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Development and Evaluation of a Pre-Professional Identity Workshop: A Case Study in Exercise Science

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Abstract

Pre-professional identity (PPI) aims to provide an understanding of, and connection to, the skills and knowledge contained in a degree and the intended profession of the student. Investigation into PPI is of importance to higher-education institutions as it provides a means of understanding a student's orientation and motivation behind degree and career selection. Developing learning activities that capitalise on these motivations is proposed to increase student engagement, reduce attrition, and enhance employability. Using the growing, but relatively new profession of Exercise Science as an example, this study describes a workshop based on theoretical models relating to the concept of PPI, adult learning and self-reflective practices that can be integrated into programs to enhance students' understanding of their professional identity. One hundred and seventy-three final year Exercise Science students participated in and evaluated the workshop. The workshop was evaluated using a theoretical framework specifically designed for the evaluation of training activities. The combination of the evaluation and feedback from students were synthesised to develop a model for the application of PPI activities across a three-year undergraduate degree.

Keywords
Pre-professional identity; exercise science; employability

Introduction

Pre-professional identity (PPI) is defined as 'an understanding of- and connection with- the skills, qualities, conduct, culture and ideology of a students' intended profession' (Jackson, 2016, p. 926). PPI has been studied through theoretical lenses to explain how PPI shapes students' career development. Specifically, the Self-Authorship Theory explains the process of becoming a professional through three developmental and interlinked stages, each having cognitive, intrapersonal, and interpersonal dimensions (Baxter Magolda, 2008). When applied to students, these stages involve: 1) gaining an understanding of the chosen profession, its norms, values and expectations; 2) using critical thinking and reflection, question disciplinary knowledge and practice; and 3) immersion into the chosen profession, collaborating with others and actively contributing to new ways of work (Jackson, 2016, 2019). At a practical level, activities including wearing a uniform, role plays and debates, role modelling and guided reflection, mentorship, and immersion into authentic, work integrated learning

experiences are proposed to facilitate the development of pre-professional identity (Hodge et al., 2009; Jackson, 2019; Ronfeldt & Grossman, 2008; Rosenblum et al., 2016).

PPI is important for academic achievement, retention, and employability for vocation specific and non-vocation specific programs (Good & Adams, 2008; Jackson, 2016; Jensen & Jetten, 2016; Tomlinson & Jackson, 2019; Whannell & Whannell, 2015). Developing students' understanding of their pre-professional identity is proposed to be associated with significant benefits including improved graduate employability through a clearer understanding of the scope of employment opportunities available (Jackson, 2019; Nadelson et al., 2017; Tan et al., 2017); providing students with a sense of purpose and meaning in relation to their current position as a student in a professional program and their intended profession upon graduation (Jackson, 2016); and developing an in-depth insight into their decision-making processes and orientation towards their chosen career, in particular, their connection and attraction to a profession (Fraher & Gabriel, 2014; Hallier & Cascón-Pereira, 2012; Schwartz et al., 2011). Students with limited experience in their professional field have been found to have a weak connection between their role as a student, the curriculum and their future profession which may lead to misalignment of student expectations of study and the scope of the profession; and in turn attrition (Bergmark & Westman, 2018; Hamshire et al., 2019; Hamshire et al., 2013; McKendry et al., 2014).

At an institutional level, developing an understanding of students' PPI in a degree is proposed as a means to understand students' orientation to their chosen career, including their values and motivations, and to promote engagement in the learning activities, thus reducing attrition (Good & Adams, 2008; Jensen & Jetten, 2016; Whannell & Whannell, 2015). Learning activities can be purposely embedded into curricula to enculturate students to their intended profession so that students have realistic expectations of what it means to practice in their intended field (Jackson, 2016). A lack of clarity regarding students' PPI limits the ability of the higher education sector to target programs and learning activities to maximise student outcomes. Therefore, there is a need for theoretically-based learning activities that describe students' PPI, both for the students and the higher-education sector.

