary curricula that demand diverse teachers. Creating an environment where staff are encouraged to share and attend to their own strengths and weaknesses and develop strategies through professional development, mentoring and engaging in a community of practice may contribute to improved outcomes for students.

Designing teaching and learning using relevant, authentic and real-life contexts may be another way to foster student engagement and challenge negative perceptions and value beliefs about the utility of science and maths learning among pre-tertiary learners. In science, some labels to this approach have included 'everyday science' (Feinstein, 2009), 'humanistic–cultural aspects of science' (Aikenhead, 2004) and 'citizen science' (Jenkins, 2011), with a common aim of producing competent and critical citizens who can 'access and interpret science in the context of complex, real-world problems' (Feinstein, Allen & Jenkins, 2013, p. 316). This is in contrast with conventional approaches to science education which tend to be dominated by the 'pipeline' ideology – that is, teaching scientific facts and principles in a decontextualised fashion in order to deliver 'science-ready' students to universities (Feinstein et al., 2013). This approach ignores the fact that not all students who study science want to be pipelined into science-based careers and as a result, students may lose interest and form negative attitudes when 'they feel science is not relevant to their lives or they are simply not good at science' (Jenkins, 2011, p. 501). Feinstein (2009, p. 766) asserts that 'the best way to encourage long-lasting interest in science, especially amongst students traditionally considered most difficult to reach, is to reveal how science can be a tool for meeting one's own goals'. This includes demonstrating how 'science education can help people solve personally meaningful problems in their lives, directly affect their material and social circumstances, shape their behaviour, and inform their most significant practical decisions' (Feinstein, 2011, p. 169). Similarly, situating mathematical problems within meaningful and realistic contexts is also important to facilitate learning (Ginsburg & Gal, 1996; Kemp, 2009). Notably, a curriculum that allows learners to engage with the concepts in the context of their own lives may also foster opportunities for a change in their frame of reference (perspective, value, belief or point of view), resulting in transformative learning (Lisciandro & Gibbs, 2014; Mezirow, 1997).

Addressing dissonance between student expectations and the realities of degree choice and career aspirations

An interesting finding in our study was that many students enrolling in enabling education appeared to have misconceptions and/or uncertainties about the realities of their degree choice and career

aspirations. One explanation for this is that students are not researching or being provided with adequate and detailed information about course content prior to attempting university entrance. Alternatively, students might have preconceived ideas about the work conducted or the role of a graduate from their chosen course, thereby overlooking the detail of the course content (O'Donnell, 2011). Perhaps they fail to appreciate the relevance of mathematics or science in the context of their course. For example, in their study of nursing students, Caon and Treagust (1993) found that some students failed to see how learning science was relevant to the nursing profession. The commodification of higher education in Australia has created a competitive marketplace, resulting in some students choosing courses based on employability and career prospects over their personal interest in the subject (Maringe, 2006), and the removal of pre-requisite subjects at many universities (Nicholas et al., 2015) is likely to add confusion over what subject-knowledge might be expected at commencement and during a chosen degree.

In our study, students who believed that mathematics was not needed in the context of a science, nursing or psychology degree, also tended to have a history of negative past maths experiences, negative maths attitudes and maths-anxiety. It is not clear whether the dissonance between student expectation and reality in this instance is related to student affect and/or poor past experiences, although Ozga and Sukhnandan (1998) suggest that student expectations are generally shaped by prior educational and life experiences. Importantly, 'students who experience dissonance between expectations and experiences, are more at risk of withdrawal from higher education' (O'Donnell, 2011, p. 54). Therefore, this study suggests that, as well as teaching in the affective domain, there is a need for enabling programs to increase student awareness of the skills and knowledge demanded by their chosen course and/or career in order to safeguard student expectation, satisfaction and retention in the longer term.

Conclusion

Students entering enabling programs are characterised by diverse affective responses in relation to science and math learning that stem from previous educational experiences, and continue to influence aspiration, confidence and expectations of future study. Greater attention to students' affective needs, for example through addressing

social and emotional learning, may create more positive and engaging learning experiences that better prepare students for their transition to university studies.

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What should be considered when designing and developing a counselling course for adults from diverse professional and cultural backgrounds?

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Increased demand for counselling services has escalated the need for quality counsellor education programs. Striving to achieve quality in course design is a process not often articulated publicly. To address this gap, the design and development of a counsellor education course is described and includes the sources of knowledge that influenced its design and the step-by-step development of the program. Challenges designers met are discussed, as well as the ways in which these challenges were met through collaborative problem solving.

Keywords: *adult, counselling, design, development, education, diverse, cultural, professional*

Introduction

The purpose of this article is to describe the rationale and processes required to develop a faculty teaching program offered to adults planning to become counsellors. The teaching program was planned

to be delivered in Australia, Singapore and Hong Kong, and included significant online components. Background information is provided about one of the key decisions faced by program developers. This is followed by details of the chief sources that influenced group thinking prior to designing the course, the delivery modes of the program, teaching methods and some general information about the course structure itself, including the identification of challenges faced in the design of the course and the expected impact that this program will have on the preparation of the students. The evaluation of course outcomes will be left to future articles. As this article focuses on the challenges involved in the design and development of the course it is aimed at two audiences: academics interested in designing and developing their own courses and practitioners and professional organisations interested in contemporary counsellor education.

Background to design decisions

The Masters of Counselling program was designed to meet a need originating from people employed in a wide variety of professional settings such as human resources, health, social work, justice and education. While some wish to change their career, many students seek to build on their existing skills or to learn new skills to use in their existing work environment. Indeed, a groundswell of interest from individuals, without a psychology background, who wished to learn counselling skills for use in a wider range of settings than typical psychology trainees, formed the original impetus for the development of the course. In previous years, all applicants were required to have a minimum of four years of Australian Psychological Accreditation Council (APAC) study in psychology before being eligible to apply for a Masters in Counselling course. As a result, an entirely new course was designed rather than restructuring of an existing course.

A key decision was to accept students from diverse academic backgrounds other than but also including psychology. As such, it was essential to define what was understood about the role of a counsellor and how being a counsellor was distinguished from other mental health professionals. Although the terms “counselling” and “psychotherapy” are sometimes used synonymously (e.g. British Association for Counselling and Psychotherapy [BACP], Corey, 2013), an attempt to form a clear distinction between these practices based on their different

histories, development and focus was made. Psychotherapy arose from psychological theories beginning with psychoanalysis, predominately from the medical profession, and was targeted towards the treatment of mental illness. In contrast, counselling arose from educational, vocational and voluntary sectors, with the intention of assisting individuals with problems in everyday living (McLeod, 2013; Neukrug, 2016; Reeves, 2013). Like McLeod (2013), we argue that counselling should be concerned as much with the development of the therapeutic relationship as specific counselling techniques, which reflects the impact of humanistic theory on counselling since the 1950s. Our valuing of the therapeutic relationship and life challenges, some of which are adverse (i.e. personal transitions, relationship stress and vocational issues), rather than severe mental illness, is in line with the American Counselling Association definition of counselling, which is defined as: "a professional relationship that empowers diverse individuals, families, and groups to accomplish mental health, wellness, education, and career goals" (Kaplan, Tarvydas, & Gladding, 2014, p. 366).

Complicating the distinction between counselling and psychotherapy is that these activities are related to, but not the same as, the practice of a counsellor and a psychologist; the term "psychotherapist" is not associated with any specific field of mental health and does not help to distinguish the role of a counsellor (Neukrug, 2015). Indeed, some psychologists practice counselling, while some counsellors may be trained in psychotherapy.

McLeod (2013) argues that the difference lies in their preparation, reflecting a philosophical difference, with counselling based on the common human capacity to listen and respond to others, rather than assessment, diagnosis and treatment. Corsini (2008) attempted with limited success to distinguish counselling from psychotherapy by positing that a psychotherapist focuses more deeply on trying to uncover unconscious influences with a longer-term approach using a more medical orientated model. In contrast, he saw counselling as related to activities in non-medical settings such as university counselling centres. However, Nelson-Jones (2015) considers there are more similarities between psychotherapy and counselling than there are differences, leading him to conclude that attempts to differentiate the two are never wholly successful. In summary, as authors we acknowledge in advance that while definitions of counselling are numerous there is no consensus

regarding either a definition or an exact description of the counsellor's role. Furthermore, it was also predicted that some of our students and graduates might work in settings and undertake tasks not typically determined by some to be that of a counsellor.

Although there is a lack of consensus about the role of the counsellor the preferred definition of counselling we adopted to guide our program is as follows: that counselling is a professional relationship that empowers diverse individuals, families and groups to accomplish mental health, wellness, education and career goals. We consider it a profession that requires graduate level education; adheres to ethical standards and encourages getting registered and becoming a member of a professional organisation (Ponton & Duba, 2009). We consider that counselling focuses on relatively healthy functioning individuals who are experiencing difficulties; that it is prevention-based developmental model of therapy and involves facilitating behavioural, emotional and cognitive changes. Such changes are planned within interventions that are empirically driven and based on theory.

For the purposes of our counsellor training program, we do not intend to emphasise a formal medical model that includes diagnosis and treatment of severe mental illnesses. Instead, we planned to teach our students to identify the difference between common mental health issues they are likely to encounter and severe mental illness, so they would be in a position to recognise severe symptoms of mental illness and refer clients on with the goal of keeping both counsellor and clients safe. It was, therefore, decided to focus on evidence-based counselling techniques to assist individuals with typical life challenges, as well as supporting clients with mild and moderate symptoms of mental illness (i.e. mild and moderate depression, anxiety, and stress). For the purposes of our course, evidence-based practice was defined as an integration of individual clinical expertise with the best available external clinical evidence from systematic research (Sackett, Rosenberg, Gray, Haynes & Richardson 1996).

As the contexts in which our graduates would practice were changing, it was agreed that there was a need to move beyond models that focused on teaching adults to work as counsellors only. For this reason, it was decided to offer a course that would be relevant to those that wished to utilise their counselling skills within their current employment

framework (i.e. human resources) in addition to those who wished to work primarily as counsellors.

While a thesis was not included, the importance of research was not diminished as students were taught to search and evaluate literature relevant to evidence-based interventions. This decision was seen to allow more time to focus on counselling theory and practice rather than research methods. This was a decision based on the knowledge that most counsellors, like psychologists, do not go on to research careers instead working predominantly as practitioners. However, we knew that by eliminating the thesis our students would be ineligible to enrol in other courses for which a research component was a prerequisite.

Realistically, an expectation was formed that these course changes would be contentious, particularly in regard to the preparation and accreditation of our graduates. This expectation was based on our awareness of the divisive ideology present in the counselling and psychotherapy field, of which one view implies that there are different tiers of therapists, with some seen as more highly ranked than others. Counselling being on a lower tier was not a belief the authors adhered to, but there was an understanding that philosophical and professional tensions exist between counselling professionals. We are also aware that such tensions might impact on our graduates if other professional groups perceived them on a lower professional tier, but acknowledge the impact of such perceptions are difficult to measure.

Sources and structure

In what follows, the sources that influenced the design of the counsellor preparation course are acknowledged, the final course structure and the methods by which the course was to be evaluated and the impact of the course on counsellor attitudes, behaviour and skills are detailed. The first source acknowledged is the general literature on counselling. It was recognised that there have been significant changes in the theories explaining the status of an individuals' mental health over time and acknowledge biomedical, psychodynamic, behavioural, cognitive, humanistic, transpersonal and sociocultural influences on professional practice (Juntunen & Schwartz, 2015). It was also acknowledged that counselling has moved away from all-encompassing theories such as those by Freud (1904), Adler (1927) and Rogers (1961) to more specific

ones for depression proposed by Beck (1967), borderline personality disorder, Linehan (1993) and addiction by Miller and Rollnick (1992). In so doing, contemporary counselling has moved towards inductive theorising in contrast to the earlier deductive theories of Freud (1904) and Adler (1927). Indeed, modern theories often have a more focused approach typically originating from an attempt to deal with a specific mental health issue.

The fact that the gap between the researcher and the practitioner has narrowed and that both researchers and practitioners are working toward the meaningful integration of research and practice was recognised. In line with this movement a strong effort to fully integrate research into the practice of counselling was planned, looking to the principles of evidence-based practice to provide a framework for the translation of research. Commensurate with the position of the Australian Counselling Association (2016), in our opinion, counsellors are well positioned to provide clinical treatments through evidence-based psychological interventions (ACA, 2016). Evidence-based practice refers to the integration of the best research and clinical expertise, accounting for client characteristics, culture, and preferences (APA, 2006; PACFA, n.d.). Whilst the value of empirically supported treatments has been the received view in contemporary psychotherapy research and practice, we acknowledge that evidence-based practice is a broader concept that includes research related to the common factors between therapeutic models (Laska, Gurman & Wamplod, 2014). Finally, it was conceded that there have been major changes in which counselling is practiced. For example, issues surrounding cultural diversity, online and telephone counselling and the increasing demand for short-term therapy hold important implications for contemporary counselling training.

The second source acknowledged is defined by the ethical guidelines of the relevant professional counselling associations. Although counselling is an unregulated profession in Australia – self-regulation is possible through membership of the Australian Counselling Association (ACA) and the Psychotherapy and Counsellors Federation of Australia (PACFA). Regulation is important as counsellors may have to defend allegations of negligence and misconduct. Counselling professionals are not only subject to threats of negligence based on a duty of care, they may also be subjected to allegations relating to a breach of contract.

Counselling professionals should have sufficient understanding about the ramifications and risks associated with providing services and be sufficiently skilled to mitigate practitioner negligence.

In Australia, the provision of counselling services consists of practitioners who are members of the ACA or PACFA (or often both organisations), and practitioners that choose to not belong to either organisation. Most of these professionals are ostensibly guided by ethical principles and standards enshrined within various codes of conduct and standards, as well as laws and regulatory frameworks that aim to prevent malpractice and misconduct through education and deterrence. The focus of conduct and standards is of course to protect clients from unethical and unprofessional practice. At its core, such behaviour involves negligence which means a failure to exercise the level of care expected given the professional's training and experience and the services they have undertaken to provide. It may involve the commission or omission of an act that results in client damage, injury or loss. The ethical guidelines of the ACA and PACFA describe the professional competencies and ethical standards by which counsellors should conduct themselves, including knowledge and skills, professional behaviour and appropriate professional activities. These guidelines were carefully considered in the development of all of the units in the counselling program and are taught to students in a dedicated ethics unit (as per ACA, 2012; PACFA, 2015).

The third source we acknowledge are the university course accreditation standards driven by consumer demand and expectations for quality services resulting from a greater awareness of mental health issues, prevention and intervention services more generally. There have also been significant changes to, and scrutiny of, formal qualifications and education requirements for membership to various counselling related industry associations, potentially leading to greater accountability.

To improve the standards of counsellor education in Australia, ACA and PACFA have developed course accreditation standards. These standards are designed to ensure that counsellors are delivered appropriate training to allow them to meet professional and ethical standards for membership. The ACA standards specify that counselling courses primarily focus on teaching counselling skills, rather than social work or psychology, and that students are taught and assessed on various therapeutic approaches

that they can apply in real-world settings (ACA, 2016). The PACFA course accreditation and training standards for postgraduate courses were planned to be used so that our students would be eligible to apply for membership of each of the professional organisations upon graduation, as membership was seen as vital to professional practice.

The brief

The brief for the new teaching model reflected the need for counsellors to work across a variety of settings, case-manage clients with a range of problems and demonstrate an ability to plan, coordinate and implement mental health strategies. Fulfilling these goals required both conceptual and practical considerations when designing and developing the course. The brief also included the requirement for our course to have sufficient resources to train a large number of new students per year, due in large part to an increasing demand for mental health services in all three countries. Additionally, it was expected that all graduates would be able to not only counsel directly, but as importantly, provide indirect services by collaborating with more experienced counsellors and other professionals as they engaged with their client's issues. The course was planned in such a way as to accommodate those who entered the course with and without a background in counselling or related disciplines.

The situation

Previously, teaching counsellors had been undertaken in a dichotomous manner. Students were either instructed face-to-face or they worked online with minimal contact from academic staff. In 2014, our Faculty committed to creating blended learning environments to enrich the learning experience of students. Historically, we had used a range of learning activities and resources, such as classroom presentations, visual materials, paper-based activities and group activities, to assist students to achieve learning objectives. However, the improvement of mobile technologies and collaborative web tools expanded our opportunities for teaching. The real difference for us as course designers was the ever improving utility of the internet with its rich sources of information and services and, more importantly, the increased bandwidth speeds it offered students and teachers, particularly the ability to create online communities and support networks.

At the same time however, we agree with Oliver and Tingwell (2003) that blended learning is ill-defined and muddled as a description of particular forms of teaching with technology. Consequently, we acknowledge that a broad continuum of definitions exists and that the definition of blended learning will continue to evolve in the literature as new technology and associated skill sets emerge. However, for the purposes of this article we define blended learning as the planned implementation of a learning model that integrated student-centred, traditional in-class learning with other flexible learning methodologies using mobile and web-based online (especially collaborative) approaches, allowing more options for students to engage in active learning and dialogue. In summary, like Dziuban, Hartman and Moskal (2004) we interpret blended learning as meaning a pedagogical approach combining the socialisation opportunities of the classroom along with the technologically enhanced active learning possibilities of the online environment, without adopting a strict ratio of presentation mode. In other words, we expected that some students might choose to attend few face-to-face classes, preferring instead to do most of their learning online, in chat rooms and virtual classroom using software such as Adobe Connect. Adobe Connect provides visual and auditory contact with the instructor and other students, allowing for practical group work, role plays and group discussions. We originally planned to draw from a range of digital tools to support blended learning, including blogs, discussion boards, live internet streaming and web conferences.

All contact with students was through the Moodle online learning management system (LMS), which was formatted to meet the following basic standards for e-learning sites. 1. Organisation and appearance focused on principles of instructional design that supported clear structure and presentation of the site leading to ease of navigation (Gagne, Wager, Golas & Keller, 2014). 2. Consistency and compliance that emphasised legal and institutional aspects such as copyright, privacy, compliance with policies and consistency in documentation and information consistent with the Faculty Unit Guides. 3. The appropriate use of tools promoted with a clear purpose for students and responsible management that created expectations about the use of communication tools (Salmon, 2011). 4. Learner resources and support ensured students had access to appropriate supports and resources such as technical support when software difficulties arose. We adopted the flexible

learning model as determined by Faculty definitions and guidelines that included synchronous (face-to-face classes that include workshops and discussion groups) and asynchronous (involves students participating with pre- and post-class activities and materials online) activities to support the delivery of a specific subject. Our standard subject was a 36-hour subject with two options: Blended and Online. The Blended offering included 18 hours of pre-class asynchronous activities and 12 hours of synchronous in-class workshop activities followed by 6 hours of post-class asynchronous activities. In contrast, the online offering included 18 hours of asynchronous pre-class activities, 12 hours of online class activities and 6 hours of asynchronous post-class activities. The asynchronous pre-class activities may include PowerPoint presentations with embedded narration, videos, readings, quizzes and counselling scenarios designed to illuminate a particular skill. Synchronous in-class activities were undertaken either in face-to-face, virtual classrooms or both. Finally, asynchronous post-class activities included discussion activities, quizzes and pre-class PowerPoint presentations with embedded narration. Faculty classroom sessions in some instances were characterised by what Gerstein (2011) terms a flipped classroom. In this pedagogical model, the typical homework elements of a course are reversed. The value of this model is that the class time is repurposed into a workshop where students can enquire about lecture content (provided online), test their skills in applying knowledge and interact with one another in hands-on activities. In contrast, the majority of the lectures are included within time devoted to individual study, undertaken before class. Overall, we adopted a multi-campus blended learning approach as outlined by Lefoe and Myers (2006) as our subjects were designed with a student-centred approach that involved pre-reading of study guides with related articles, videos and prerecorded PowerPoint lectures that prepared the students for the face-to-face workshops and/or online seminars.

Like other vocational courses, finding placements for all the students within the required timeframe was assumed to be a challenge. We planned to address this potential issue by liaising with the supervisors at those sites and offering preparatory classes to students prior to attending placements and by using avenues of communication such as email, phone and video conferences to support the search process.

In order to expedite the successful placement of students we decided to provide, where possible, university approved field supervisors when

an appropriate supervisor could not be provided by the placement organisation. It was decided that appropriate field supervisors should be degree qualified (e.g. a master's degree in counselling, psychology or social work) with a minimum of 5-years post-qualification counselling experience, eligible for membership of a relevant professional organisation, and preferably having undertaken supervisor training. The supervision model that best fitted our needs was that designed by Bernard (1979). This model provides a framework for supervisors to help them design the supervision agenda and plan the direction supervision would take. Bernard identified three functions of supervision. 1. To enhance the process of counselling by modelling skills such as interviewing. 2. To develop deliberate thinking and case analysis. 3. To boost personal aspects as a counsellor such as empathy. The field supervisor was identified as having a teaching role that includes the transmission of knowledge or expertise; a counsellor role that places priority on the counsellor's personal needs to allow the counsellor to overcome the nervousness or self-doubt that impedes natural development and a consultant role that has a focus on an explorative relationship with the counsellor and assumes that the counsellor is able to express his or her supervision needs (Bernard, 1979). Supervision was conceptualised in part as a teaching role that supports the student in their professional development.

Each student was also required to have a university supervisor, independent of their professional placement, to review the student's placement activities and provide external support when required. This was seen to be a vital part of the teaching program as this form of an internship is considered a significant phase in the career of a professional counsellor (Lin, 2015). We considered that having this form of dual supervision put the student in the best position to undertake and complete client work, ethically and efficiently.

The design path

As program designers we worked collaboratively on the design of a professional counselling program using a new paradigm and germane to the requirements of practitioners and potential employers. Depending on team preferences and styles, these meetings took on different forms and timelines. For example, general planning involving brainstorming was longer and less organised. In contrast, as the program progressed

meetings became more focussed time limited. As the project neared the end, the relevant documents were often shared, discussed and modified via email and digital cloud drives.

From the outset the designers identified seven essential program-delivery issues. The first issue centred on practice with a commitment to evidence-based practice. In other words, materials included in the course were planned to be based on published research findings, and that they would be referenced in the course materials. Research findings include quantitative and qualitative methodologies, with a preference for more recent meta-analyses and systematic literature reviews (Hjørland, 2011). Students are also to be taught the importance of relying on recent published research in each of the units, and are partly assessed on their ability to critically appraise the research literature.

The second issue was how we would view mental health. We agreed that mental health and mental illness would be presented as existing on a continuum, as related but differing concepts. We used the mental health definition of the World Health Organization (WHO) (2014) as a "state of well-being in which every individual realizes his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to her or his community". In contrast, mental illnesses were characterised by "… some combination of abnormal thoughts, emotions, behaviour and relationships with others" (WHO, 2017). We also adopted the continuum model of mental health and illness that suggests that mental health is not merely the absence of mental illness; that individuals might have a mental illness whilst exhibiting good mental health and that mental health varies between and within individuals across the lifespan (Westerhof & Keyes, 2010).

The third issue we addressed was our approach to teaching and learning. There was widespread agreement that lectures played a role in providing new information not found in textbooks or other printed sources and could be used to highlight similarities and differences between key concepts and organise subject matter in a way that is best suited to a particular class and course objectives. Simultaneously, there was also an agreement that lectures should not dominate class time. The designers considered that a professional course should have as many opportunities as possible to practise counselling. Indeed, experiential group work

was accepted as an essential aspect of counsellor training (Chang, Suniti Bhat & Chen, 2017). There was, however, no clear consensus on how to structure teaching within the classroom. There were two main approaches preferred by course teachers, the first was a direct instruction (DI) approach (Liem & Martin, 2013) that had a behavioural emphasis and included instructing, modelling, doing, behavioural rehearsal, monitoring and checking for generalisation. DI is based on the premise that all students can learn and all teachers can successfully teach if given effective training in specific techniques using explicit, guided instructions and often a behavioural script. DI, therefore, involves explicit teaching of a skill-set using lectures or demonstrations of the material to students. DI is a model of teaching that relies on transmission approaches, such as brief lectures or demonstrations of the material as opposed to exploratory approaches, which are the basis of models of inquiry-based learning. DI includes, participatory laboratory classes, discussion, recitation, seminars, workshops, observation, active learning and practicums.

The second teaching approach preferred by course teachers was constructivism (Piaget & Inhelder, 1969), an approach emphasising a comparatively more open system of learning, defined as a means of encouraging students to use active techniques (experiments, real-world problem solving) to create knowledge and then to reflect on and discuss what they were doing and how their understanding changed following teaching and practice. In this approach, teachers prefer to function as facilitators whose role is to aid the student when it comes to their own understanding. Instead of telling, the teacher begins by encouraging students to come to their own conclusions instead of being told. Therefore, instead of students relying on someone else's information and accepting it as truth, the constructivism approach to learning argues that students should be exposed to data, primary sources and the ability to interact with other students so that they can learn from these experiences.

The fourth issue we confronted was the selection of teaching staff. A conscious decision was made that all teaching staff involved in the program should have significant counselling experience. It was believed that lecturers would be more effective if they were able to talk from personal experience and, in particular, discuss cases that they had managed in the past. In case-based learning (CBL), lecturers present students with authentic clinical scenarios and then provide

structured questions to guide student learning to achieve specific educational outcomes. This approach allows for a structured problem-solving approach that gives the lecturer the opportunity to correct student misunderstandings (Srinivasan, Wilkes, Stevenson, Nguyen & Slavin, 2007). Previous research on case-based learning in tertiary health-related education indicates that students prefer CBL over more open-inquiries (Srinivasan et al., 2007) and that students believe that this method of teaching improves their learning (Thistlethwaite et al., 2012). Additionally, teachers of CBL enjoy this method as they believe it motivates their students (Thistlethwaite et al., 2012). In all units of the program, CBL was employed by lecturers drawing from their previous clinical experiences. To protect the anonymity of previous counselling clients, significant details about these cases are changed so that the client cannot be identified.

The fifth issue we addressed was cultural relevance. As the program was intended to be delivered in Australia, Hong Kong, and Singapore, it was important that the units included content that was culturally appropriate for each of these populations. It was acknowledged that to simply transpose western counselling paradigms to another cultural context without first examining the cultural beliefs and assumptions within them would be inappropriate (Moir-Bussey, 2010). It was, therefore, acknowledged that all cohorts should be taught how to assess and work with a wide range of cultural groups. Content in each unit therefore included information on counselling considerations for specific cultural groups, including assessment of cultural background, ethical issues when working with diverse cultural groups, mental health issues unique to specific cultural populations and cross-cultural counselling techniques. Case studies and videos of individuals discussing their mental health issues were specifically selected to represent individuals from a variety of cultural backgrounds. Although the course content was largely identical across cohorts, the focus of cultural education was somewhat different. In Australia for instance, units included information on the epidemiology, assessment and counselling techniques relevant for Aboriginal Australian clients (Purdie, Dudgeon & Walker, 2010). This information was not included for Hong Kong and Singapore clients, where the focus was on issues for Chinese, Malay and Indian populations (Paniagua, 2013).

The sixth issue discussed was linked to assessment. The overall goal was to follow faculty imperatives to provide a variety of assessments

allowing students different ways to demonstrate competence (i.e. group work, oral presentations, essays, quizzes and case studies). What we have described is good practice for assessment design and is driven by the university policy for assessment, which does address those issues referred to, such as integration of assessment across units in the course and providing engaging and varied tasks. The university assessment procedures set out the more practical aspects of assessment design, which the Faculty needs to ensure we are doing. We are required to show how this happens in the course proposal, which is approved by the university (through the Academic Board). We don't have specific Faculty policy directing this, but we are required to follow university policy and devolve most specific curriculum decisions to chief examiners. In addition, this course has external professional accreditation requiring us to show very clearly how assessment tasks are mapped to unit and course outcomes.

Assessments were selected that tapped into the core skills expected of professional counsellors, including therapeutic techniques, presenting information to clients and critical thinking. Assessments included both individual and group assignments and assignments completed in class with supervision and more traditional assignments, such as essays. There was robust discussion among staff about types of assessments, particularly those centred on group vs. individual assignments and in-class vs. out of class assignments. In-class assignments where students worked in groups, presented an oral assignment with the group sharing the same grade and mark were seen by some as non-traditional and occupying teaching time. Conversely, such assignments were seen as an opportunity to provide direct supervision and immediate feedback. Supporters of individual assignments argued that group assignments advantaged the less able student at the cost of the more able student. In contrast, proponents of group assignments argued that they provided an opportunity to problem solve in groups, a behaviour encouraged when employed as a counsellor. Ultimately, it was decided that the chief examiner for each unit would decide on the type of assessment and present the tasks to the Faculty Academic Board for final approval.

The seventh issue was related to the ongoing evaluation of the newly developed course so that we might be able to identify how the course impacted on student learning and where our students would potentially secure employment after graduation. We plan for three types of

evaluation. First, during orientation, all students will be asked to complete a survey that includes a variety of qualitative and quantitative measures, including counselling self-efficacy, mental health measures, such as stress and burnout, and course expectation items. Second, the same students are then asked to complete a similar questionnaire one year into their studies and at the completion of their degree, to track their development as counsellors and their appraisal of the course. Third, at the same time points, students will also be asked if they would like to participate in an interview regarding their motivations for becoming a counsellor and their expectations and appraisal of the course. In this way, we will be able to collect longitudinal data on the development of our students, which can be used to enhance course development and improve teaching. The second and third form of assessment is the most challenging and expensive to undertake as students have to be contacted after they have left the university. Ideally, we would also like to seek the opinions of other significant people indirectly impacted by the quality of the course. People such as placement supervisors and consumers would provide another perspective on course quality, however, we accept that the focus of our evaluation is on student learning experience and, as a result, for now there are constraints on our resources that limit how we evaluate the counselling course.

In addition, part way into each semester or term, we planned to ask students to complete an informal survey evaluating their interest in the unit, the course content, performance of the lecturer and the extent to which the unit is seen to improve their learning. This feedback will be used to adjust the delivery of teaching in the remainder of the semester to improve student satisfaction and learning. Student evaluation will also be assessed formally as part of standard university procedures. This evaluation takes place at the end of semester and includes questions regarding what students find most effective as well as suggestions for future changes. Students are also asked to rate the potential of the unit to meet their learning objectives, intellectual stimulation, the learning resources, assignment feedback and overall satisfaction on a Likert scale from 1 (Strongly disagree) to 5 (Strongly agree). This feedback will be used to make more extensive unit improvements on an annual basis.

Course content

As noted earlier, the course was designed to accommodate students from varying educational and occupational backgrounds, with three entry points (8-subjects, 6-subjects, and 4-subjects) available based on prior qualifications. It was intended that students would be exposed to increasingly complex counselling skills through their degree, and that those with prior learning be exempted from foundational units that might repeat knowledge attained from previous studies. The first two subjects of the 8-unit degree were selected to provide students, who had little academic exposure to counselling before, with an introduction to major lifespan theories and the professional practice of counselling. The two subjects in the 6-unit degree were then designed to build upon a foundation of basic counselling knowledge, including teaching an awareness of severe mental health symptoms as well as issues that are common to children and adolescents. Finally, the four subjects of the 4-unit degree were designed for students with a more advanced understanding of counselling. These units focused on the development of practical skills, based on foundational theories, that would be essential to professional counselling, including cognitive therapies, couple and group counselling, ethics, and other advanced intervention and research skills.

Summary

As authors of the program we accept that it is difficult to provide all the information and skills that our students will need as they enter the workforce or in their professional careers. An additional reality that affects course content is that counsellor preparation courses are limited by Faculty funding and by the number of hours required for a University post-graduate degree.

We also recognised the challenges and philosophical tensions that existed within our design team and have attempted to make these clear in this article for those who might benefit when designing their own course. When designing the course, we were confronted by several challenges, not all of which we addressed to our complete satisfaction. We considered nine main challenges to successful course design and implementation that we attempted to address.

First, we needed to create a teaching program for students, many of whom would not have a background in psychology. This required us to decide on a definition of counselling that we could use to underpin our teaching approach. We decided that our counselling course should focus on assisting individuals, couples and groups with life challenges such as relationship problems and work–life balance. We also recognised, however, that counsellors would be required to assist individuals with mild and moderate symptoms of common mental illnesses (e.g. anxiety, depression, and stress) and so they were trained to support clients with these issues. We taught students to recognise key symptoms of severe mental illness and make appropriate referrals when required, as these individuals might require diagnostic assessment, medical evaluation and/or long-term psychotherapy by a specialist provider.

Second, to enable us to spend more time teaching counselling theory and practice, we decided not to include a thesis component as we believed we could instil an appreciation for evidence-based practice through instruction, workshops and formal written course assessments. The advantage being more time for students to focus on practical skills and the disadvantage being a barrier to pursuing advanced studies contingent on completing a thesis.

Third, incorporating the features of blended learning was a significant challenge especially as the notion of blended learning is not well defined and thus, more difficult to implement. The proportion of face-to-face teaching to online private study was a contentious issue for lecturers. Opinions ranged from the need to have 100% face-to-face teaching for each subject totalling 36 hours to those who considered that 15 hours face-to-face teaching per subject as sufficient, with the remainder of the learning undertaken online. At the time of writing Faculty had decided to go with the reduced face-to-face option to maintain consistency with other teaching programs. The increase in the online teaching component raised another issue related to access to bandwidth speeds in regional, rural and remote Australia and the educational equity of access in these areas. This proved to be one of the tensions in delivery we were unable to resolve at the time of writing.

Fourth, finding and organising placements that suit the needs of all students seeking to complete the required hours of supervised counselling was predicted to be a challenge. This type of challenge

faces all vocational course designers. Such challenges were assumed to include language and cultural issues linked to student skills and availability of placements and supervisors.

Fifth, the issue of an accepted approach to teaching was considered a crucial issue. Ultimately, the two methods accepted as appropriate were philosophically quite different, however, as both were accepted and commonly used teaching techniques it was decided to let individual teachers decide which one they preferred to use.

Sixth, how to assess each unit of study was a challenge that was largely resolved by nominating the Chief Examiner of a unit to decide how assessment was to be undertaken. Providing both assessments collectively totalled 8,000 words, or the equivalent, approval was then sought from the Faculty's academic board.

Seventh, while we considered evaluation to be an important part of the course, some reservations about the appropriateness of the overall scores and what the teaching evaluation actually represented were expressed at the outset. Some forms of evaluation were considered by some to be more a measure of popularity than teaching expertise and impact on student learning. In other words, what students learned was considered a more appropriate measure of effectiveness than student satisfaction. Ultimately, the university determined the form that evaluation took and how it was interpreted.

Finally, there was some debate regarding which subjects to include across the three points of entry. We decided that all students should be taught ethics, advanced counselling skills, cognitive-behavioural therapy and individual, couple and groups therapies, regardless of their professional or academic background. More contentious were subjects selected for the 6-unit degree. We considered that students at this middle point of entry may not have a formal education from a related field, so an introduction to mental health issues was deemed important. Additionally, a subject focused on counselling children and adolescents was included as anecdotal evidence suggested that there was interest among potential students for this topic. The subjects selected for the 8-unit degree provided a more basic introduction to counselling and included counsellor identity, lifespan theory and professional practice and were less debateable.

A key feature of our success in designing the program has been the collaborative strength of the team that included outside accreditation officials, a large number of university academics and practicing counsellors. This team approach allowed us to confront and deal with challenges when developing a course designed to train counsellors. Ultimately, confirmatory data will need to be collected to establish the effects of our program, however, that task is beyond the scope of the present article. As we progress and publish more detailed evaluations we consider that these will be of interest and potentially positive benefit to other groups of counsellor educators.