Exercise Scientists are allied health professionals who assess, design and deliver exercise and physical activity programs for the purposes of improving health and fitness, wellbeing or performance, and/or the prevention of chronic disease and disability (Exercise and Sports Science Australia, 2020). Exercise Science encompasses a broad range of professions including Exercise Scientists, Sports Scientists, Exercise Physiologists and clinical measurements and diagnostics specialities (Exercise and Sports Science Australia, 2018, 2020). Exercise Science professions are relatively new and evolving entrants into allied health and are among Australia's highest employment growth areas (Australian Industry and Skills Committee, 2018). Given the evolving nature of the profession and variable employment outcomes, it is not clear how students define, or perceive what it means to be, an Exercise Science professional. Defining PPI is confounded by the broad nature of the degree outcomes in Exercise Science and the narrow backgrounds of the students, particularly with the establishment of shared foundation years across health curricula in many Australian universities. It is proposed that a student's PPI develops throughout the duration of their study, as students are exposed to their profession's theoretical and practical knowledge (Cruess et al., 2019). This aligns with the Self-Authorship Theory.

To begin to understand the PPI of Exercise and Sports Science students enrolled at an Australian University, the authors of the present study conducted a body of work that evaluated the PPI and work readiness of two cohorts of Exercise Science Students (Clanchy et al., 2021). Key findings from this work indicated that: 1) students identified strongly with the professional identity of practitioner, with little understanding of the role of scientist and researcher in the context of Exercise Science; 2) the formation of a student's PPI is largely value-driven based on the desire to help others, interest in exercise and sport and satisfaction with previous work or volunteer experiences in the field; and 3) the students' professional identity and future perceived employment were focused on being an autonomous practitioner who works in a team to deliver evidence-based and science-oriented interventions. Building on this work, the current paper describes the process of developing and

evaluating a workshop that aimed to increase Exercise Science students' understanding of PPI in the context of their degree program.

This paper aims to: 1) describe the development and delivery of a workshop to promote PPI; 2) evaluate the workshop in a cohort of undergraduate Exercise Science students; and 3) identify additional strategies that could promote PPI. The results are used to provide a model for integrating PPI in an established curriculum scaffolded across a 3-year degree. Using Exercise Science as a case study is advantageous due to its newness as a stand-alone career pathway, its increased popularity and growth within the health sector, and the limited understanding of students' PPI. Our findings can be applied to other professional degrees to promote increased understanding of the students' intended profession and engagement in learning activities associated with the degree.

Methods

As stated above, this study is part of a larger program of research that used a mixed method design to describe the perceived PPI, work values, work readiness, and perceived healthcare contribution of two final year cohorts of students (2016 and 2017) in the Bachelor of Exercise Science at Griffith University, Australia (Clanchy et al., 2021). Ethical approval was gained from Griffith University Human Research Ethics Committee (GU Ref No: 2016/205). The results of this evaluation formed the basis of a PPI workshop which was developed and evaluated in 2017.

Students were informed of the research via an introductory email. Students provided consent for two separate purposes: 1) to participate in the online survey and allow researchers to use their responses for research purposes; and 2) to allow researchers to use their verbal responses for research purposes. Data were analysed only from students who consented to participate in the program of research. Participants were able to withdraw their consent up to the point that the data was deidentified for analysis.

Workshop Description

The Guideline for Reporting Evidence-Based Practice Educational Interventions and Teaching (GREET) Checklist (Phillips et al., 2016), guided the description of all aspects of the face-to-face workshop to facilitate its evaluation, interpretation and replication (Phillips et al., 2016). The 17 checklist items were grouped under four themes to provide clarity for the workshop descriptions: 1) workshop focus, including background information and objectives; 2) development including the selection and application of theoretical frameworks; 3) delivery, including the number of instructors, resources, schedule, and contact; and 4) outcomes, including whether the workshop was delivered as designed. Item 4 of the GREET checklist requires discussion of the five foundation steps of evidence-based practice included in the educational intervention as per the model proposed by Dawes and colleagues (Dawes et al., 2005). It was not the intention of this workshop to develop students' understanding or application of evidence-based practice. Thus, elements of the five steps of evidence-based practice were included in the workshop design, that is, students were asked probing questions to appraise their own experiences and values to apply the information provided regarding PPI frameworks; however, this model was not explicitly referred to in the workshop.

The workshop aimed to improve students understanding of their pre-professional identity through three mechanisms:

1. Establishing the definition of PPI and factors considered to influence PPI;
2. Understanding the five key domains of professional identity; and
3. Increasing the perception of the meaning of three professional categories associated with Exercise Science (researcher, scientist, practitioner).