This article has outlined the design and development of a counsellor education course that was intended to accommodate individuals with or without a background in counselling or related disciplines. Drawing from a range of sources including the general literature on counselling, ethical guidelines of professional counselling associations and university accreditation standards, we have described the development of a course that will equip students with the skills to work across a variety of settings, case-manage clients with a range of problems and plan, coordinate and implement mental health strategies. Despite several challenges, we were able to effectively establish a program by using a team approach, drawing upon the skills of academics and practicing counsellors. Our design pathway has implications for academics interested in developing counsellor education courses and professional organisations with an interest in counsellor education. Specifically, our teaching models, use of technology and placement coordination strategies exemplify a way of teaching counselling skills to help to meet the demand for counselling services.

Disclosure statement

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Informal workplace learning experiences of graduate student employees

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Informal learning and how individuals learn in the workplace have gained increasing attention by researchers in recent years. In relation to other learning activities, informal learning constitutes a substantial part of an adult's life. This paper explores the informal workplace learning experiences of graduate student employees. Data was collected through in-depth semi-structured interviews with 14 PhD students who were employed at their universities. Thematic analysis was used to interpret the data. The findings revealed that graduate student employees learn at work by participating in various work practices, collaborating with colleagues and advisers, and meeting new challenges that provide learning opportunities. The challenges of a set task play a crucial role in learning and skill acquisition, and learning happens as a result of interaction between an individual, an activity and a context. The workplace also provides a social environment where people can grow in maturity and learn responsibility as well as skills. Learning is embodied in the everyday practices of work.

Keywords: *informal learning, workplace learning, informal workplace learning, graduate student employees*

Introduction

Workplace learning comprises a significant part of the learning endeavours of adults (Boud & Middleton, 2003; Billett, 2001). Studies investigating workplace learning have increased in recent years (Ellinger & Cseh, 2007; Tynjälä, 2008), spurred by rapid changes in the global labour market (Manuti, Pastore, Scardini, Giancaspro & Morciano, 2015).

There are various approaches to and definitions of 'workplace learning' (Marsick & Watkins, 1990; Tynjälä, 2008 and 2013; Manuti et al., 2015; Le Clus, 2011). Workplace learning is generally characterised as taking place through either formal or informal channels. Formal learning in the workplace happens through organised, curriculum-based training programs that generally take place in classroom-like environments. Marsick and Volpe (1999) emphasise the relevance of informal learning as opposed to formal learning in the workplace and suggest that providing an environment where workers can engage in informal learning activities will contribute not only to the organisational effectiveness of the workplace but also to the learning and development needs of individuals. Research indicates that a substantial amount of workplace learning is informal (Skule, 2004; Boud & Middleton, 2003; Day, 1998). This may be as much as 60 to 80 per cent according to Ellinger and Cseh (2007), over 75 per cent according to Bancheva and Ivanova (2015), and even over 90 per cent in some cases (Cerasoli, Alliger, Donsbach, Mathieu, Tannenbaum & Orvis, 2017). Sambrook (2005) distinguishes between learning at work and learning in work, where the former refers to more formal learning, while the latter refers to a more informal type of learning. In general, workplace learning refers to the 'many ways that employees learn in organizations' (Jacobs & Parks, 2009, p. 134).

Informal learning

In their extensive literature review, Colley, Hodkinson and Malcolm (2003) classify learning as informal, non-formal, and formal, recognising that the continuum of learning may range from highly informal to highly formal (Van Noy, James & Bedley, 2016). To define the term, most researchers, however, find it useful to contrast informal learning with formal learning (Hager & Halliday, 2009).

Marsick and Watkins (1990 & 2001), in their early work, classify learning as formal, informal, and incidental. They differentiate informal and incidental learning from formal learning, where formal learning is described as being 'typically institutionally sponsored, classroom-based, and highly structured' (Marsick & Watkins, 2001, p. 25), whereas informal learning is characterised by the absence of these. Schugurensky, who classifies learning as formal, non-formal and informal, argues that informal learning 'takes place outside the curricula provided by formal and non-formal educational institutions and programs' (2000, p. 2). He further differentiates three types of informal learning: self-directed learning, incidental learning, and tacit learning (also referred to as socialization). Self-directed learning is both intentional and conscious, whereas incidental learning is unintentional but conscious. Socialisation is neither intentional nor conscious. Livingstone (2001) too considers informal learning as distinct from formal learning, where an externally imposed curriculum is present. But he also differentiates between learning that is informal, which refers to self-directed or collective learning, and education or training that is informal, which presupposes the presence of an institutionally recognised instructor in more incidental learning situations (Livingstone, 2006). Eraut (2000), in his initial efforts to conceptualise the learning that contrasts with formal learning, rejects the use of the descriptor 'informal' because it is used in a wide variety of contexts beyond learning and is therefore insufficiently precise. He adopts the use of 'non-formal' learning instead. Later, Eraut (2004) uses the term 'informal learning', which he contrasts with formal learning. He identifies five features of informal learning that distinguish it from formal learning: 'implicit, unintended, opportunistic and unstructured learning and the absence of a teacher' (2004, p. 250). As seen from the definitions, informal learning has been conceptualised in different ways by various researchers, yet there are many common features.

Numerous studies have investigated informal learning and how individuals learn in the workplace (Gola, 2009; Jurasaite-Harbison, 2009; Skule, 2004; Eraut, 2004; Enos, Kehrhahn & Bell, 2003). In recent years, studies that focus on the contribution of others to learning in the workplace have increased (Boud & Middleton, 2003; Cheetham & Chivers, 2001; Poell, Van der Krogt, Vermulst, Harris & Simons, 2006).

Informal workplace learning

Billett finds it problematic to describe workplace learning environments as either formal or informal, which, according to him, 'suggests a situational determinism' (2002, p. 56). He further points out that there are substantial similarities between formal and informal learning when the actual learning is considered, and he maintains that the purported differences between formal and informal learning are debatable.

Beckett and Hager, on the other hand, use a matrix to compare formal and informal learning in the workplace. They identify six key features of practice-based informal workplace learning as organic/holistic, contextual, activity- and experience-based, not an end in itself, learner initiated, and often collaborative/collegial. They argue that 'informal workplace learning of the right kind appears to be an essential component of proficient practice in most, if not all, occupations' (2002, p. 114).

Table 1: *Differences between formal learning and informal learning from work*

Formal learning	***Informal workplace learning***
Single capacity focus, e.g. cognition	Organic/holistic
Decontextualised	Contextualised
Passive spectator	Activity- and experience-based
An end in itself	Dependent on other activities
Stimulated by teachers/trainers	Activated by individual learners
Individualistic	Often collaborative/collegial

Source: Beckett and Hager (2002, p. 128).

Hodkinson and Hodkinson (2004) compared learning in the workplace as intentional/planned learning or unintentional/unplanned learning in a matrix. They presented different types of workplace learning in a six-fold classification. From this matrix, it can be deduced that unintentional/unplanned learning refers to informal learning experiences (Table 2).

Table 2: *Types of workplace learning*

	Intentional/planned	***Unintentional/ unplanned***
Learning that which is already known to others	(1) Planned learning of that which others know	(2) Socialisation into an existing community of practice
Development of existing capability	(4) Planned/intended learning to refine existing capability	(3) Unplanned improvement of ongoing practice
Learning that which is new in the workplace (or treated as such)	(5) Planned/intended learning to do that which has not been done before	(6) Unplanned learning of something not previously done

Source: Hodkinson and Hodkinson (2004, p. 261).

Hager and Halliday, who argue that informal workplace learning cannot be gained elsewhere, define the term as follows: 'The informal learning from the practice of work can be thought of as the development of an evolving capacity to make context-sensitive judgments in changing contexts' (2009, p. 30).

By 'context' they mean 'the surroundings in which learning occurs and the possible influences that these surroundings have on what is learnt' (Hager & Halliday, 2009, p. 159). They assert that all activities require multiple judgments and that an ability to make context-sensitive judgments 'is needed to identify features of a new context to which (one) can relate through previous experience' (2009, p. 210). They argue that context and practice are related: 'one obvious way of making sense of the notion of context is through the practice within which a judgement is located and that itself is a matter of judgement' (2009, p. 193).

Numerous studies investigate informal workplace learning with a primary focus on types of informal learning, factors that impact informal learning, and the context. Slater (2004), for example, emphasises the inefficiency of workplaces that rely strictly on formal training methods, as most of the learning happens informally. He surveyed 676 employees in a non-profit financial service organisation and found that the top five informal learning activities were (in the order of most to least frequent)

executing the job, interacting with supervisors, getting on-the-job training, working in teams, and reviewing documentation.

Ellinger (2005) conducted a qualitative case study to investigate contextual factors that influence informal learning in the workplace and found that contextual factors influence informal learning both positively and negatively. The emergent themes for 'Positive Organizational Factors Influencing Informal Learning' (p. 401) were identified as learning-committed leadership and management, an internal culture committed to learning, work tools and resources, and people who form webs of relationships for learning. The emergent themes for 'Negative Organizational Factors Influencing Informal Learning' (p. 404) are leadership and management not committed to learning, an internal culture of entitlement that changes slowly, work tools and resources, people who disrupt webs of relationships for learning, structural inhibitors, lack of time resulting from job pressures and too many responsibilities, too much change too fast, not learning from learning.

Berg and Chyung (2008) investigated factors that influence informal workplace learning and the types of learning activities employees engage in at work. A total of 125 workplace learning and performance improvement professionals volunteered to respond to an online survey. The data laid out no significant correlation between engaging in informal learning and presence of learning organisation characteristics. Personal and environmental factors, on the other hand, were found to affect employee engagement.

Kyndt, Dochy and Nijs administered a questionnaire to 1,162 employees of 31 different organisations 'to investigate the presence of learning conditions for non-formal and informal workplace learning in relation to the characteristics of the employee and the organisation he or she works for' (2009, p. 369). The findings suggest that opportunities for non-formal and informal learning are different for different groups of employees in five learning conditions, namely: 'feedback and knowledge acquisition', 'new learning approaches and communication tools', being coached', 'coaching others', and 'information acquisition'.

In a survey of 143 information technology professionals, Lohman (2009) investigated factors that affect engagement in informal learning activities. The findings revealed that this group of professionals relied primarily on online sources, and when this failed, they would talk with

colleagues or share materials and resources in order to meet their learning needs. He identified six environmental factors that inhibit informal learning activities: lack of time, distance to colleagues' work areas, non-supportive organisational culture, lack of access to others, insufficient equipment and technology, and lack of meeting/work space. The enhancers for engagement in informal learning activities were identified as initiative, self-efficacy, love of learning, interest in the profession, integrity, an outgoing personality, a teamwork ethic, curiosity, and open-mindedness.

The university as a workplace includes diverse work positions that are grouped broadly as academic staff and non-academic staff. Academic staff generally fulfil teaching and research responsibilities, although they may also have managerial and administrative tasks. Graduate student employees contribute to academia through research or by teaching or working at laboratories and research centres. While Flora (2007) investigates the legal employment status of graduate assistants, a number of studies focus on unionisation of graduate employees (Julius & Gumport, 2003; Rhoads & Rhoads, 2005; Rogers, Eaton & Voos, 2013), and yet others investigate the use of research assistants in academia (Hobson, Jones & Deane, 2005; McGinn & Niemczyk, 2013; Naufel & Beike, 2013). However, research that focuses on the informal workplace learning experiences of graduate student employees at the university is sparse.

The present study takes the university as a workplace where PhD students are employed. The following sections describe the methodology and the sample of the study.

Methodology

Since the time of Vygotsky, one witnesses an increased interest in social interaction, which is considered the foundation of human activity and learning. In studies on workplace learning, it is therefore important to focus on social interaction, environmental factors, and the social dynamics of the workplace (Loftus & Higgs, 2010). This focus also contributes to the understanding of the experience of the individual through the individual's reflection. With this in mind, the study employed a qualitative approach. Data was collected from PhD students in semi-structured, face-to-face in-depth interviews from three

universities in three different cities in the states of Pennsylvania and Massachusetts in the USA.

The critical incident technique was used for the in-depth interviews. The critical incident technique is a systematic and sequential procedure to collect and analyse the content of 'observed incidents or observations previously made that are reported from memory around a phenomenon of interest' (Ellinger, 2005, p. 398). This technique was introduced into the social sciences in 1954 by Flanagan (1954), who claimed that its roots go back to the late 19th century and the studies of Sir Francis Galton. The critical incident technique allows respondents to determine which incidents are relevant and important to them in relation to the phenomenon under investigation. As such, Gremler (2004) argues that it provides a rich source of data and is particularly useful when investigating a phenomenon on which there is little knowledge.

The sample consisted of 14 PhD students who worked in jobs related to their area of study at their universities. To give an example, a PhD student in mechanical engineering working in a university mechanical engineering laboratory was eligible to participate, but the same student would not have been eligible if he had been working at a job in the library. A further requirement was that the participating PhD students should be on the university payroll, with the full responsibilities and benefits of an employee.

An informed consent form was signed both by the researcher and the interviewee before each face-to-face interview. An interview guide was used during the interviews. Each interview lasted approximately half an hour, with the longest being about an hour. To protect the identity of the interviewees, no personal information was requested except for their area of study and year of the PhD study (Table 3).

Table 3: *Details of interviewees*

University	Subject No.	Gender	Area of Study	Year of Study in the Program
University A	A-1	Male	Mechanical Engineering (Mechatronics and Robotics)	5th year
University A	A-2	Male	Interdisciplinary Engineering	3rd year
University A	A-3	Male	Chemical Engineering	2nd year
University A	A-4	Female	Engineering	2nd year
University A	A-5	Male	Mechanical Engineering (Biomedical)	5th year
University A	A-6	Male	Mechanical Engineering (Mechatronics)	4th year
University B	B-1	Male	Mechanical Engineering (Nanomechanics)	1st year
University B	B-2	Male	Polymer Engineering	3rd year
University B	B-3	Female	Learning Sciences and Policy	4th year
University B	B-4	Male	Learning Sciences and Policy (Policy and Instruction)	3rd year
University C	C-1	Male	Bioinformatics	3rd year
University C	C-2	Female	Statistics	3rd year
University C	C-3	Male	Computer Science	3rd year
University C	C-4	Male	Adult Education	4th year

For the present study, thematic analysis was used to interpret the data. In thematic analysis there are three ways to develop themes and a thematic code: theory driven, prior data or prior research driven, and inductive or data driven (Boyatzis, 1998). In this research, themes were developed inductively, based on the data from the interviews.

As a first step, data collected from the interviews was transcribed verbatim. To preserve the anonymity of the interviewees, each one was

assigned a code. NVivo, a software to organise and analyse qualitative data, was used for the thematic analysis. The research results are laid out around the themes that emerged from the analysis. The themes unfold in a narrative that emanates from the personal reflections of the interviewees.

Findings

The findings are presented from the perspective of graduate student employees, based on their informal workplace learning experiences. The narratives unfolded around the general themes of the first days at work, getting more competent through work, and ways of informal learning.

Most of the interviewees had started working at the same time they started their PhD studies. A few did not have a position from the start, but had worked either at a different part of the university (e.g. interviewee C-3, who had worked at the university dining hall) or worked on a volunteer basis (e.g. interviewees A-6 and B-4), until they got jobs relevant to their area of study.

When they first started work, they generally had a period when they adapted to the routine of their workplace and learned to perform the tasks that would be assigned to them:

> *I was really kind of just learning the routines and a lot of the procedures in the lab and things like that. I learned about the specific technology of our lab … our machines, what kind of software we use. You know, really, my first responsibility in the lab was just to get up the speed … (A-2)*

The tasks performed by newly-recruited PhD students are diverse and generally start with basic hands-on tasks such as cleaning machine parts (A-2), preparing samples for experiments (A-3), constructing an experimental set-up (A-4), or desk-based tasks such as doing online searches (A-1) or reading journal articles (C-1). An exceptionally different experience is reflected in the following citation:

> *Me and one of the guys (laughs). Big project (laughs). It was … it was also kind of ah … when it was introduced to me, my adviser here at the university at the lab said, 'okay this is what you'll do for the next six months. It's a pretty easy project, [so]*

> *you should be able to package it up and do [it] pretty easily – no problem, six months, no more it should be, you know, it isn't too much'. And I looked at it, like trying to eat an elephant – like, how much am I supposed to eat in six months? (Laughs) So my perception ... first perception was completely different. And for an experienced engineer, six months is okay, six months is okay. But for a new guy ... (A-5)*

Unlike the others, who started with more routine and low-level tasks as an initiation into the job, this interviewee reflected on the enormity of the task he was assigned, which eventually took much longer than six months to complete.

To cope with the demands of the initial tasks, the strategies most frequently used by the interviewees were reading (articles, books, theses), observing others, asking for help from a co-worker or adviser. For instance, interviewee B-3, whose first assignment was to contribute to a project, explained her role of observer:

> *I remember that in the project that I worked with two professors, I went to the interviews with them. And my main task ... actually, they told me 'now we will do the [actual] interview, but we want you to pay attention [to] how we ask the questions, how we prompt them' and ... so all this stuff. I think I was like ... when I was conducting all the interviews this time [myself] ... I was remembering all the conversations that we had and how they were asking the questions, how they were prompting them. So they modelled it for me, and then this time I could do it easily. (B-3)*

With the exception of three respondents, all mentioned that their tasks changed significantly over time. The changes were generally characterised by moving from low-level tasks to higher-level tasks, taking on more responsibilities, and occasionally making decisions. Some eventually became senior members in their workplace and were thus considered decision-makers.

> *So I shifted more kind of from doing all the smaller tasks to some of the higher-level tasks like project management, or overall design things like that. And I really liked that. It is nice ... it is nice not to having to ... not having to do every little detail of the project ... I became a confident person ... (A-2)*

> *... [M]y tasks changed. At first I was just a passive person who, you know, did whatever being told and from there now I came to the point where ... you know, we meet with very important people, we have ... we write grants for ... we write research proposals for grants ... (A-6)*

With higher-level tasks, their responsibilities increased and they became decision-makers:

> *When I first came here, I didn't know much, so I was sort of ... new, and now that I am here almost two years, I am one of the senior members ... so ... and I think with that comes more responsibility ... you are sort of looked at to make decisions, sort of keep everyone in line, to make sure things don't break, to make sure they [are] clean ... stuff like that. It is just ... I don't see it [as] seniority but you just get more responsibility. (A-3)*

Through work, they learn the culture of their workplace, the needs and the priorities, and ways of doing things; in the process, they become more confident in themselves, which eventually leads to an ability to make decisions when necessary.

Difficult work situations are critical incidences that may arise from any unanticipated situation, event, contradiction, lack of skill or knowledge, and the like. The nature of such situations encountered by the interviewees is quite diverse, ranging from being unable to handle cheating students during a test to managing a whole project, from having conflicts with a new recruit in the lab to not being able to handle a specific program or understand how it works.

The first strategy that most participants used for dealing with a given situation was to do an online search. The interviewees were quick to point out that an online search often provides only generic knowledge unless the chosen key words are very specific, in which case the search can yield useful material. Reading articles, theses and dissertations can provide a more specific understanding of the nature of the problem if the problem is academically based. Another important strategy used by the participants to resolve a particular issue was to ask for help from others, such as an expert, co-worker, or adviser. Almost all the interviewees, however, indicated that they would resort to asking others only when they were unable to find a solution on their own. First they would try to

understand the nature of the problem, identify what was missing in their knowledge or skills, and then try to equip themselves with the needed knowledge or skills. A comment by interviewee A-6 provides an insight into the feelings of those who were asked for help:

> *I ... right now, for example, there are various ... there are students who come to me for advice, the new members, and I am the senior engineer ... senior student. So, I hate it when people come to me with questions without trying first, because first if they didn't research it they don't exactly know what they are asking, and I just find it disrespectful to me, you know, to take up my time without actually ... them ... trying first. So that's why I was always like trying to figure [things] out on my own, but when I sense like that it is a waste of my time, then I went to them. (A-6)*

Difficult work situations also create learning experiences. All the respondents expressed that critical incidents resulted in personal development in areas such as gaining confidence, valuing patience, appreciating good advice, not being intimidated, and not doing a sloppy job. These learning experiences are embedded within the context of the work to be done and are therefore practice-based.

For instance, A-4, who was deliberately given a difficult task to accomplish, endured sleepless nights and feelings of insecurity until she finally managed to complete the task, but her critical incident resulted in her having more self-confidence and the realisation that she can succeed if she does not give up.

> *I think I have gained some ... gained some confidence after ... I mean, before that, I was like 'what I am gonna do. I can't solve this. I can't do this.' But after that, I realised that, well, somebody trusts me, so I also have to trust myself. That's ... that's ... that's the basic thing that I gained. And well, okay, it was hard ... (A-4)*

Participant B-1 also experienced difficult times working on a project, and as he explains in the following quotation, the lesson learnt was the value of persisting, not giving up, and patience.

> *We worked hard on this problem. We actually had times when we lost our hope and we thought about more ... more marginal*

> *ideas maybe giving up some quality of that project or ... maybe not trying anymore or ... But at the end, I see that if we hadn't acted on any of those different ideas, we wouldn't succeed at the end. I mean, we were talking about giving up that ... quality in that project, [and] ... if our adviser wasn't, you know, more stubborn and just wanted to cut things at that point, we couldn't work more on this problem and we couldn't solve it. ... I mean, patience was good at this point. (B-1)*

When reflecting on how they improved overall through their work, respondents referred not only to technical and practical skills but also to personality traits and soft skills such as time management, patience, and confidence. For those who were planning to stay at the university after their PhD study, working with faculty members also initiated them to the everyday realities of being an academic researcher. Interviewee B-3, for instance, who plans to become a faculty member after her graduation, reflected on how she was involved in the everyday work of the profession:

> *I feel that I learned to work a lot. In the beginning, I did not have a clear sense of what it would be like to work as a researcher in a faculty ... So now, working with the professors very closely on a research project, I have a sense of how to conduct a research project ... And then I have a better sense of what are the challenges of finding even like the sample ... or like finding the schools that we need to work on ... So I feel like I learned a lot about in terms of how to conduct a better research and what a researcher should be paying attention to while doing all this work. And I also learned the skills of doing this. (B-3)*

Respondents reflected on the relevance of their courses and their work at the university to their PhD studies. Generally, they were of the opinion that, while courses are of value, many times these do not equip students with the skills and experience that they had the opportunity to acquire during their work experience. With the exception of one, the interviewees believed that what they were doing in their workplace was relevant and that it contributed to their PhD studies. For instance, interviewee C-4 explained that he had preferred a graduate assistantship over a fellowship because it would give him the opportunity to work at the university during his PhD program, which he believed would

contribute to the skills he needed to achieve his goal of becoming a faculty member.

> *I actually had been offered a fellowship at [University of X]. That was gonna be a way to finance my education. But I remember talking to ... people about the pros and cons of a fellowship and a graduate assistantship, and a lot of people said 'well it is actually, you know when you have a fellowship, you don't actually have to go to work' ... 'but as a graduate assistant you have to do certain tasks'. And I remember people saying that it is actually the better thing to do ... (C-4)*

He further reflected that it was a wise choice, since working at the university gave him the skills he would need as a university researcher. He further stated that, although the courses provided a theoretical foundation and a practical basis for those skills, it is never the same as working in an actual situation. Hence, what made him learn was being involved in the everyday processes, with the responsibilities of the tasks assigned to him.

Developing writing skills was another benefit of work for some of the interviewees, as mentioned by A-6, B-4, and C-4. Writing in the context of a PhD program, including writing a dissertation, is different from writing for business, as C-4 explained:

> *I wrote literature reviews for proposals ... [their] structure is a bit different from a dissertation. A dissertation tends to be much longer, sort of, you know, they expect you to prove that you can be analytical and all that. But when you are writing a proposal, you know, you tend to be more succinct. (C-4)*

Similarly, A-2 pointed out how writing for a different audience requires a different style. From writing a dissertation for PhD purposes and through his work, he had the opportunity to learn the skills to write for different audiences:

> *And the other thing I would say is writing, having to write all these reports. Sure, I had to write a dissertation, [and] I [had] had to write a master's thesis, that's part of my work but in ... but in my actual work, there are reports, e-mails and memos [and] everything else, so my writing skills, at least writing for*

> *certain audiences, and things outside the normal academic environment have definitely improved through my work. (A-2)*

Overall, the interviewees' experiences reflect a progressive improvement in skills, knowledge and attitudes that resulted from their job. The experience of A-1 resembles a master-apprentice relationship, where the master explains, shows, and scaffolds the steps of a task for the apprentice. After that, an apprentice performs the task on his own. Similarly, he experienced the process of listening to the professor, an engineer, observing how he performs tasks, and then performing them himself. This informal learning experience as an organic form of learning contextualised in an activity related to work, and in collaboration with a more able mentor, also highlights the value of such learning:

> *He [the mentor] is the director of the motion analysis lab at the hospital. And so he is an electrical engineer by training but he is an electrical engineer for study of biomechanics and motion, human body motion, so I learned a tremendous amount from him about manipulating, you know, signals from sensors in the machines that are supposed to sense what the environment of the person does. Yeah, so just working with him [was] very good experience ... he would explain to me enough for me to understand why, you know, this is how it would be done, and he would show me how to do it. So that's how I learned. And the next time I had to do it, I knew, I knew why I had to do it, and I knew what the tools were ... (A-1)*

The findings from the interviews indicate that as newly recruited members in their workplace, all the interviewees except one had routine tasks in their early days at their workplace. These tasks generally served as an initiation to the workplace, and as the new employee handled each task, he or she moved on to tasks that required progressively higher level skills and decision-making. The fact that all the interviewees had graduated from related programs and had a master's degree meant that they had already completed courses that covered the knowledge and some of the skills that would be needed in their workplace at the university. Still, they appreciated this initiation process.

Workplaces should therefore be seen as environments for learning. The transmission of knowledge through observation and practical

application provides a very important form of learning that resembles the traditional forms of apprentice-like learning. Such learning is woven into activities that are ends in themselves. Skills and knowledge are acquired through practice. Distinct in character from learning in formal settings, informal workplace learning provides us with an important insight into learning. The skills acquired on the job are embedded in life. That is, a person performs a task not to learn, but to accomplish something. Therefore, a task within a context – for instance, writing a new program or conducting an interview – plays a crucial role in learning and skill acquisition, and learning happens as an interaction between a person, an activity and a context. Furthermore, the workplace provides a social environment where people can grow in maturity and learn responsibility as well as gaining skills. Informal workplace learning thus provides not only for the enhancement of skills but for personal development and collegial interaction as well.

Conclusion

The workplace is an environment where learning often occurs informally. This study aimed to investigate – via graduate student employees – informal workplace learning experiences and ways of informal learning. The findings reveal that graduate student employees learn at work by participating in various work practices, collaborating with colleagues and advisers, and meeting new challenges, all of which provide learning opportunities. Learning is embodied in the everyday practices of work.

Several interviewees commented that when they compared their experience of PhD coursework to their workplace experience, they realised that the formal learning of the classroom produces mainly explicit knowledge, while informal workplace learning leads to tacit or implicit knowledge, thanks to personal involvement in working towards completing a particular task. Consistent with previous research, the findings of the present study reveal that informal learning in the workplace is important for graduate student employees, and this happens in the performing of a task and interaction with senior researchers and advisers (Slater, 2004). Such learning flourishes in a collegial environment (Ellinger, 2005) and is enhanced by personal characteristics (Lohman, 2009).

In line with the findings of Beckett and Hager (2002), the informal workplace learning experiences of the graduate student employees in the present study showed that, when involved in tasks that are holistic, contextualised, and activity- or experience-based, individuals were motivated to learn and enhance their skills so as to better accomplish the tasks at hand. Often such learning had a collaborative/collegial nature. In fact, one cannot separate workplace practices from learning, as they are inter-embedded.

Most previous research on informal workplace learning has concentrated on types of informal learning and on factors and contexts that affect informal workplace learning. However, none of these studies investigated graduate student employees' experiences. The present research does exactly that and provides insights on how these experiences can contribute to PhD candidates' studies and their overall development as future academicians. Difficult work situations (critical incidences) also proved to have potential for skills development and personal growth when combined with the right amount of pressure and/or support from senior researchers or advisers.

The present study contributes the literature as a pioneering study, but further research is needed to develop a more detailed understanding of the effect of informal workplace experiences of graduate student employees. Future studies might, for example, focus on similarities and differences between diverse disciplines in terms of the degree of contribution of informal workplace learning to the students' professional, academic and personal development. One could also explore the transition of graduate student employees into new roles after graduation.

Finally, various studies point out concepts such as communities of practice that undoubtedly contribute to a broader understanding of workplace practices, but as Loftus and Higgs (2010) point out, investigating individual experiences and what the individual brings to the world of work through practice and through engaging in activities is important and needs to be researched further.

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Enhancing e-learning in old age

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This study assesses the efficacy of e-learning content that has been adapted to cognitive styles in a sample of older adults. Since the personalisation of learning content has been generally associated with learning processes, it was hypothesised that intrinsic motivation, metacognition and self-regulated learning and learning strategies would interact in affecting learning outcomes. A sample of 106 older adults attending the University of the Third Age was divided into two groups on the basis of the learning approach (face-to-face vs. online). Participants were asked to fill out questionnaires that assessed cognitive styles, learning processes and learning outcomes. A factorial ANOVA and path analysis were used. Findings confirmed the efficacy of adapting e-learning content to older adults' cognitive styles, as well as the role played by intrinsic motivation, metacognition and self-regulated learning, and learning strategies in determining learning outcomes. Consequently, this research supports the benefits of e-learning environments in facilitating learning processes and in encouraging older adults to engage in learning activities.

Keywords: *e-learning, cognitive styles, learning processes, older adults*

Introduction

The rapidly growing older population has led researchers to further investigate the cognitive domains of intelligence, learning, memory and attention, which normally change during ageing, and their implications for maintaining a good quality of life (Simpson, Camfield, Pipingas, Macpherson & Stough, 2012; Williams & Kemper, 2010). Universities of the Third Age offer education programs aimed at promoting psychological and social wellbeing. There are a range of stereotypes about older people and their lifelong learning habits; for example, that they have low or no interest, experience anxiety or lack self-confidence (Chang, McAllister & McCaslin, 2014; Morrell, Mayhorn & Echt, 2004). These stereotypes are out of touch with reality. While there is general agreement in the literature that online educational programs can be effective interventions that foster intellectual stimulation and personal fulfilment (González, Ramírez & Viadel, 2012, 2015; Goodwin, 2013; Wandke, Sengpiel & Sönksen, 2012). Older people take more time to learn; make more mistakes and need more support.

When teaching technology to older people, teaching methods often draw on their other abilities and experiences in order to reduce their anxiety about using computers (Patsoule & Koutsabasis, 2014), especially in the first stages of learning (Kim, 2008). Consequently, even though e-learning seems to be an appropriate tool to support learning; for example, by allowing for individualised learning content and flexible delivery (Hernández-Encuentra, Pousada & Gómez-Zúñiga, 2009), an improvement in cognitive function is not enough to guarantee outcomes in terms of actual computer use for older adults. Other attitudinal variables must also be investigated (Chaffin & Harlow, 2005) such as cognitive styles, motivation, metacognition and self-regulated learning.

Background of study

Since the 1990s, an increasing number of studies have highlighted the beneficial effects of computer usage on personal and social factors

such as social interaction, loneliness, self-esteem, self-efficacy, as well as on cognitive capacity for cognitive health in later life (Czaja, 1996, 1997; Jones & Bayen, 1998; McConatha, McConatha & Dermigny, 1994; Mead, Batsakes, Fisk & Mykityshyn, 1999; Morrell, Mayhorn & Bennett, 2000; Rajagopal & Thilakavalli, 2014). Investigations on intellectually engaging activities have shown that there is no prototypical "elderly computer user" but there is a heterogeneity of individual characteristics, from cognitive to motivational states. In terms of the different ways people process information, older people are said to be more internally motivated, problem-orientated and self-directed than adolescents and young adults (Knowles, Holton & Swanson, 2005; Straka, 2000). As a result, "it is important to develop contextual knowledge about the users for whom the system is being designed" (Dickinson & Hill, 2007, p. 616) in order to motivate and reduce the barriers (anxiety, lack of interest and negative attitudes towards technology) that hinder learning processes in old age (Savelsberg, Pignata & Weckert, 2017). Accordingly, as cognitive styles seem to be key factors that affect older people's learning patterns, they should be taken into account in the design of e-learning systems.

Cognitive styles are generally defined as individuals' habitual or typical ways of experiencing situations, perceiving, organising, retrieving, processing information, and solving problems (Chen & Liu, 2008; Messick, 1984; Riding & Rayner, 1998; Sternberg & Grigorenko, 1997). Clustered in a considerable array of dimensions, cognitive styles are often understood as opposing poles occupying opposite ends of a behavioural continuum, such as field-dependent vs. field-independent (Witkin, 1962); reflective vs. impulsive (Kagan, 1965); wholist vs. serialist (Pask, 1976, 1988); verbaliser vs. visualiser (Paivio, 1971). In the 1990s, two major hypotheses were formulated, one arguing a superordinate unified structure based on an analytical-intuitive (holistic) style in relation to the hemispheric lateralisation of the brain (Allinson & Hayes, 1996; Hayes & Allinson, 1998), the other affirming two principal orthogonal cognitive style families, wholistic-analytic and verbaliser–imager, grouped on the basis of the correlations among different cognitive styles, methods of assessment and effects on behaviour (Riding & Cheema, 1991).

Using the structure of government as a metaphor for describing individual differences in the regulation of intellectual activity, labelled as thinking style, Sternberg (1985, 1997) proposed a model including 13 styles. Among

them, he distinguished the individuals who use a global thinking style from those who use an analytic thinking style.

Conceiving cognitive style as an individual's constant approach to organising and representing information, Riding (1991) developed the first computerised test to assess the wholist–analytic and verbaliser–imager cognitive style dimensions in an integrated manner. From this perspective, Cornoldi and De Beni (1997, 2001) confirmed the constant characteristic of cognitive styles, although they admitted a specific cognitive plasticity. Individuals fall on different positions along the style continuum and, when facing a task, can prefer a style other than their own (De Beni, Moè & Cornoldi, 2003). Cornoldi and De Beni's model of cognitive style foresaw four dimensions:

1. The global style that consists in a preference for organising and elaborating information as a whole;
2. The analytical style that refers to a tendency to analyse information into its parts;
3. The verbal style that concerns a preference for representing information initially verbally and then in mental pictures;
4. The visual style that involves a tendency to represent information as images and to learn best from visual displays.

As for e-learning environments, the personalisation of learning contents to students' cognitive styles may facilitate the memorisation of items and their recall, especially when learners are older adults. However, personalisation alone may not be enough. Further factors related to learning processes, such as motivation, metacognition and self-regulated learning are needed (Castel, Murayama, Friedman, McGillivray & Link, 2013; Kumar, Singh & Ahuja, 2017; Monacis, de Palo, Sinatra, & Berzonsky, 2016; Villar, Pinazo, Triado, Celdran & Sole, 2010; Villar, Triado, Pinazo, Celdran & Sole, 2010b).

Even though past studies have shown that motivation is a central component of personal health and wellbeing, as well as one of the key factors affecting learning in any environment (Lim, 2004; Miltiadou & Savenye, 2003; Schunk, Pintrich & Meece, 2008), it has not yet received enough attention in online learning (Fırat, Kılınç & Yüzer, 2017, p. 65; Jones & Issroff, 2005) because educationists and researchers have focussed more on the cognitive processes in these environments than

on the affective and socio-emotional processes (Chen & Jang, 2010). In this regard, intrinsic motivation has been referred to as engaging in an activity for its own sake, for the enjoyment, interest or natural fulfilment of curiosity throughout life (Barry & King, 2000; Ryan, 1995; Ryan & Deci, 2000). It has been identified as the main source that triggers and maintains learning processes especially in e-learning environments (Cerasoli, Nicklin & Ford, 2014; Hartnett, George & Dron, 2014).