The Self-Authorship Theory was utilised to address the first aim of the workshop. Students were encouraged to critically reflect on: 1) their previous experiences and values that drove their decision-making process to enter into the degree and how these align with their chosen profession; 2) the alignment between their disciplinary knowledge and intended career pathways; and 3) possible activities/ opportunities that would engage them with their chosen profession during their university studies.

Two theoretical frameworks relating to the domains of professional identity were identified and utilised to address aims 2 and 3 respectively: Brooks et al (2003) domains of professional identity; and the Science-Practitioner model (Jones & Mehr, 2007). Brooks et al (2003) domains of professional identity consist of 5 values that are proposed to influence where an individual identifies themselves on the science practitioner continuum (Jones & Mehr, 2007): affiliation; autonomy; money; science; and structure. The Science-Practitioner model demonstrates the importance of research in practice by providing a continuum of research participation relating to the roles of practitioners and scientist/ researchers. This model highlights the inter-relationship between research and clinical practice in evidence best practice (Jones & Mehr, 2007). These frameworks were selected as: 1) they provided an overview of the different professional categories (researcher, scientist, and practitioner) associated with practice as an exercise scientist; and 2) they provided a list of values/ domains that can be used to conceptualise decision-making processes for student exercise scientist professional identity (affiliation, autonomy, money, science and structure). Additionally, both frameworks allow academics with limited exposure to the theoretical basis of professional identity to facilitate discussions with students on exercise science professional practice and the factors that drive career decision-making processes for students. Further, principles of adult learning (Collins, 2004) and self-reflective practice (Maudsley & Strivens, 2000) were applied to promote active learning.

The workshop was delivered as a 2-hour face-to-face session conducted during a practical laboratory in a core final year (Year 3) exercise prescription and programming course during the first week of class in Trimester 2. In total, 28 workshops were delivered with 10-12 students in each. All workshops were facilitated by the same Accredited Exercise Scientist who had 7 years' experience in academic curriculum development and delivery and in clinical practice (KC). Familiarity with clinical practice/ employment fields of the students was desirable as it provided context to the application of the three above mentioned theoretical frameworks. The workshops were delivered in a standard classroom, and no specialised equipment was required.

The full workshop description is contained in the Supplementary Material (refer Appendix). In summary, the workshop was divided into three sections:

- Section 1 – Definition of PPI: including probing questions to construct a definition of PPI and examine the factors that are perceived to facilitate its development.
- Section 2 – Professional Identity in Exercise Science: delivery of a facilitated discussion and presentation to encourage students to reflect on the continuum of professional identities available in exercise science, specifically the role of science and research, and to investigate the relationship between their own professional identities and the established domains of professional identity.
- Section 3 - Individual Development of PPI: the use of probing questions to encourage students to reflect on the development and evolution of their individual PPI.

Workshop Evaluation and Strategy Identification

The evaluation of the PPI workshop was mapped against Kirkpatrick's Training Evaluation Model (Kirkpatrick & Kirkpatrick, 2006), a measure with evidence of sound psychometric properties for the evaluation of education and training initiatives (Phillips et al., 2013; Phillips et al., 2016). Based on the four levels of the Kirkpatrick's Training Evaluation Model (i.e., reaction, learning, behaviour, and results), a workshop evaluation was constructed comprising: 1) a survey containing a question on the perceived usefulness of the workshop for the development of the students' PPI, using a 4-point

Likert scale (level 1) and an open-ended text question on how the PPI workshop assisted the students to evaluate their PPI (level 2); and 3) evaluation of the notes of the workshop facilitator (level 1 and 2).

The survey was conducted at the conclusion of the workshop using an online survey platform, SurveyMonkey. An anonymous online survey was used to encourage an accurate, honest, and immediate account of the students' perceptions of the workshop. The evaluation followed the workshop in the same session due to time restrictions.

The workshop facilitator kept notes on the engagement of students in each workshop and reflections on the implementation of the workshop content after each workshop. These notes were analysed to identify key themes across workshops.

Evaluation of the behaviour and results of the implementation of the workshop (Kirkpatrick's level 3 and 4 respectively) was not in scope based on the challenges of quantifying 'professional identity' behaviour. However, participant responses to the open-ended survey questions were analysed for self-reported increase in participation of behaviours or changed perceptions that could be considered to develop PPI (level 3). The maintenance of the workshop in the curriculum was considered a measure of the workshop results/organisational performance (level 4).

Strategies that could influence students PPI were identified during workshop discussions. Workshop discussion responses were audio- and video-recorded and transcribed verbatim.