There has been general agreement that intrinsically motivated learners exhibit behaviour patterns including self-regulation, exploration, reflexion, deep level learning (i.e. understanding instead of learning by heart; Marton & Säljö, 1984), metacognitive regulation and strategy use (Boekaerts & Minnaert, 2003; Martens, Gulikers & Bastiaens, 2004; Ryan & Deci, 2000; Schunk & Ertmer, 2000; Zimmerman, 1995). Self-Regulated Learning (SRL) (Pintrich, 2000; Zimmerman, 2000) refers to an inclusive perspective that comprises cognitive, motivational, affective and social-contextual factors, through which individuals set their goals in relation to learning and ensure that these goals are achieved (Efklides, 2011). One of the components of SRL is metacognition, which has been generally defined as the knowledge of one's own cognitive process (Flavell, 1976), involving monitoring and control functions. Self-regulated learners consider learning as a controllable process and they tend to use various cognitive and metacognitive strategies, such as planning, organising, and monitoring (Zimmerman, 2000). Given their particular meaning, these learning processes have received much research attention in relation to academic achievement in traditional settings (Abar & Loke, 2010; Efklides, 2011; Mega, Ronconi & De Beni, 2014) and in online environments (Broadbent & Poon, 2015; Greene & Azevedo, 2010). As for age differences, the above-mentioned learning processes have been found to be similar in both younger and older adults (Castel et al., 2013; McGillivray & Castel, 2017; Price, Hertzog & Dunlosky, 2010).

The present study

The first aim of this study was to assess the effects of adapting learning content to cognitive styles on learning outcomes in a sample of older adults. The learning content was delivered by the Adaptive Hypermedia Learning Systems (AHLSs) and recorded by a Sharable Content Object Reference Model (SCORM).

As the adaptation of the learning content is believed to be associated with learning processes, it was hypothesised that intrinsic motivation, metacognition and self-regulated learning, and learning strategies would interact with learning content adaptation in affecting learning outcomes. More specifically, it was expected that:

1. e-learners would achieve better learning outcomes than face-to-face learners;
2. e-learners with higher levels of intrinsic motivation, metacognition and self-regulated learning, and learning strategies would achieve better learning outcomes than e-learners with low levels;
3. e-learners with higher levels of intrinsic motivation, metacognition and self-regulated learning, and learning strategies would achieve better learning outcomes than face-to-face learners with both higher and lower levels.

The second aim of this research was to assess the mediating role of metacognition and self-regulated learning and learning strategies between intrinsic motivation and learning outcomes using path analysis with observed variables. It was expected that:

1. Intrinsic motivation would have positive effects on learning outcomes and, in turn, would promote metacognition and self-regulated learning;
2. Metacognition and self-regulated learning would positively affect learning strategies and learning outcomes;
3. Learning strategies would improve learning outcomes.

Methods

Sample and procedure

The sample comprised 106 older adults (55 females; Mean age = 65.7, SD = 5.17) attending the University of the Third Age. They were divided into two groups on the basis of the learning approach (face-to-face vs. online). Twelve respondents were excluded from subsequent analyses because they did not complete the procedure. The final sample was composed of 94 participants (50 females and 44 males), who filled out a series of questionnaires in approximately 25 minutes during an ordinary

lesson. E-learners received the online questionnaires, whereas face-to-face learners completed the paper–pencil version.

The experimental procedure consisted in the following steps:

1. Administration of questionnaires;
2. Presentation of the learning units: e-learners received the units tailored to their cognitive styles, whereas face-to-face learners received the same units without adaptation;
3. Final examination to verify the achievement of the learning outcomes.

The learning units were presented in an adaptive learning sequence system allowing the definition of a process able to build an interoperable learning object (LO) that could be used or adapted for use in multiple e-learning environments. The learning content was divided into different units given the high level of granularity of the SCORM standard. Each unit was implemented in a Shareable Content Object (SCO) for two reasons: it is the smallest unit that can be launched and traced by the Learning Management System (LMS); and the Sequencing and Navigation (SN) rules are able to choose among these components, thus offering different navigational paths. Two types of SCO (the unit and the reinforcement) were constructed for each topic and the learning content was presented according to four cognitive styles (global, analytical, verbal and visual). Consequently, a total of eight SCOs were built for each unit. The units were followed by a multiple choice test to verify the comprehension level of the learner. If the test failed, the same learning content was provided in the same cognitive style but using a different presentation mode. A second test followed. The navigation path supported by the same cognitive style continued if the learner passed the test. Differently, the same content was given by adapting the learning content to the second preferred cognitive style.

Measures

The *AMOS Cognitive Style Questionnaire* (CSQ) (De Beni, Moè & Cornoldi, 2003) was used to assess the cognitive style on the global–analytic and verbal–imagery dimensions. The test encompasses two parts, each containing nine items rated on a 5-point Likert scale (1 = *Strongly disagree*, 5 = *Strongly agree*). The first part measures the

preference toward an analytic or a global approach. Respondents have to observe a figure inspired by the Rey-Osterrieth Complex Figure test for 30 seconds, then they are asked to reproduce the stimulus figure from memory. Subsequently, participants answer the nine items to indicate their preference for analytical (four items) or global (five items) style. In this study, the reliability of this dimension proved to be good (Cronbach's alpha = 0.798). The second part of the test refers to the preference toward verbal or visual cognitive styles: after viewing twelve words and twelve images, participants answer the nine items referring to their inclination toward imagery or verbal style. Also in this case, the reliability was good (Cronbach's alpha = 0.810). The completion of the questionnaire took approximately 25 minutes. The cognitive style was determined by assigning positive and negative scores to each item on the basis of the scheme suggested by the CSQ and then by calculating: (a) the total sum of the scores for each cognitive style (analytic vs. global and visual vs. verbal); (b) the standard deviation to estimate the amount of variance of the scores obtained from the sum; (c) the high values (HV; $x + \sigma$) and the low values (LV; $x - \sigma$). Visual and analytic styles were identified when the sum of the positive and negative scores was less than the LV, whereas verbal and global styles were identified when the sum was higher than the HV.

Intrinsic motivation, metacognition and self-regulated learning, and learning strategies were assessed by using the subscales of the *Questionnaire on the Processes of Learning* (QPL; Polácek, 2005), D-form, the Intrinsic Motivation Scale (IMS), the Metacognition and Self-Regulated Learning Scale (MeSRLS), and the Learning Strategies Scale (LSS). Each subscale comprises 18 items rated on a 5-point Likert scale (from 1 = *Strongly disagree* to 5 = *Strongly agree*).

The IMS measures individuals' interest, joyful involvement, perceived competence, usefulness, and concentrated attention considered as positive predictors of autonomy. Students who are intrinsically motivated tend to engage in activities for no reward other than interest and enjoyment (Deci, 1972; Lepper & Malone, 1987). The scale showed high reliability (Cronbach's alpha = 0.851).

The MeSRLS measures two components of a single factor: metacognitive ability and self-management of learning. Metacognition refers to the knowledge of one's own cognitive processes, whereas self-regulated learning is defined as the process by which learners activate cognitions,

affects and behaviours orientated toward the achievement of learning goals. Cronbach's alpha of the scale proved to be high ($\alpha = 0.813$).

The LSS assesses the techniques used by students to learn. They consist of choosing important information, taking productive notes and answering questions. The scale showed good levels of reliability (Cronbach's alpha = 0.786).

The *learning units*, each comprising a maximum of 7 chunks, were elaborated on the basis of the previously described cognitive styles. The topic of the units concerned psychology. As for the global style, the text consisted of 15 lines with keywords in bold to underline the most relevant parts. With regard to the analytic style, the content consisted of maximum 25 lines with a list of the main elements of the unit; the visual style foresaw the presentation of the content with coloured characters, drawings and cartoons. As for the verbal style, the written text was accompanied by an oral recording. Each unit included a total of 16 SCOs and the whole package amounted to 80 SCOs.

The comprehension tests involved 30 multiple-choice questions about the content of the units. After the presentation of each unit, participants had 30 minutes to complete the test. The scores ranged from 18 to 30: scores lower than 18 indicated the exam failure. Participants took a final exam after three weeks to evaluate their learning outcomes.

Data analyses

Statistical analyses comprised independent samples t-test to verify gender differences on the scores of the variables taken into account; a 2x2x2x2 factorial Analysis of Variance (ANOVA) to compare the main and interaction effects of Learning Objects Adaptation (LOA; adaptation vs. non adaptation), Intrinsic Motivation (IM; high vs. low), Metacognition and Self-regulated Learning (MeSRL; high vs. low) and Learning Strategies (LS; high vs. low) on learning outcomes. The scores of IM, MeSRL and LS were divided into high and low after calculating a cut-off value; (3) a path analysis with observed variables to test the indirect effects of MeSRL and LS between IM and learning outcomes. The model fit was examined using the chi-squared test ($\chi 2$) and its degree of freedom, the Root Mean Square Error of Approximation (RMSEA; values of 0.08 or less) and its 90% confidence interval (90% CI), the Comparative Fit Index (CFI; values greater than or equal to

0.95), and the Standardized Root Mean Square Residuals (SRMR; values of 0.08 or less) (Browne & Cudeck, 1993; Hu & Bentler, 1999).

Analyses were carried out using SPSS 20.0 for Windows and MPlus 8.

Results

Gender differences were found in the scores of MeSRL and LS between males, $t(92) = 3.125$, $p = 0.000$, and females, $t(92) = 2.147$, $p = 0.002$. Specifically, females obtained higher scores than males in MeSRL ($M = 26.32$ and $M = 25.63$, respectively), whereas males obtained higher scores in LS ($M = 24.28$ and $M = 23.12$, respectively).

As for the cognitive styles, 24 learners were identified as global, 22 as analytics, 23 as verbalisers, and 25 as visualisers. The total sample was evenly divided into two groups: e-learners and face-to-face learners. Results of the factorial ANOVA revealed significant main effects of learning objects adaptation, $F(1,64) = 14.636$, $p = 0.012$, partial $\eta 2 = 0.250$, metacognition and self-regulated learning, $F(1,64) = 2.625$, $p = 0.001$, partial $\eta 2 = 0.192$, intrinsic motivation, $F(1,64) = 13.324$, $p = 0.003$, partial $\eta 2 = 0.270$, and learning strategies, $F(1,64) = 7.499$, $p = 0.020$, partial $\eta 2 = 0.102$, on learning outcomes. That is, statistically significant differences were observed in learning outcomes between e-learners and face-to-face learners, and between participants with high and low levels of intrinsic motivation, metacognition and learning strategies. Post-hoc analyses indicated that e-learners obtained higher scores ($M = 28.49$) than face-to-face learners ($M = 26.59$) in the final exam. Learners with high intrinsic motivation gained higher scores ($M = 28.77$) than those with low levels of intrinsic motivation. Learners with high levels of metacognition and self-regulated learning showed higher scores ($M = 26.23$) than those with low levels of metacognition ($M = 24.36$). Learners with high levels of learning strategies scored higher ($M = 25.71$) than those with low levels of learning strategies ($M = 23.62$).

Interaction effects were also observed. In particular, the interaction of learning objects adaptation with intrinsic motivation, $F(1,64) = 5.724$, $p = 0.005$, partial $\eta 2 = 0.178$, and with metacognition and self-regulated learning, $F(1,64) = 9.424$, $p = 0.015$, partial $\eta 2 = 0.226$, significantly affected learning outcomes. Differences in the scores were observed between e-learners and face-to-face learners with low levels of intrinsic motivation: e-learners obtained higher scores ($M = 27.35$) than face-to-

face learners (M = 24.21) both with low levels of intrinsic motivation. Moreover, statistically significant differences in learning outcomes were found between e-learners and face-to-face learners both with high levels of metacognition and self-regulated learning: e-learners with high levels of metacognition obtained higher scores (M = 25.55) than face-to-face learners with high levels of metacognition.

Path analyses were performed to test the multivariate relationships between the variables. According to the hypothesised model, intrinsic motivation predicted metacognition and self-regulated learning, which, in turn, predicted learning outcomes. Moreover, the construct of metacognition and self-regulated learning was assumed as a predictor of learning strategies. Fit indices of the model indicated an excellent fit to the data, $\chi 2 = 2.263$, df = 1, $p = 0.132$; RMSEA = 0.056, 90% C.I. = 0.005 - 0.096; CFI = 0.987; SRMR = 0.026. As expected, intrinsic motivation positively predicted learning outcomes and metacognition and self-regulated learning which, in turn, positively predicted learning strategies and learning outcomes. Standardised beta coefficients are shown in Figure 1. With regard to the indirect effects, results suggested that learning outcomes were indirectly predicted by intrinsic motivation via metacognition and self-regulated learning ($\beta = 0.377$, $p = 0.003$), and by metacognition via learning strategies ($\beta = 0.285$, $p = 0.020$). Moreover, learning strategies were indirectly predicted by intrinsic motivation via metacognition and self-regulated learning ($\beta = 0.427$, $p = 0.003$). The model explained 48.2% of the variance of learning outcomes, 31.3% of the variance of metacognition and self-regulated learning, and 23.9% of the variance of the learning strategies.

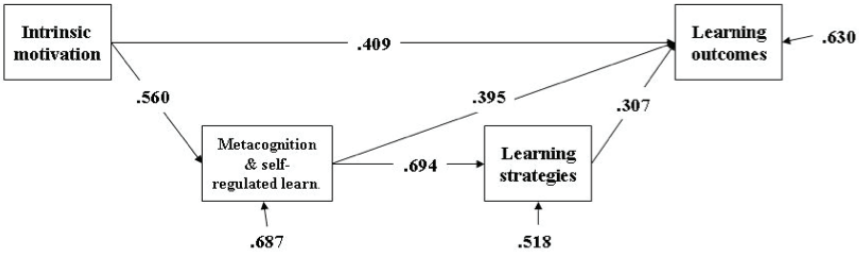

Figure 1: *Path diagram of the relationships between intrinsic motivation, metacognition and self-regulated learning, learning strategies, and learning outcomes with standardised parameter estimates (paths were significant at p < .05).*

Discussion

This research provided several key results that expanded the understanding of how individual differences in cognitive styles affect learning outcomes, even in old age. First, findings from factorial analysis of variance confirmed the efficacy of the adaptation of learning contents to older learners' cognitive styles on learning outcomes, together with intrinsic motivation, metacognition and self-regulated learning, and learning strategies. Consistently with previous studies carried out with young students (de Palo, Sinatra, Tanucci, Monacis, Di Bitonto, Roselli & Rossano, 2012; Di Bitonto, Roselli, Rossano, Monacis, & Sinatra, 2010; Monacis, Finamore, Sinatra, Di Bitonto, Roselli & Rossano, 2009), learning tailored according to cognitive styles and offered in an e-learning environment facilitates and improves academic performances. This is true in the sample of older adults who may require a learning environment that gives priority to specific information and activates effective control operations in learning. As for learning strategies, findings confirmed the role of intrinsic motivation, metacognition and self-regulated learning, and learning strategies in enhancing learning outcomes. Surprisingly, when considering the interaction effects, results indicated that older e-learners with low levels of intrinsic motivation showed better learning performances; that is, although they showed a decreased interest and involvement in learning, their learning outcomes were better when learning contents were adapted to the cognitive styles and provided in an e-learning environment. Conversely, learning outcomes were greater when learners with high levels of metacognition and self-regulated learning obtained the adaptation of learning contents in the e-learning environment. Hence, results further confirmed the efficacy of the AHLSs tailored to participants' cognitive styles in interaction with the knowledge of their own cognitive process and the control of their learning process. These findings corroborated the potential benefits of adaptive e-learning environments in enhancing assimilation of learning content, in reducing forgetfulness, in motivating and providing learners with the possibility to develop autonomous learning strategies (Al-Azawei & Badii, 2014). The increasingly heightened awareness of such benefits was also motivated by the difficulty of individualising learning at a "massive" scale through traditional approaches, especially because of the heterogeneity of the target population (i.e., younger and older adults) participating in lifelong learning activities (Paramythis & Loidl-Reisinger, 2003).

A further goal of the present research was to examine the relationships between specific learning processes, such as intrinsic motivation, metacognition and self-regulated learning, learning strategies, and learning outcomes in older adults. Results from the path analysis indicated, first, that higher levels of intrinsic motivation, i.e., the tendency to participate in learning activities for curiosity, interest and satisfaction purposes, determined better learning outcomes as well as increased metacognition and self-regulated learning, thereby confirming the specific literature: the rational and affective involvement in the learning process may foster students' use of cognitive and metacognitive strategies to plan, organise, and monitor the process itself (Boekaerts & Minnaert, 2003; Martens, Gulikers & Bastiaens, 2004). Second, learning achievement and the effective use of learning strategies depended directly and strongly on metacognitive processes. However, the weaker indirect effect observed between metacognition and learning outcomes through learning strategies indicated that knowledge and regulation of cognition were important sources of learning achievement, in accordance with the related literature (Zimmerman & Schunk, 2011). This relationship further confirmed that when students learn for themselves they display personal initiative, perseverance, and adaptive skills that allow them to achieve the desired learning outcomes.

In conclusion, the present research provided further empirical support for the effectiveness of e-learning environments structurally arranged in specific ways (instructional interactions, systems, tasks and texts). As a result, learning processes are facilitated, encouraging older adults to engage and persist in learning activities. As Findsen (2002) wondered: "What do older adults need education for?" There are lots of reasons. For example, Jenkins (2011) argued that lifelong learning can increase the wellbeing of the elderly, and Tornstam wrote that "human aging includes a potential to mature into a new outlook on and understanding of life" (Tornstam, 2011: 166). Indeed, research has begun to deal with the potential for older people to acquire new knowledge and fulfil learning needs, rather than dwelling solely on how can they meet their physiological and social needs (Boulton-Lewis, 2010).