Data Analyses

Frequencies were used to summarise the responses to the Likert-scale questions. Descriptive content analysis was used to identify themes for the open-ended survey question, workshop discussions and facilitator notes. Open to selective coding was used to provide an overview of each response, with a secondary hierarchical analysis applied to group responses under key themes (Braun & Clarke, 2006). Two researchers independently conducted the analyses. Differences of opinions on the deconstruction, interpretation, and reconstruction of data were resolved through discussion until consensus from all researchers was gained regarding the key theme that the datum represented. The process undertaken was selected based on evidence that indicates the use of two primary coders reduces flexibility in the iterative process of coding analysis, particularly interpretive and pattern coding (Berends & Johnston, 2005).

The frequency of the themes derived from the open-ended survey question was presented as a percentage of the total coded responses. Themes derived from the workshop discussions were presented as a percentage of the number of workshops the theme was discussed in, and as a percentage of the total coded responses. Primary themes were identified by applying two arbitrary criteria: 1) $\geq$ 30% representation in the 12 workshops; and 2) > 10% of the total coded responses relating to the construct of interest, to ensure that the distribution of responses was reflected in the analyses, while allowing for consensus conclusions to be drawn. When either or both criteria were not met, themes were classified as secondary. Quotes that illustrated the primary themes were identified.

Results

Participants

The 2017 cohort of students enrolled in a final year prescription and programming course (n=187) participated in this study. The PPI workshop evaluation response rate was very high (n=173, 93%).

Participants identified as female (42%) or male (58%) with the majority aged 20-24 years (67%) and of Australian nationality (71%). Eighty percent of the respondents were enrolled as full-time domestic students, and most had not undertaken previous tertiary study (66%) other than their current Bachelor of Exercise Science degree. More than half had not undertaken previous professional or paid work experience (66%), were not currently undertaking work in their field of interest (81%), had not

undertaken voluntary work experience (68%), and had not engaged in research activities (81%). There were no statistically significant differences between respondents and non-respondents for any demographic variables.

Perceived Usefulness of Professional Identity Workshop

Figure 1 presents the students' perception of the usefulness of the workshop for the development of PPI. The workshop was perceived by most students (95%) to be useful/very useful.

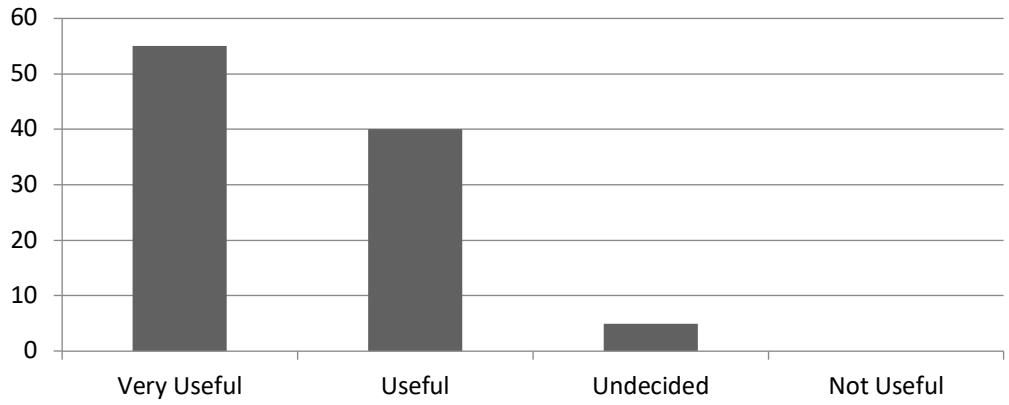

Figure 1: Perceived Usefulness of an Interactive Workshop for the Development of Student's Pre-Professional Identity

Table 1 presents the distribution of written responses relating to the usefulness of the PPI workshop (n= 119; 63% of respondents). Primary themes on the usefulness of the PPI workshop included the promotion of self-reflection relating to a career pathway (21%); explanation of pathways, careers, and opportunities available (21%); and the broadening career perspectives as to not close off employment options (18%).

Table 1: Themes Relating to the Influence of the Workshop on the Students' Pre-Professional Identity

Themes	**Coded Statements (n=119)**
Promotion of self-reflection relating to career selection	25 (21%)
Explanation of pathways, careers, or opportunities	25 (21%)
Broadened perspective/ not close off options	21 (18%)
Provide direction, clarity and insight to decision making processes	19 (16%)
Provide opportunities to ask questions and discuss career options openly	7 (6%)
Information should be presented earlier	5 (4%)
Increased confidence in decision making	4 (3%)
Provision of information regarding the five values underpinning career selection	3 (3%)
Not perceived to be beneficial	2 (2%)
Scared for future prospects	2 (2%)
Other	6 (5%)

Students' responses relating to self-reflection were further categorised into two themes: 1) reflection on the practicalities of career selection; and 2) value-based career decisions. Students indicated that the workshop provided context to their professional identity; their desired professional pathway; and their university experience. This is reflected in the responses below. Please note that the following quotes are from de-identified transcripts, therefore no participant attribution is possible.

> *Given me useful information to reflect on my professional identity as I haven't stopped to think about it.*
>
> *Made me really think about what I want from my degree and how I want to go forward with my profession.*
>
> *This is the first time I have actually realized in all three years of studying exercise science that I know the reason why I am doing what I am doing.*

Students also indicated that the workshop resulted in self-reflection on how their individual values aligned with their career decisions as demonstrated in the following responses:

> *It helped me to identify what I valued and why I valued those areas when choosing a job. It also helped me to understand what other job areas are available and how they link in with the area I am interested in, as well as how my job interest area can be a sliding scale towards other areas too. Overall, I feel more confident in the career pathway I have choose and my reasons for choosing it.*
>
> *Made me think further about my future and what is important to me in a role.*
>
> *Encourages to reflect about what is important to you, your own values, responsibility, and commitment to the profession you choose.*
>
> *The workshop has made me evaluate my values, and how these can align to my future career.*

Facilitator's Reflections

Three primary themes emerged from analysing the facilitator's reflections:

1. Consider integrating the PPI workshop earlier in the degree as PPI key concepts are important for students to understand from the commencement of their study to provide relevance to the degree content and possible career opportunities.
2. The content included in the PPI workshop did not map to the content of the exercise prescription and programming subject it was integrated into. Students perceived the content as useful, and therefore important. Integrating smaller curriculum elements relating to PPI results in the content being a 'hidden' component of the curriculum. Therefore, students may be unable to reflect on their decision-making processes in relation to their career.
3. The current professional standards for Exercise Science have limited application in the domains of PPI. There is, therefore, limited capacity/ 'space' to integrate professional identity into the curriculum. However, modules (beyond a singular workshop) need to be dedicated to PPI and employability. This recommendation is made in consideration of the proposed benefit of establishing a professional identity for students particularly relating to engagement in learning activities.

Proposed Activities to Develop Professional Identity

Students suggested many activities that they perceived would increase their professional identity. These were summarised into 11 themes (Table 2), of which two themes were classified as primary: 1) provision of work integrated learning (WIL) opportunities earlier or more frequently in the degree; and 2) providing career pathway information earlier in the degree to guide the selection of subjects and extra-curricular activities. The provision of mentoring activities, inclusion of more skill-based

practical subjects and explanation of subject relevance to the students' intended career were represented in 25% of focus groups but less than 10% of the coded responses.

More frequent or earlier WIL experiences was discussed as a means of the students gaining a more in-depth understanding of the requirements of the Exercise Science profession and insight into the inter-relationship between theory and practice. This would allow for reflection relating to their desire to pursue a career in the field, and their connection with the identity of an Exercise Scientist.

> *We've learnt like a lot of stuff and I can tell you a lot of random things, but I don't think any of it can actually apply to what we want to do, like I just feel like I've just been given a lot of information, but none of it is actually useful and a lot of it we're forgetting because we're using it, we're not doing anything with it. If we had a placement where you put that theory into practice or something, it might help us to remember.*
>
> *As he said, I was thinking more placement as well, just so you can understand that this is what you're getting into. I understand like in health it's hard to have placement because we're in a position where we could actually hurt someone if we don't know what we're doing, so even if it's just like going in like one or two hours a day and just watching what's been happening. I'm happy with sitting on a chair and watching people work, so I know this is what is expected of me.*
>
> *Something that could work well is I know like the Nursing Degree, they incorporate a placement, like pretty early on and that will, I know a lot of people that I know who are in Nursing, while doing that placement they find out whether what they do, if they actually do want to do it because you're actually working in the field and you're doing the things that you would be doing later on when you're actually qualified and having that for this, like just in placements in all the different fields opens people's eyes up to all different options as well.*

The provision of career information early in the degree was identified as a priority due to the importance of making decisions on degree pathways that allowed students to both achieve their intended career, but also not exclude potential career options.