Notwithstanding, much research is still needed to overcome some limitations of the present study. A broader and representative sample of older adult learners would allow a generalisation of the findings, as well as a comparison with a sample of younger learners, which may confirm

the effectiveness of adaptive learning systems. In any case, e-learning programs offer undoubted opportunities for reshaping the place of older adults in society and promoting their wellbeing.

Author contributions: VdP, PL and MS conceived and designed the experiments; FC performed the experiments; VdP and LM analyzed the data; VdP and MS wrote the paper. All authors have approved the submitted version.

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Music learning for fun and wellbeing at any age!

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Abstract

Music has long been shown to have diverse benefits for all age groups. Music therapy has been used in a variety of situations involving both physical and mental health issues. A report of a United Kingdom study on the benefits of older people's participation in community music activities prompted an investigation of the benefits of a new initiative in an Australian regional city – a ukulele group formed by members of the local branch of the University of the Third Age (U3A). Data-gathering materials comprised a questionnaire completed by voluntary participants early in their involvement, a second questionnaire six weeks later, and a focus group near the end of the year, as well as participant observation. Both questionnaires incorporated Diener and Biswas-Diener's Flourishing Scale (Diener et al., 2009) and questions on the physical aspects of playing the ukulele. The first also sought details of demographics, motivation for learning, musical preferences and any previous experience in learning a musical instrument. The second asked for highlights and challenges and whether the experience could be recommended to others of their age. Responses indicate enjoyment in learning something new, despite some challenges, and in

being part of the group. This is supported by the fact that most original members are still attending, and many new ones have joined them.

Keywords: *Third age learning, arts and health, rural and regional, active ageing*

Introduction

A sense of wellbeing is surely something desired by most human beings. Ideas differ as to what contributes to it, and what it consists of – perhaps a sense of contentment, finding meaning in life, and a feeling of value and being valued by others are part of it. Wellbeing is not equivalent to happiness, which may be a more changeable state. Stanley (2009) recognises the lack of consensus on what wellbeing is. Her study on how wellbeing is understood by older people was conducted in response to a gap in the literature relating to older people's perspectives. Stanley (2009) highlighted the importance of knowing how older people think and feel, given the growing numbers of older people in society.

Wellbeing can be considered as having three dimensions – personal, relational and collective (Prilleltensky, 2005); that is, a person's own individual wellbeing, wellbeing as manifested in relationships between individuals, and community wellbeing. The arts, in general, have been recognised as contributing to these three dimensions of wellbeing, and in health and healing; "[c]reativity and exercise of the arts that are involved are major contributors to living healthy lives" (Regional Arts Australia, 2011, p. 3).

British studies have concluded that the arts and the cultural experience of children play a key role in determining what their adult lives will be like (Stone, 2017). Recent Australian research highlights the association between mental wellbeing and the time spent engaged in the arts (Davies, Knuiman, & Rosenberg, 2016). A report, from Western Australia, has recommended that each hospital and health service should have an arts plan (Watts, 2016; Gibson, & Goedhart, 2016). Various presentations from a 2016 conference on the arts and health add insights on the role of the arts in wellbeing, ageing creatively and in clinical practice (Country Arts SA, 2016). A submission by the

National Rural Health Alliance (NRHA) to the Standing Committee on Communications and the Arts inquiry into broadcasting, online content and live production to rural and regional Australia stresses "the strong relationship and connection between creative involvement in cultural activity and health and wellbeing" (NRHA, 2016, p. 2). It also summarises the potential community functions of art:

- Art in its various forms is used as a means of communication on health and health-related issues;
- Art is itself therapeutic and is widely used to complement treatment and management;
- Art is widely used as a force for community development, to sustain communities and develop their capacity to deliver health-promoting lifestyles (NRHA, 2016, p. 2).

Australia's National Arts and Health Framework outlines the positive effects of the arts on health, including empowerment through personal development and social engagement involving support networks, a sense of belonging and coping assistance (Department of Communication and the Arts, 2014). It is therefore important that steps be taken to ensure that people in rural and regional areas have equitable access to arts experiences.

In this article, the focus is on music and its effects on wellbeing, specifically with regard to older people.

Recognition of the potential influence of music on one's mental state is not new. As told in the Bible (1 Samuel 16: 14–23), King Saul, about 3,000 years ago, suffered from a troubled mind – his attendants encouraged him to let them find someone skilled in playing the lyre (called a harp in various translations) to play for him and calm him. That is how David, the future king, came to serve in Saul's court. As the playwright Congreve later wrote (1697), "Music has charms to soothe a savage breast" (often misquoted with "beast" instead of "breast").

Today, music therapy is used in many situations. It has been found helpful for people with dementia. Recently a man with Alzheimer's, who had found that singing helped him with his disease, gained a recording contract – previously he had become increasingly aggressive, but his

singing took him back to positive times in his life as an entertainer (ABC News, 2016). The role of personalised playlists in helping people with dementia and also those with Parkinson's has been demonstrated – allowing the former to reconnect with those close to them as old memories resurface and the latter to unfreeze and move more freely (ABC TV, 2016). Music therapy is now being prescribed by doctors for a range of conditions (Block & Liura, 2016). Bright (1997) draws on her considerable experience as a music therapist and in aged care to discuss ways of providing such therapy for older people. This involves both individuals and group situations, in the context of a range of physical and psychosocial needs. A Victorian initiative has turned hospital patients with cancer, stroke and various other conditions into singers/songwriters, lifting their spirits and giving them new energy and purpose (ABC TV, 2015). Music also has a role to play in palliative care – in music thanatology harp music helps bring peace to patients and others present and singers also have a soothing effect (Fyfe, 2006; Rule, 2006; Chatterjee, 2009; Cardozo, 2017a; Cardozo, 2017b).

Music may be used as "a form of recreation, as lifelong learning and education, for social contact, and as a form of emotional expression, self-therapy and spiritual expression" (Harris et al., 2005, p. 233). It has also been identified as a means of promoting positive ageing (Harris et al., 2005). A study relating to music in older people's lives revealed the following benefits for older people for whom it gave meaning. It offered "ways of understanding and developing their self-identity, connecting with important life events and other people, maintaining wellbeing, experiencing and expressing spirituality, and enhancing cognitive and physical functioning" and also contributed to improved quality of life, self-esteem, sense of competence and independence, and counteracting isolation and loneliness (Hays, 2002, as cited in Harris et al., 2005, p. 236).

Australians who engage in musical activities – dancing, attending events, playing an instrument and singing – scored higher on wellbeing scales, particularly when these activities were in the company of others (Weinberg & The Australian Unity Wellbeing Research Team, 2014). Group singing has been shown to be good for health and stress reduction as well as building community; a Victorian study investigated the effect of singing on wellbeing (Gadd, 2013). This is something also supported by neuroscience – singing has been found to stimulate the right side of the brain to release endorphins, which lower stress and heighten

happiness; an increase in levels of the hormone oxytocin has also been identified, with consequent greater pleasure and bonding (Sheppard, 2016; de Jong, 2014).

The Music for Life Project in the United Kingdom (UK) investigated the wellbeing benefits of participation in community music activities by older people and found that participation in group activities brought numerous perceived benefits, with higher levels of enjoyment reported by those participating in choirs, instrumental music and other music activities (Hallam et al., 2011; Hallam, Creech, Varvarigou, McQueen, & Gaunt, 2014). An Australian study found that a group of older people belonging to a University of the Third Age (U3A) choir gained enjoyment and connectedness. Along with their new musical skills, they were able to "form connections with like-minded people and gain from their social and musical engagement a sense of accomplishment and pride from being part of a successful choir" (Joseph & Southcott, 2015, p. 344). Another Australian study, which included more dependent people, including in aged care facilities, identified various motivating factors for their participation in community singing groups, and the benefits this provided for their quality of life. These included the importance of singing in their lives, the pleasure, challenge, achievement and sense of purpose it provided, as well as good fellowship, lifting their spirits and assisting in overcoming negatives in their lives stemming from health conditions and financial hardship (Lee, Davidson, & Krause, 2016).

The benefits for wellbeing gained by some older people through participation in a ukulele group are revealed in this study into the psychosocial and physical benefits of music learning.

The music and wellbeing study

Background

The research project is set in Whyalla, a regional South Australian city of about 22,000 people, the second largest outside of the capital Adelaide (Mount Gambier being the first). The Whyalla U3A Branch was formed in 1996. Over these two decades a wide variety of courses have been available to members, presented by both members and guest lecturers – languages, historical topics, discussion groups, scientific topics, one-off

sessions on various topics, games and social activities, including visits to interesting places. For most of that time the U3A has enjoyed a close relationship with the local campus of the University of South Australia, which has provided a rent-free meeting space for U3A activities.

While classes have included musical appreciation sessions, a new initiative at the beginning of 2014 enabled participants to take a more active role and produce music themselves through learning the ukulele (Davis, 2014). Inspired by the British project mentioned above, it was decided to conduct a small study involving the ukulele group members, most of whom were beginners.

Aims and objectives

The study investigated the effects on participants' wellbeing of taking part in the ukulele sessions. It aimed to identify both psychosocial and physical benefits of these music learning activities for this regional city group of active retired people, for whom the variety of opportunities can be more limited than for their metropolitan peers.

Methods

Approval was gained from both the University of South Australia's Human Research Ethics Committee for this extension to an existing project relating to older learners and from the U3A Committee. Early in their involvement in the ukulele classes, participants who were willing to take part in the study were surveyed via an anonymous questionnaire seeking both quantitative and qualitative data. The survey incorporated Diener et al.'s Flourishing Scale (formerly called the Psychological Well-being Scale with its questions about general wellbeing (Diener et al., 2009). It also contained questions about physical abilities that were relevant for playing the ukulele, and questions relating to demographics, motivation for learning the ukulele, musical preferences and previous experiences of learning to play a musical instrument. Open-ended questions allowed a deeper gathering of individuals' feelings about their music learning experience. A second questionnaire was administered six weeks later. This contained some of the same questions on wellbeing and abilities, and also asked respondents to identify the highlights and challenges of their musical learning, and whether they would

recommend that others in their age group take up such activities. While the questionnaires were anonymous, a number was allocated to the first one submitted by each respondent. They were asked to put this same number on the second questionnaire so that changes over time could be pinpointed. A focus group was also conducted near the end of the year; this involved class members staying after class for a short discussion – those taking part signed consent forms. Researcher participant observation also contributed to the data collection.

Findings

The initial survey was completed by most of the group (21: 9 males, 12 females; mostly aged 65 and over; all residents of Whyalla for at least 10 years, except one; 3 with a first language other than English). Fifteen of those responded to the follow-up survey: 5 males, 10 females.

Responses concerning the physical aspects of playing the ukulele revealed the following: all could move each of their fingers independently, though there was some variation in strength of fingers (one who had lost a left thumb did not need it for this instrument, but had given up keyboard because of this loss); almost all could sit comfortably for up to 20 minutes, but some had difficulty in standing for that long. Over half (12) rated their hearing as either "good" or "very good" (6 for each), two rated theirs as "adequate", and five chose "sometimes I have difficulties"; four needed an aid (including one under each of the previous two categories). Sight (with glasses, if needed) was rated as "very good" (9) or "good" (10), with one "adequate" and one having difficulties.

The Flourishing Scale formed the first part of both surveys. Adding the ratings for each participant gave scores for wellbeing, a high score (maximum 56) indicating psychological resourcefulness and strength. One female participant in the first survey (only) has been excluded from the reporting of the Flourishing Scale results, as there was simply a tick on that part of the questionnaire. The total of each person's scores on the first survey ranged from 40 to 56, indicating that the group in general had fairly positive feelings about themselves. For most of those who completed the second survey there was little change evident, the range of totals being from 43 to 56. The two group members who exhibited the greatest improvement increased their score from 45 to 54

and 40 to 48, respectively. The small numbers were a limitation, and the high starting point made it less likely that this scale would indicate the sort of improvement in wellbeing that some of their comments indicated had occurred. However, it provided a framework for participants to reflect on the aspects of life covered by the statements.

Participants had wide-ranging musical tastes and showed a willingness to learn new things. All except five expressed willingness to learn a few songs in other languages. Approximately half of them had previously learned one or more other musical instruments. Seven took the opportunity to provide additional comments. One commented that participation in this activity gave *"Better respect for artists that play"*. While three respondents were not eager to perform in public, there were expressions of enjoyment in this new learning in the following statements:

> *"Very happy to have the opportunity to learn to play the instrument";*
>
> *"I am enjoying learning to play ukulele very much";*
>
> *"I wanted to learn to play the ukulele for my own pleasure and a 'challenge'";*
>
> *"Joining the group has been quite a life-changing experience, meeting wonderful and fun-loving people."*

Seven members of the group took part in the focus group conducted by the researchers (who were also part of the group), and an absent member provided responses to the focus group questions via e-mail. The following findings are drawn from both the second survey and the focus group notes.

Regarding physical aspects, some participants had noticed an increase in dexterity and flexibility, while others found arthritic fingers a continuing challenge. *"My finger control has improved as I have remembered a lot of the chords. I do have arthritis in my little finger left hand, but at this stage I am not too restricted."*

Some participants found that they were better able to distinguish particular sounds, recognising clear chord changes in songs to which they were listening and anticipating when a chord change was needed in what they were playing.

While highlights included gaining musical skills, learning chords and new songs, and improved singing, the social aspects and associated enjoyment were important and are reflected in the statements from the participants listed below:

> *"I like the company."*
>
> *"It's fun being part of the group."*
>
> *"Having a go and doing something new, people are helpful and I find the class goes fast."*

The *"'joie de vivre' of others participating"* was commented upon, along with *"the group's enthusiasm and patience"*. Occasional visitors to the group added to the social interaction. It was affirming to receive genuine applause from an audience at a "gig" and to receive feedback that showed that the performance had been appreciated. They enjoyed being in a group with so many others interested in the music, and where people had the opportunity to share their ideas about possible additions to the repertoire. One participant said: *"The highlights for me are that I have been able to go home and confidently learn more songs that I like to play myself."* The fact that the ukulele was a small, light, inexpensive instrument was appreciated. The session was *"always good"* and helped with learning *"something new every day"*.

Challenges included learning the chords, distinguishing differences in sound, getting fingers to do what they were supposed to, battling arthritis, and being able to sing in tune with sufficient volume. Some found it difficult at first when presented with an unfamiliar song, and found playing smoothly with fast rhythms challenging. Some chose to contribute in other ways – as strong singers or by playing a tambourine to keep the rhythm and help the others, which was an asset in public performances. Differing expectations of how leaders should be directing the group at times became an issue, but in due course procedures evolved that satisfied participants. On the other hand, one described *"unity within the group"* as a highlight.

Several participants indicated that they could be happy to play to family and friends, but this was something they would need to build their skills and confidence in as they learned more. One said: *"I would be drowned out by my grandson's electric guitar!"* There was a willingness to play

for community events. Several participants had spoken enthusiastically to friends about how they were having fun learning the ukulele, and that it was good to see other people enjoying themselves. One or two had tried to encourage others to take it up as well. All agreed that they would recommend that others of their age group learn the ukulele.

Other comments, including some from people who joined the group after the surveys had been administered, included the following from a wheelchair-bound man who had been rather doubtful that he would enjoy it when people told him that he should join this group of mostly retired people. He said: *"Now I go and thoroughly enjoy it. I love being with people. People were only too willing to invite me into the group."* He had found taking part in the U3A twentieth birthday celebrations a *"wonderful"* experience (despite the flies!): it was *"incredible to be able to be there"*. Another participant who had had depression issues found that making the effort to take part in these activities had provided enjoyment. He commented that he was sometimes reluctant to attend because of other things cutting across the time slot, but he always felt better after he had gone to the class. A former member who has not been attending recently was wondering whether to return: *"I did enjoy it – I think I will go back."*

In general, although the ukulele learning experience had sometimes presented challenges and occasional frustration, participants rated it overall as something positive in their lives.

Discussion

The group's satisfaction with this music learning activity, even with some challenges, is demonstrated by the continued attendance of the majority of the original group. While others have discontinued for a variety of reasons – some have moved from Whyalla and two have passed away, new members have been attracted by the enthusiasm of the longstanding members to join the group since the study. Participation has enabled the group to socialise with others, sharing in a common interest, and making a contribution, not only by supporting their fellow ukulele players, but also through playing at community events such as musical evenings and a festival held over a long weekend. Other contributions have been at aged care facilities on occasions such as a Mother's Day lunch.

Some performances have included making a contribution to events raising funds for various local causes. Invitations for the group to be involved in future community events continue to arrive.

Despite this being a much smaller study than the United Kingdom research that led to our undertaking it (Hallam et al., 2011). It is evident that there have been similar positive outcomes for these older ukulele players, demonstrating that such activities are worthwhile and should be encouraged. As well as experiencing a sense of achievement in the new learning involved, for some there have been therapeutic advantages. All of the participants agreed there have been the positives of being involved with others pursuing common interests, and enjoying the companionship provided, just as Joseph and Southcott (2015) found in their U3A choir study.

Further research could investigate the levels of wellbeing experienced by participants in other music activities in the same locality and farther afield. While this ukulele group is for people of U3A aged 50 and above, there are other musical groups in Whyalla that do not have a minimum age for membership and yet have a predominance of people in the older age group: for example, the Whyalla Community Brass, the City of Whyalla Pipe Band, and the Whyalla Singers.

Current interest in the ukulele in some primary schools (including in Whyalla), where it seems to have supplanted the recorder as a first musical instrument, indicates that intergenerational interaction and learning opportunities are worth considering (Lambert, 2013). The United Kingdom study referred to previously found benefits for both primary school children and older people in intergenerational activities, with both groups finding that they were "fun and enjoyable, challenged stereotypes, and facilitated peer learning and the sharing of expertise" (Hallam et al., 2011, p. 4).

For this group, participation in this form of learning has contributed to breaking down social isolation, particularly for those living alone. They have received pleasure from their musical achievements as well as enjoying the company of their fellow musicians. The Council on the Ageing SA's October 2017 "ZestFest" (formerly the Every Generation Festival) had the theme "Celebrate Connect Challenge" – these are aspirations also for this band of older musicians https://zestfestsa.org.au/).