> *Yeah, I guess, but I like the details of everything, so I guess like just being more specific and clearer on like what exactly you have to do to go from point A to point B, that's the path you have to take, rather than finish your Exercise Science degree and then go '[…], I want to be a physio, now I have to go back and do these three or four subjects.*
>
> *It's a very broad degree, Exercise Science, and it would be a great move, I know other unis are doing it with Exercise Science and creating those certain streams and you said that the uni wants to focus on employability but for instance you said that we can get into sleep, being a sleep scientist, but we probably haven't touched onto that at all throughout our degree, so how then do we know that that's what we want to do. So, I think moving forward it would be awesome to see that, I know it's hard to know, but a lot of people do know what interests them and what pathway they want to take and it's a lot easier to make that decision at the start of your degree or even in second year, if you go 'Okay, I've done one year of Exercise Science now I'm going to choose the education path'. You still do Exercise Science but it just sets you up well for doing education or I've chosen now the physio path, so I'm doing a couple of subjects that's going to focus on that clinical reasoning and that communication with patients and a few basic physio things so that by the end of Exercise Science I have a basic understanding into physiotherapy or […] wants to get into research so he can do all that science stuff that probably 90% of people here don't want to do, but yeah.*
>
> *I think maybe that first year where you're just hit with all the medical stuff, obviously you have to learn about the body to learn further onwards, but there was no subject that was like, yeah, like everyone said, 'This is what you can do with it, this is the paths you can take'. Maybe a subject earlier that was like set in more about the Exercise Science and more what you would be doing at the end in more of maybe just a basic detail just so people knew what they getting into early.*

Table 2: Themes Derived Relating to the Proposed Activities to Develop Professional Identity

	Number of focus groups n= 12	Number of instances coded n= 88
Work integrated learning opportunities earlier or more frequently	9 (75%)	29 (33%)
Career pathways information early in degree	8 (67%)	24 (27%)
Mentoring	3 (25%)	7 (8%)
More skills based practical subjects	3 (25%)	7 (8%)
Explanation of subject relevance to career	3 (25%)	4 (5%)
Increased access to the program director or advisor	2 (17%)	7 (8%)
More career specific subjects	1 (8%)	3 (3%)
More networking and volunteering opportunities	1 (8%)	3 (3%)
More information on postgraduate options and requirements	1 (8%)	2 (2%)
Guest speakers from different professions	1 (8%)	1 (1%)
Other	1 (8%)	1 (1%)

Discussion

This paper described the focus, development, delivery, outcome, and evaluation of a tailored workshop that aimed to develop the PPI of Exercise Science students in their final trimester of study. To provide a replicable description of the workshop, the Guideline for Reporting Evidence-Based Practice Educational Interventions and Teaching (GREET) Checklist (Phillips et al., 2013; Phillips et al., 2016) was used. The workshop evaluation applied the Kirkpatrick Training Model to determine students' perceived usefulness of the workshop, their changes in attitudes, skills and knowledge as a result of participation, and/or the uptake of the workshop by the learning institution (Kirkpatrick & Kirkpatrick, 2006). In addition to conducting a structured evaluation of the workshop via an online survey, participants were asked for their viewpoints on additional strategies that could be included in the curriculum to improve PPI. Moreover, the facilitator provided notes on the delivery and engagement of students during the workshop. Triangulation of these sources of data allowed for strong conclusions to be drawn regarding the workshop's efficacy and acceptability, and recommendations for improvements.

The workshop was theoretically driven, based on the Self-Authorship Theory, Science-Practitioner-Model, and Brooks et al (2003) domains of professional identity and addressed a need in an Exercise Science degree program at one Australian university. The workshop was perceived to be beneficial by 95% of students as a means of developing their PPI. Students stated that the workshop promoted self-reflection of their intended career pathways, provided explanation of available career pathways and opportunities, and broadened their perspectives as not to close off employment opportunities that they may not have considered previously. This feedback aligned with the workshop learning outcomes (refer to Table 1 in Supplementary Material, Appendix). The workshop was designed to allow students to consider the practicalities of their career selection and how their values drive their career decision-making processes. Evaluation of the qualitative responses of the usefulness of the workshop indicated student-identified improvements in their skills relating to PPI including self-reflection and application of the provided knowledge to their own circumstances. Although the inquiry described in this paper

relates to the profession of exercise science, it can be argued that the content of the workshop could easily be applied to other vocational and non-vocational degree programs.

Evaluation of both student and facilitator responses indicated that the timing of the workshop may limit the students' ability to apply any benefits gained from the workshop to their program of study. This was supported by students who indicated that they would have benefited from WIL opportunities and career pathway information earlier or more frequently during their degree, consistent with previous research undertaken in exercise and sports science students (de Hollander et al., 2018). This would enable them to make more informed decisions on elective subjects and extra-curricular WIL experiences. Providing this information during a degree would also have the added benefit of linking the curriculum elements and the potential employment outcomes, possibly increasing engagement and reducing attrition (Good & Adams, 2008; Jackson, 2016; Jensen & Jetten, 2016; Tomlinson & Jackson, 2019; Whannell & Whannell, 2015), as demonstrated by the following quotes:

> *What you've done here, I actually think you should, you know, something like that could have gone in first year and I say that because my daughter started this degree, she completed first year and she went 'Well, I don't know what the hell to do with that, I want to go to university to get a job at the end of it' and something like that would have been really good in the first year.*
>
> *Yeah, I agree, like one of my friends, she was in this program as well and she, first year, and there was like Anatomy, Foundations, Chemistry and it just felt like being back in school with chemistry and everything like that, like I was disheartened, I was like 'Is this really what I want to do?' and so she dropped out. Luckily, I kept going because I was like 'Hopefully it gets better than this'. Yeah, I just wish there was a, especially in first year, there was just something more hands on and practical so that you can know how to relate all your chemistry and your anatomy in the first year to at least something basic hands on.*

Current Exercise Science accreditation standards focus on discipline-specific skills that are required for employment. However, information on how these skills apply in an employment setting and the employment opportunities available for Exercise Science graduates is lacking. Previous work undertaken by the authors of this study emphasise the need for PPI to be developed for Exercise Science students using activities that are integrated across the curriculum from enrolment onwards (Clanchy et al., 2021). As such, the integration of PPI and employability into the curriculum needs to be supported by accrediting bodies as a means of increasing the employability of their graduates.

Information collected during this body of work can be used to map PPI activities across a university curriculum from intake to graduation based on the work by Lizzio and colleagues (Lizzio, 2011). An assumption made when generating this model was that the current curriculum is saturated with theoretical concepts and practical competencies, with no room for a dedicated professional practice and employability subject. The proposed model relies on the integration of these activities into core units/subjects in the degree and the scaffolding of the activities from students who are transitioning into the degree to students who are transitioning out of the degree. This scaffolding is consistent with the student lifecycle model proposed by Lizzio and colleagues (Lizzio, 2011) which has been previously used to successfully integrate activities linking curriculum content, WIL and employability (Bates & Hayes, 2017). Our model for scaffolding professional identity and employability activities across a three-year professional degree is presented in Table 3.

The model is based on three phases: 1) transitioning into the degree program (year 1); 2) transitioning through the degree program (year 2); and 3) transitioning out of the degree program (year 3) (Lizzio, 2011). The objectives of the model include establishing a connection with the degree contents, future career options and with industry to facilitate early engagement and reduce attrition; developing a stronger understanding of the profession and possible pathways of interest to capitalise on WIL opportunities and elective selection; and a more nuanced understanding of the students' current skills and knowledge in the context of their chosen profession to promote a stronger affiliation with their profession and enhance their employability. This aligns with the three stages in the Self-Authorship Theory (Baxter Magolda, 2008). Included activities range from the progressive development of

ePortfolios and resumes to document developing skills and competencies, career profiles, information on interviews and peer and professional networking to promote industry engagement, and stronger integration of career knowledge and practice-based assessments to develop stronger links between curriculum activities and professional outcomes. Learning activities are scaffolded to move from the attainment of discipline-specific skills to a more refined understanding of the specific profession, to provide an opportunity for the development of employability skills (Smith et al., 2009; Watts, 2006).