Conclusion

This study makes a small contribution to research that fits under the second of a list of National Research Priorities – Promoting and Maintaining Good Health (Australia's National Research Priorities). One of the priority goals under this heading is "Ageing well, ageing productively", which involves "Developing better social, medical and population health strategies to improve the mental and physical capacities of ageing people." Health in the later years of life will enable continued contribution to our communities and nation; engaging in activities that promote social engagement is a vital part of a healthy lifestyle.

It is important that local, state, and national goals for active ageing take into account the positive outcomes of the fostering of lifelong learning in older individuals and groups. This should include ensuring that there are appropriate pathways for seniors to continue learning in a variety of areas, that acknowledge their diversity, and that recognise that their experience can contribute to social equity and prosperity.

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Adult literacy and socio-cultural learning at *Pina Pina Jarrinjaku* (Yuendumu learning centre)

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Introduction and purpose

The Whole of Community Engagement (WCE) initiative commenced in July 2014, led by the Office of Pro Vice Chancellor of Indigenous Leadership at Charles Darwin University (CDU). WCE aimed to build the aspiration, expectation and capacity of six remote and very remote Indigenous communities in the Northern Territory to participate and achieve in higher education. Using a place-based, Indigenous-led, community development approach, the initiative developed a model that could be applied by other Australian universities and agencies through engaging closely within Indigenous communities and promoting local level management, leadership, decision-making, research and action. The WCE included participatory action research and developmental evaluation approaches. Campus-based and remote Indigenous community-based staff worked together to identify educational needs, priorities and activities from the ground-up. Some of the main messages communities emphasised were that:

- Aboriginal leadership and governance in remote education are essential

- Education and higher education are a priority for many Indigenous people
- Aboriginal cultural knowledge is foundational to other learning
- Education should be 'both-ways'
- Education was viewed holistically by Indigenous participants and includes wellbeing, spirituality and livelihood
- English language, literacy and numeracy (LLN) is central to progress

In response to this last point, a Strategic Priority Project (SPP) on Aboriginal adult English Language Literacy and Numeracy was put in place. The SPP was aimed at promotion of policy development and systems change, increased information sharing and collective action for improved English LLN for Aboriginal adults across the NT, and in the long term.

Both the Commonwealth and NT governments have made statements about the importance of NT's Aboriginal population to economic development in Northern Australia, and have strategies that target stronger participation in local community decision making, greater education and employment success and improved health and safety.

Indigenous people make up 30 per cent of the NT population and are highly significant to economic development and cultural richness. Competency in English Language, literacy relates strongly to the ability to participate in all these areas. Fifty four per cent of Aboriginal people in the NT don't speak English as their first language.

For anyone with aspirations for post-school education or employment for themselves, their family and community – English is essential. For anyone who wishes to understand any information issued by government or business, read a book or a newspaper, navigate the health or legal system, understand the writing on a prescription, find their way around an airport, the ability to communicate in English is vital.

A 2017 statistical overview report[1] revealed that 85 per cent of a sample of 660 Aboriginal adults from across the Northern Territory lacked the English language, literacy and numeracy skills to function independently

[1] Aboriginal adult English Language, Literacy and Numeracy in the NT: A Statistical Overview, Fiona Shalley and Allison Stewart, Office of the PVC of Indigenous Leadership, CDU Uniprint , Sept. 2017

in life, education and work, and that there is very little assistance currently available. Data for this statistical overview was provided to CDU from multiple service providers – an indication of extent of need and goodwill. Aboriginal elders from 6 remote communities supported the SPP and statistical research. These leaders spoke about the need for English alongside recognition that Indigenous language and literacy are central to their lives and that first language literacy should come first.

Purpose of this case study

WCE research has shown that at this time the majority of the adult Aboriginal population are missing out on any form of assistance with English LLN – particularly those who are at the lower measures of the scale; and most people, especially those in remote areas, are at that end of the scale. Among the innovative strategies to emerge in the past decades internationally, is 'family learning' which stands out as a transformative approach that works across generations and between institutions. Family learning is breaking down barriers between home, school and community.

Research evidence supports a 'whole family' approach to literacy and other educational challenges that disadvantaged families and communities face. The only Council of Australian Governments (COAG) indicator for adult literacy in Australia focusses on employment and jobs – a good thing, but many people are missing out given that:

a) There is no (or minimal) assistance for people at the lower end of the LLN scale.

b) There are so many people at the lower end of the LLN scale.

c) There are so few remote employment opportunities.

d) Many people are not in the labour force.

e) There are very few adult learning centres in communities.

Solutions are not simple and sustained effort of multiple players is required over time – a wide-ranging commitment to Aboriginal-led policy and the implementation of diverse and appropriate models informed by LLN specialists and linked to related policy initiatives. One model that has emerged and is supported at local level is the community/family learning centre model. This case study draws on

the Yuendumu experience of literacy development and socio-cultural learning and has been commissioned to inform discussion and debate and inspire action. Literacy provision that is underpinned by what is happening in social and cultural practices, rather than what is not happening[2], and the building of local delivery capacity matched to people's real-life needs, preferences and realities.

This report strongly suggests that the local learning centre is key to improvement, to the embedding of literacy and the maintenance of any successes.

Allison Stewart
WCE and SPP Manager
23 November 2017

Recommendations

Any English LLN delivery for adults should take into account socio-cultural learning practices, including new and old ways of learning, and the use of digital technologies.

A family/community capacity building approach is seen as the most beneficial in order to capitalise on the existing skills and competencies of Warlpiri adults, so that they are more able to mentor and support others in community.

Any model should include a component for non-Indigenous workers to ensure that their communication is appropriate and that they have the right skills to support the needs of local learners.

A bi-partisan approach is required, whereby government recognises and adds value to the financial commitment that the Warlpiri Education Training Trust (WETT) has made in the past ten years, and has committed to in future years. WYDAC is unwavering in its commitment to adult LLN in remote Northern Territory, and is setting a strong precedent for culturally responsive and respectful ways of supporting communities to participate fully (through LLN) at the local, national and global level.

[2] Guenther and Kraal 2017

Background

The Warlpiri Education Training Trust (WETT) established in 2005 in collaboration with the Central Land Council and Newmont Mining, funds community learning centres in the four Warlpiri communities of Nyirripi, Willowra, Yuendumu and Lajamanu (Disbray & Bauer, 2016, p. 6). The establishment and operation of the learning centres in each community has a varied history, but in the last few years Batchelor Institute has had the contract for managing all four learning centres.

In 2017, the Warlpiri Youth Development Aboriginal Corporation (WYDAC) was successful in obtaining the contract to manage the learning centre in Yuendumu (Disbray and Guenther, 2016, p. 81). This learning centre is now known as the *Pina Pina Jarrinjaku*, which in Warlpiri language means "to learn". WYDAC' s aim is to provide a centre that offers a flexible and responsive approach to adult learning, integrating individual, family and community priorities. Its real underpinning strength, however, is in solid governance and the Aboriginal Board's commitment to Warlpiri aspirations for learning and education, particularly with regards to adult literacy. This case study describes the WYDAC and WETT model and approach to improving English language, literacy and numeracy (LLN) in Yuendumu.

The four LLN program delivery areas

The WYDAC *Pina Pina Jarrinjaku* has responsibility for working with a local advisory group, providing access to computers and the Internet, case managing the learning journeys of participants and providing mentoring and support to local learning centre employees.

In addition, there are four areas of program delivery:

1. Informal
2. Non-formal
3. Formal
4. Warlpiri language and culture

Informal learning

Informal learning is the program area that has the highest participation

rates. Warlpiri people access the *Pina Pina Jarrinjaku* for many purposes; including using email, searching the internet, reading newspapers, chatting online, accessing their myGov account to check Centrelink information, filling out forms, applying for a driver licence or Ochre Card, ringing their bank and to get help reading and understanding letters from Court and other government services. People also like to read local texts such as the School newsletter, Central Land Council News, Land Rights News and *Junga Yimi*, which is the old Yuendumu School magazine. *Junga Yimi*, which means "true story", is very popular because it is full of stories about the community in the past 30 years, with pictures of people and places that have a great deal of meaning to the reader.

Non-formal learning

Non-formal learning is community driven education sessions that provide information about important community issues. Some examples of these sessions include domestic violence awareness, healthy eating, how to set up myGov accounts and understanding legal rights. One of the most popular community education sessions has been about cyber safety and how to respond to online bullying.

Formal learning

Formal delivery is accredited training that is provided by training organisations that travel into Yuendumu and usually stay for one or two weeks. Most of this training is organised and delivered in workplaces. Other training delivered in the *Pina Pina Jarrinjaku*, such as Sport and Recreation (Charles Darwin University), Education Support (Batchelor Institute), Mental Health First Aid (National Employment Services Association) and Domestic Violence (Lifeline). WYDAC *Pina Pina Jarrinjaku* has focussed on the delivery of community services this year, because it is an entry level or pathway qualification that is suitable for many different kinds of jobs and workplaces.

Warlpiri language and culture

The reference group determines Warlpiri language and culture, Board and any other interested community members. Some of the activities include artworks, creating Warlpiri literacy resources, story and designs

for artefacts in the learning centre space, Warlpiri signs, participating in off-site cultural activities and Warlpiri literacy development such as reading, find-a-word and using online language resources.

Learning literacy – a socio cultural model

Literacy learning takes place in every part of our lives, in informal ways such as our personal, social and community practices and in formal ways through school, vocational training and higher education. Daily literacy practices that we are all familiar with include talking to other people, using a key card, writing a text message, checking our bank balance, reading a community poster, listening to the radio or attending a meeting. The literacy for all of these types of tasks develops over a lifetime of different experiences and using literacy in different contexts, it is not separate from who we are. Literacy is real, authentic, and is embedded or natural occurring in the routines of our life. When adults learn literacy in all of these ways – from their interactions in their family and interactions in the community, where the learning has real meaning, it is called a social practice.

The way in which people learn and develop thinking skills as part of a social process, through interaction with others, is known as socio-cultural learning (Vygotsky, 1978). The behaviours of people are influenced by their society and culture, including learning behaviours. It is a two-way process whereby people learn from themselves and from each other. This is evident in the way Warlpiri people learn new literacies amongst family, friends and social groups in the community or social groups in the *Pina Pina Jarrinjaku*. In other words, in marlpa – to have company or learning with others.

The following information was presented by Barbara Napanangka Martin at the Australian Council for Adult Literacy 2017 Symposium: 'Action for Change: Indigenous adult, English, language, literacy, numeracy'. Barbara Napanangka Martin, a teacher at Yuendumu School describes her view of socio-cultural learning.

Barbara Napanangka's view of socio-cultural learning

> *Socio-cultural learning is about people's behaviours, it is about what is happening in the community with our family, sitting*

down talking story about what they want to teach their young children, older children and young adults. If you have a bedtime story to your child, it means sitting around a camp fire, which is a way of socio-cultural learning. Young people are learning from their elders and are really listening to dreaming stories and things around them. It is a form of literacy teaching for young people to learn from elders because it is the way we have done things for a very long time. Reading a book is important too as they are reading and listening it can be like elders telling story in real life. But it is also playing, making jokes, laughing, and thinking about family together in a circle. All the family is there. No one is missing out from this beautiful way of learning through story.

In Kardiya way, they read books to their children but in Yapa way it is outside sitting, watching the stars and talking about things they can see. It is important it is coming from an elder. When we take them out bush we tell them about the land, dreaming, songs and ceremony, which is important for them to learn. It's all about what we believe. All of these are important for Yapa people to learn about their jukurrpa. We always think, talk and tell story. It is an emotional way of thinking of using our literacy teaching. Social and emotional learning is a feeling thing. When people use story to teach something it uses more parts of the brain, the emotion part, the feeling part and the memory part as well.

My grandchildren brought a poster to me and asked what it said. It was all about asbestos on the airstrip and how dangerous it was, warning people not to go there. I told them a long story about what happens to people when they breathe in asbestos. It makes you sick and you will have health problems, possibly cancer. Dogs will die too. Nobody is allowed to go in that area, not even for bush bananas. So I made it into a story so they could understand the danger.

It is important for them to learn literacy with support from other Yapa because Yapa will have the opportunity to teach them about what to do for phonics and sounds. Some people have never learnt

> *sounds and so they need to break words into single sounds and syllables to help them understand English sounds. When I go on bush trips I use these times to make sure that I teach Warlpiri literacy and English literacy at the same time. Bush trips are good opportunities for teaching and learning all language because learning the Warlpiri helps to learn the English.*
>
> *Young people connect through Jaru with other Yapa workers and Kardiya workers and volunteers. They participate in different programs and they increase in self-esteem by being proud of who they are. They develop positive connections because they are always working with older Jaru workers who are role models. They are learning with them. Young people don't have a lot of knowledge but if they are learning in Jaru the way we do in our culture, this helps them. It is important because they are being supported and learning through older mentors. They learn by listening and being strong in their identity. It is what is inside you, not separate. This is what socio-cultural learning means to me.*

The *Pina Pina Jarrinjaku* has consistently provided a place for Warlpiri people to engage in learning in a safe and supported space and where their value as learners has been respected through informal skills development. This is fostered through socialisation with peers and family, where learning in a group has a long history in cultural origins. Literacy provision that is underpinned by what is happening in social and cultural practices, rather than what is not happening is key to success (Kral & Schwab, 2012, p. 6).

The recent review of the learning centres by the Warlpiri Education Training Trust made very clear the gap in adult education policy in the Northern Territory and indicated that English LLN was critical to success in all areas of learning (Disbray and Guenther, 2017, p. 87 & p. 100). Many of the recommendations in the Review that refer to mentoring and development of Yapa staff are highly dependent on improvements in English LLN. Training and education in the Northern Territory are delivered in English language. Therefore, adult learners need to be competent in the language of instruction (Hanemann, 2016, p. 9). It is an imperative for Warlpiri people to develop competency in English literacy in order to progress along the education and training pathway.

It is important at this point to note two factors. Firstly, there is ample evidence on the value of first language literacy to support second language literacy (Hanemann, 2016) and secondly, that the maintenance of Warlpiri language and culture is strong, as evident in the vision and recommendations of the WETT Review (2017). The consistent message is that English LLN is an additional skill and this is reflected in the Whole of Community Engagement initiative across six Northern Territory communities, which states that 'Aboriginal people reiterated the centrality of their own languages to their cultural practice, identity and connection to country, however many understood the importance of supporting their children to learn English and wanted to improve their own' (Shalley & Stewart, 2017, p. 3).

According to the statistical overview of the Aboriginal English LLN in the Northern Territory 'More than 85% of a sample of 660 NT Aboriginal adults assessed against the Australian Core skills Framework (adult LLN assessment tool) have English reading, writing, speaking, listening and numeracy skills below the level needed for independence in the workplace and for having the confidence to participate in all aspects of the broadest Australian society' (Shalley & Stewart, 2017, p. 71).

This is typical of the data from Workplace English Language Literacy Programs in Yuendumu and assessments conducted in the learning centre space over the past five years. Clearly, there is work to be done in addressing this inequity, so that Indigenous people can participate fully in all aspects on their lives.

The WYDAC *Pina Pina Jarrinjaku* has a new, whole of community approach to literacy that occurs inside the learning centre and literacy that occurs outside of the learning centre in Yuendumu. This has been informed by our *Pina Pina Jarrinjaku* data and extensive experience in the historical challenges in delivering formal training that is dependent on a classroom approach over consecutive days and/or weeks. Patterns of engagement whereby incidental, short, discrete learning opportunities occur have been most successful. These challenges are best described by Musharbash (2010) during her anthropological research in Yuendumu:

> *Immediacy shaped my fieldwork every day in multiple ways … I could not plan ahead … specific data collection, language lessons, everything happened when it happened, rather than when I wanted it to happen. Big events (such as mortuary rituals in the case of death) overruled any other activity, but even without*

> *them, everything had to be slotted in with what was happening in the settlement on that particular day … appointments simply did not work.*

In addition, the WETT Review (2017), in considering models of adult learning opportunities, reviewed the ' Yes I Can ' adult literacy program (implemented by the Literacy for Life Foundation and with origins in Cuba), and deemed it unsuitable for Warlpiri contexts, based on its delivery restrictions (classroom based, 74 consecutive lessons) and lack of experience in English as an Additional Language (ADL) context (p. 154). The Review also notes that "language, literacy are best learned incrementally and purposefully" (ibid., p. 87), reinforcing the need for socio-cultural approaches in Warlpiri communities.

Given the anecdotal and statistical evidence that WYDAC has gained through service delivery experience in Warlpiri communities in the past two decades, an increasing number of community leaders recognise the value of the fundamental role that socio-cultural learning and social interaction plays in the development of the way that adults think and learn. This view is also supported by Kral and Schwab (2017).

Approaches to learning

1. Literacy approach: in the learning centre

All of the delivery by WYDAC *Pina Pina Jarrinjaku* inside the learning centre is connected to improved English LLN through incidental learning opportunities. For example:

When a young Warlpiri woman uses the phone to ring her bank, she is using numeracy to read numbers and English language to talk to the bank staff members – which are both literacy practices.

When a young Warlpiri man fills out a driver licence application, he is reading and writing – which are both literacy practices.

When a Warlpiri grandmother checks her myGov account, she is using numeracy, reading and technology – which are all literacy practices.

When an old man comes into the learning centre to read the school newsletter, he reads in English and/or Warlpiri, two-way learning – which are literacy practices.

Every single time a young person comes into the *Pina Pina Jarrinjaku* to use a computer, they could be either reading, writing, learning, talking or using numbers; all literacy practices which help develop English LLN competency.

In the period January to August 2017, there were 1600 instances of informal support provided to Warlpiri people. This translates to 1600 opportunities where Warlpiri people have either engaged independently in a task that required English LLN practices or asked for English LLN support to complete a task. The tasks are usually for either a personal reason, for example, a birth certificate application, a community activity such as a poster for a funeral notice or for an educational goal such as completing a boarding school enrolment form. In all of these instances, the literacy was embedded in a task that had meaning for the learner. In almost every situation, the person seeking help was with a family member (older or younger depending on the task) who often provided literacy support, demonstrating the effectiveness and strength of intergenerational learning. Encouraging and scaffolding (by providing support and then reducing the amount of support as the learner acquires more confidence are very typical of the ways in which Warlpiri learners support each other.

2. Literacy approach: in the community

There is a great deal of literacy support provided to local Warlpiri people that occurs outside of the learning centre. Family members, Yapa workers and Kardiya workers (Walpiri and non-Aboriginal) provide this support. Everyone becomes a teacher when they are asked for help that is about literacy, they are *pinangkalpa-wati* – those who have learned and who are teaching others. WYDAC *Pina Pina Jarrinjaku* is planning a program to provide some specialised support for those helpers in partnership with its existing community engagement program, *Jintangka Mardaninjaku* – 'Coming together to Learn'.

The Department of Prime Minister and Cabinet (PM&C) recognises the need to address the low levels of adult LLN in remote communities. However, evaluation of the Skills for Education and Employment (SEE), program (the primary LLN delivery program of the Australian Government) clearly demonstrated that overlaying this mainstream national program has not worked for Aboriginal people in the NT. This

viewpoint was supported by SEE management at the November 2016 Aboriginal English LLN workshop at Charles Darwin University where the Australian government acknowledged key stakeholder feedback and invited ideas for positive change.

WYDAC has recently been in negotiations with the Department for some additional support with application of the learning centre model. Some level of recognition and acknowledgement of the issue has been formally expressed (for example at the November 2016 LLN workshop at CDU) and informally expressed, see below:

> *During my time in Central Australia, I have become more aware of the importance of English literacy and numeracy for First Nations adults to better participate and take more control of their economic and social futures. There is value in approaches that come from the community, for the community, and that are contextualised to local organisations. So, for example, in relevant parts of Central Australia, Warlpiri adults engage in learning drawing on their resources and organisations and Arrernte adults engage in learning using their organisations (G. Powell, September 27, 2017).*

2.1 Drawing on the 26TEN model

The new pilot program in Yuendumu will formally commence implementation during 2018. The design of the program has drawn on ideas from the Tasmanian Government's adult literacy campaign, 26TEN. The 26 stands for the letters of the English alphabet and 10 stands for the numbers that make up the English counting system. 26TEN's collective approach supports and encourages everyone in the community, and across different sectors to take an active role including: various government departments, libraries, businesses, community groups, volunteers, educators, training organisations and individuals; all working together to improve the literacy levels of adults in Tasmania with clearly articulated joint-goals and long-term funding arrangements firmly in place (www.26TEN.tas.gov.au). The 26TEN program goals are that:

1. Everyone knows about adult LLN
2. Everyone is supported to improve their LLN & help others
3. Everyone communicates clearly.

26TEN strategies are broad and include:

- plain English and literacy awareness-raising workshops for organisations and the general public
- referral services and a website
- public access to a hotline and social media messages and interaction
- ongoing support for literacy workers including those employed in training organisations
- training and support for volunteer tutors
- funding to workplaces and communities which need LLN support
- advice to businesses and industry
- partners with the statewide library network called LINC to deliver embedded literacy

The WYDAC *Pina Pina Jarrinjaku* Yuendumu pilot will use some of the ideas from the Tasmanian model. These include discussions on raising community awareness and understanding of English LLN, workshops on how to communicate in plain English and training in strategies to support local Warlpiri people with literacy tasks. For the first part of the pilot, WYDAC *Pina Pina Jarrinjaku* is focussing on raising awareness and supporting reading in English. These workshops and discussions are being developed with two different target groups. One group will be Kardiya workers and Kardiya community members, with all services agencies, for example, CDP supervisors, youth workers, media workers, school staff, shire staff, invited and welcome to participate.

2.2 Literacy and storytelling

In addition to those named above, other activities will be aimed at local Yapa (Walpiri people) who have high levels of English LLN and who are consistently called upon to support family in English LLN tasks. The really unique aspect of delivery to Yapa literacy leaders is that delivery will occur in each of the Walpiri camps in Yuendumu and that the learning will be done through narrative. Storytelling has sustained Warlpiri knowledge transmission for generations. As an example, consider the ways in which world faith systems use storytelling to explain the creation and the beginning of time and to set down rules to

establish and moderate codes of behaviour and to provide comfort in times of grief and chaos. There is probably not a better example of socio-cultural learning, as in the way that religious systems are embedded in story. For Indigenous peoples, cultural heritage, identity and knowledge are passed through each generation by language and are integral in affirming and maintaining wellbeing, self-esteem and a strong sense of identity.[3]

Furthermore, the importance of storytelling can now be explained in brain research. When learning is constructed into story, rather than just facts, it activates more neural parts of the brain including sensation, emotion and memory. Research has shown that learners have much better recall when they learn new things in narrative, and they are able to transfer or use this information more effectively (Science of Learning Research Centre, 2014).

Reading is so important in understanding writing and in learning an additional language but access to hard copy based texts in Yuendumu is limited and they are not readily available in homes or in 'camps '. English and Warlpiri books are primarily housed in the Yuendumu School, the Bilingual Resource Development Unit and the *Pina Pina Jarrinjaku*. Newspapers and pamphlets are available in various other service organisations but in all cases access to these texts is during school or business hours. A part of the whole of community approach will include the distribution of locally produced texts such as the school newsletter, Land Rights News, Central Land Council News, Junga Yimi and Koori Mail to every camp on a regular basis.

2.3 Access to digital technology

Access to technology is a different story. There is also a lot of evidence about the way in which young people from remote communities are using digital technology and the way that this is transforming learning and literacy practices (Kral & Schwab, 2012), including English alphabetic awareness (Kral & Schwab, 2017). This uptake and interest in technology is evident in the data from *Pina Pina Jarrinjaku*. Of the 1600 learning incidences mentioned earlier, the majority involved the use of technology and it seems that almost everyone has access to some

[3] From the House Standing Committee on Aboriginal and Torres Strait Islander Affairs inquiry into language learning in Indigenous communities – Our Land Our Languages, 2012.

sort of mobile device. The use of digital technologies has contributed to the skills of reading and writing, which have been enhanced over time because this approach is both meaningful to the learners and determined by the learners (Kral & Schwab, 2017, p. 11–12).

Furthermore, there is a certain amount of freedom, and reduced risk, in using technology for writing. Errors in writing using traditional pen and paper can be considered as failure to the adult learner who lacks confidence, rather than an understanding that this is part of the writing process. Writing a text message or an email enables the learner to experiment with ideas, drafting, spelling and self-correction (all good writing strategies), which encourages the risk in writing without the threat of failure or impact on confidence.

3. Literacy approach: Intensive and individual

There is an increasing need to provide more intensive support to Warlpiri learners who have significant English LLN challenges. This is usually about developing alphabetic skills and letter–sound relationships, spelling strategies and understanding how language can be used to meet individual needs. Learning the different sounds of a second language can be difficult for young adult learners, who also may not have literacy in their first language. Building confidence in learners who are at this stage of learning is also very important.

During 2017, WYDAC Pina Pina Jarrinjaki enlisted the support of volunteers who have been involved in a variety of roles in the learning centre. A new focus for future volunteers is planned to provide this intensive English LLN support to learners. Local texts and other reading and writing materials that are meaningful to the learners will be used while digital technology and multimedia will play an important role. Family members will be encouraged to be part of this activity to observe, provide bilingual support and develop their own competency in literacy tutoring. This is another way in which socio-cultural learning strengthens and reinforces the skills of the learner and the skills of other family members. As bedtime reading and other family literacy practices are not part of everyday practice, it adds value to the literacy practices of the broader family group, raising awareness of literacy. The Board also hope that this reinforces the important roles of playgroup and early childhood participation, which are critical in acquiring new literacy practices, which falls within the scope of

WYDAC's broader commitment to caring for young people.

> *The national Reading and Writing Hotline will be partnering with Pina Pina Jarrinjaki on this initiative by circulating volunteer opportunities to specialists and organisations in their database. The aim is to capture the interest of suitable LLN practitioners who have the skills and expertise to develop phonics and spelling in context with learner needs.*
>
> *The following is an extract from a presentation given at the Symposium, Action for change: Indigenous adult, English, language, literacy, numeracy, Symposium, by Enid Nangala Gallagher, from Yuendumu.*
>
> *In this presentation, Nangala described her niece Kaylisha's learning journey, embedding English LLN in her day-to-day socio-cultural practices.*
>
> *This is a story about Kaylisha, who is my niece. Before, when she was a Jaru participant, she would look at the older Jaru about how they would run activities. She would listen and see how things are working. She has been looking at older Jaru, watching and seeing how to learn and how things are working so that she can join in the activities. For her, Jaru is a safe place and a place that she wanted to get socially involved with other people. It was good that she stayed out of trouble when she was younger and Jaru was the best place for her to go. She had lots of encouragement from the older Jaru workers to join in. She was quite happy staying at home playing with the young ones and helping her other aunty and when she was 15 she started going to work with Jaru.*
>
> *A few times she was shy and the youth workers would say to me "Napaljarri is a bit shy". But when I went back home I kept encouraging her to be strong. I told her to keep going, they need you to be Jaru worker and be confident in your work. Today, by hearing about her and seeing her she makes me feel proud. She has been to a conference in Canberra and one in Darwin to talk about the Jaru Pirrdiji program. She is a strong Jaru worker and a leader as well. She is a teacher for other young people.*

By using English in the workplace and using English in the learning centre Kaylisha's literacy and numeracy has become stronger. She worked on a cyber bullying program with other young people. She didn't understand all those words because she hadn't used them before. One of the older Jaru explained to her what those words meant. Words like cyber and fraud and server.

Getting involved with the youth workers, planning the program, setting out sports equipment, working out which areas can be used and how long activities should go for – that is learning literacy of language, time and space. Napaljarri texts and emails while she is at work and downloads things from the computer. That means she is reading, writing and using technology in the workplace. When Jaru cook for movie night she counts the carrots and potatoes to make sure they have enough food and reads recipes to cook it the right way. She transfers those literacy skills to what she does at home helping her aunty cook for the little ones. Kaylisha knows all of her banking details and how much she receives from Centrelink. She knows all the times she works and reports this to Centrelink. She knows how long she works for, which days, the start and finish time and so she knows how much she will be paid. There's lots of numeracy and reading in those skills. When Kaylisha helps get ready for bush trips, she teaches the young girls how to pack the boxes for each camp, working out how much food and dividing up the number of utensils to go in each box. More numeracy, language and planning skills.

Kaylisha also works some days at the Outback Store using all the skills she has learnt through Jaru. She went to the shops and asked if there were any jobs there. The manager told her the days, hours and times she would work. She learnt about Work Health and Safety, read warning signs about electricity and read the shop policies and protocols. She can read and write her hours in the timesheet, use the till, the eftpos machine, process power cards and help people when they buy phones and iPads. In this job she is reading, writing, using numbers, speaking, listening, learning and using technology. She helps family members activate phones and recharge their credit because she can read the instructions on the box. As she continues to work,

she improves her English literacy and numeracy to help herself and then helps others in the family and community.

I know that if I asked Kaylisha to go to a literacy class every day and sit in a classroom for weeks and weeks with people she was not comfortable with, then she wouldn't go. So you see, it is hard for us to talk about English literacy and numeracy unless we can talk about the things that we do in our community and the things that matter to us, and then the literacy and numeracy become a part of all that.

Kaylisha is a leader for young girls and that is what socio-cultural learning means to me.

Lessons learnt

What we now know

1. Learning centre data shows that Warlpiri adults demonstrate strong engagement through embedded incidental (on the spot) learning opportunities, in contrast to fly in, fly out delivery models.
2. Informal learning is significant for socialisation into literacy, as using everyday activities grows a person's identity as a successful learner, and increases confidence.
3. Once people are in employment there is increased opportunity for contextualised and ongoing English LLN support.
4. Learning and knowledge that is developed through human interaction (socially constructed learning) significantly enhances the relevance of English LLN.
5. Traditional classroom training models are high risk, likely to fail, and do not reflect Warlpiri patterns of engagement in learning.
6. There is an increasing awareness of the importance of English LLN, as a value add to literacy competencies, but not at the expense of Warlpiri language and literacy.
7. There is a strong uptake of digital technologies, increases confidence in writing skills, problem solving more than traditional pen and paper approaches.
8. Cultural obligations of Warlpiri life take priority above all else.

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Book review

Continuing professional education in Australia

Barrie Brennan
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257pp.

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Barrie Brennan in his narrative of the evolution of Professional Development (PD) in Australia presents the reader with a provocation, very aptly alluded to in the small print of the book's title 'A Tale of Missed Opportunity'. He speaks from experience, having witnessed the highs and lows of the evolving world of Continuing Professional Education (CPE). Brennan takes the reader on a historical journey from CPE's early days where PD evolved from 'practitioners learning in and from their practice' (p. 16) to the economically lucrative industry it is today, supporting a vast array of professional organisations and private businesses.

His personal and professional experiences involving CPE, from traditional professions embedded in the medical, legal and education world, through Trades and into government ogranisations that include the National Office of Overseas Skill Recognition (NOOSR), enables Brennan to provide personal

insight and explanation of a very confusing and at times contradictory world of PD in the working life of many Australians. All the while, he remains focussed on the key message of his thesis, which is the need to adequately and effectively address the continuing learning requirements for professionals across a range of professions in a complex world. Brennan achieves this using informed, insightful yet at times laboriously detailed and acronym filled accounts of the development of CPE. Using personal observations, literary analysis, interviews, as well as primary and secondary data including tables and charts, he takes the reader on a journey from the 1930s through to current times. It is during this journey the reader is, at times, made painfully aware of what might have been had events unfolded differently. Brennan's work also brings to mind Rittel & Webber's construct of 'wicked problems' (Crowley & Head, 2017; Australian Government 2007) where the problem itself was never fully identified or defined by the relevant parties at that particular time and place and many responses (or lack of response) by politicians, business, professions and educators never fully accounted for the needs and lived complexities experienced by the professionals working in the industry.

The tale begins with a recount of early PD, which Brennan describes as 'practitioner initiated learning activities' (p. 26) based on the 'individual practitioner's desire to keep up to date' (p. 31), particularly in the medical professions, Law and Education; progressing through the era of CPD, arriving at the current iteration where the decision of professional development is often removed from the individual and placed in the hands of bureaucracy, politicians and professional organisations. The premise, that over time, many professions have required their members to develop increasing knowledge, skills and understandings in the form of CPD has resulted in a system of compulsory accountability in the form of Mandatory Continuing Professional Education (MCPE).

The topics covered by Brennan are extensive. Using themes within chapters, he explores it all. To identify individual points would not do justice to the depth and breadth of content covered by Brennan. However, there were a number of salient points of interest for this reviewer throughout the tale. For example, his disclosure of a lack of interest in CPE by state and federal governments between 1980 and 2010, and the subsequent importance of Vocational Education and Training (VET) for the CPE moment during this time was particularly interesting, considering the current political obsession with controlling all aspects of education.

He also includes a detailed historical account of Competency Based Education (CBE) and critiques of this approach both nationally and internationally. Brennan also draws attention to the need for clarity of the relationship between competencies and CPE, identifying that '… competencies are concerned with describing professional practice. CPE is concerned with helping professionals maintain and improve their practice' (p. 108). This topic will be of particular interest to medical professions as they progressively work to introduce CBE into their respective professions that traditionally have not had a good understanding of what CBE is and how to equitably assess it in a complex work environment. This venture down the assessment pathway also highlights the increasingly difficult task of developing effective assessment for professionals' practice where the skills and knowledge being assessed involve communication, both verbal and nonverbal, which are difficult to accommodate as circumstances change in each situation. Using traditional assessment methods such as multiple-choice questions could not and do not account for the reality of the professionals' job.

Part II of the book adds insight and a deeper understanding of the complex and unregulated world of CPE, and raises a number of pertinent questions about the future of CPE and its relevance to many professionals. Brennan in his 'tale' forces the reader to think beyond their immediate needs and understandings of PD and consider how the history of their particular profession has impacted their personal and professional PD requirements. This historical account also helps to highlight and account for the phenomenal rise of power and position some professional associations have in the lives of professionals working in particular fields.

Brennan's exposition continues on to disclose the development of CPE, arriving at Mandatory Continuing Professional Development (MCPD), and still further to the current situation of where MCPE has moved from being focussed on improving professional practices including the updating of skills and knowledge in a bureaucratic attempt to ensure compliance and control through assessment. It also raises the question of whether the current MCPD situation is a result of 'unintended consequences', as coined by Robert Merton (Norton, 2008) where unanticipated consequences result from or are caused by a combination of ignorance, error, immediacy of interest to the neglect of other aspects,

challenges to basic values and a self-defeating or self-fulfilling prophecy. All of which appear at some point in Brennan's tale of the development of CPD in Australia.

In the current professional working environment where professionalism, skills, knowledge and expertise are scrutinised, questioned and require constant explanation and justification as well as proof or evidence of such, Barrie Brennan offers historical insight and understanding of how the current situation evolved in Australia. Importantly, he also raises a number of questions around how the emerging areas of ethics and soft skills such as communication and problem solving will be addressed as the spotlight continues to focus on accountability and proof. It is apparent that at the time of publication, the story of CPE was still in the making as it entered the era of the national registration scheme of 2010. By the end of the read, you are left wondering why were there so many missed opportunities. Yet a spark of hope remains that at some point in the future the opportunities as they present themselves to develop CPE to the point where it is accepted, recognised and capable of achieving what its intention is, will be taken up rather than missed.

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About the reviewer

Gayle Jenkins is is Course Director and Lecturer in the Masters of Applied Learning and Teaching (MALT) at Deakin University, Victoria. She has had extensive teaching experience, including teaching VET in Schools. Prior to her current position, Gayle was Lecturer and Adjunct Professor in the undergraduate and post graduate teacher education programs in curriculum studies, pedagogy and differentiated learning at Queensland University of Technology and Bond University.