The strength of the study design includes a detailed description of the intervention to allow for replication using a validated checklist, the inclusion of a strong theoretical basis for the intervention design including the Science-Practitioner Model and the domains of PPI, integration of the principles of adult learning and reflective practice, evaluation by the facilitator to provide meaningful feedback on delivery, and a structured evaluation of the workshop delivery using a theoretical framework. It is proposed the strength of the study design will allow for modification and replication of this workshop in different professional fields. We suggest that the methods described in this study could be applied to students studying vocational and non-vocational degrees as a means of facilitating an increased understanding of professional identity. We propose that PPI can be developed through learning activities that facilitate reflection on personal factors and experiences, and the understanding of their chosen profession and possible career directions, and explicitly link these to professional norms and values, and scope of practice, consistent with the theoretical constructs of the Self-Authorship Theory.

The outcomes of this study are limited to the evaluation of the perceived usefulness of the workshop by the participants and the facilitator. Due to the complex nature of the domain being evaluated, that is PPI, it is difficult to determine whether participants increased their 'professional identity' behaviour, beyond their focus group responses. Future research could apply a PPI scale at baseline, immediately after the workshop delivery, then three to six months later to track maintenance and/or changes. However, evidence suggests that PPI scales have limited evidence on their psychometric properties (Matthew et al., 2019) and the outcomes of this workshop may not be apparent immediately post-delivery. The inclusion of focus groups post-workshop delivery, or at the time of students entering the workforce, may determine the influence of the workshop of professional identity and the student's employability/ career pathway. Future research could include the evaluation of the utility and acceptability of the workshop in other health science professions.

Conclusion

Pre-professional identity promotes an understanding and connection between skills, qualities, conduct, culture and ideology of students' intended profession and can be facilitated through learning activities designed to consolidate an understanding of the profession, critical thinking and reflection relating to curriculum elements and immersion into their intended profession prior to graduation (Jackson, 2016; Johnson et al., 2012; Marks & Thompson, 2010; Sutherland & Markauskaite, 2012; Trede et al., 2012; Whannell & Whannell, 2015). Several theoretical frameworks provide an understanding of professional identity and to a lesser degree PPI; however, worked examples demonstrating the application of these frameworks in teaching practice are limited. This article provides a description of the development (including the theoretical basis), delivery and evaluation of a PPI workshop, using Exercise Science as a case study. The outcomes from the evaluation, in combination with suggested strategies from students relating to the development of PPI, have been combined into a framework for integrating and scaffolding professional identity and employability activities across a three-year professional degree.

Table 3: Potential Scaffolding of Professional Identity and Employability Activities Across a Three Year Professional Degree

Year	Objectives of Model	Possible Curriculum or Co-Curriculum Elements
Year 1	Transition In: • Clarifying connection of content and degree program to future career options. • Improving industry connections.	• Develop an ePortfolio categorising previous experiences and education. • Complete personality profiles and testing and apply the results to the student's field of interest. • Provide career profiles including interviews with practicing professionals with proposed study plans. • Define graduate attributes for the degree to provide context for learning. • Explicitly state the relevant graduate employability skills in the learning outcomes for every subject.
Year 2	Transition Through: • Developing an understanding of the profession and potential pathways of interest. • Capitalising on workplace learning and WIL.	• Deconstruct job advertisements and identifying study plans and opportunities for practical experiences. • Conduct information interviews with professionals of interest. • Participate, as a peer, in practical exams. • Progress ePortfolio. • Ensure assessment items have a practice specific focus/ scaffolding of case studies and examples across subjects. • Develop practice-based assessment item. • Provide information sessions on postgraduate study options. • Integrate research friendly experiences- participating in research projects, student selection of research topic. • Embed an industry mentoring program/ industry Q&A sessions/ industry events. • Produce or engage with blogs for professional development opportunities/ volunteer opportunities.
Year 3	Transition Out: • Understanding of current skills and knowledge and relationship to professional fields. • Affiliation with a profession.	• Implement a peer mentoring program. • Use peer personal training program. • Embed professional identity workshops. • Integrate employment specific modules (e.g., resume writing, selection criteria etc.) • Finalise the ePortfolio. • Map personal skills against job/ fields of interest. • Practice skills in simulated practice environments/ virtual classrooms. • Develop a professional development plan post-graduation. • Build alumni networks to build profiles of 'first years.'

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Appendix

Supplementary Material 'Development and Evaluation of a Pre-Professional Identity Workshop: A Case Study in Exercise Science' is available http://hdl.handle.net/10072/420414