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Ignorance is risk: An exploratory investigation of Australian higher education students' perceptions of their education–employment pathways

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Abstract

The widely held view that higher education constitutes a gateway to employment has underpinned the dramatic widening of access to university in recent decades. However, globalisation and technological development have complicated the task of enhancing the employability of students, as the future world of work has become ever-more dynamic and unpredictable. Given such conditions, the delivery of employability teaching has become a central focus of many higher education providers (HEPs). To meet their responsibilities, HEPs must understand how students perceive their respective courses in relation to the employment pathways that they seek to follow. The present study aimed to gain an understanding of prospective students' perceptions regarding this, but also to evaluate the accuracy of these perceptions. Because some course types are more narrowly vocational than are others, a subsidiary aim was to investigate whether or not student expectations and knowledge varied depending on course-type. The findings gathered from 462 students enrolled into a wide range of courses at 15 Australian universities were profound. They highlight that, while most students commence university with a career goal in mind, many have a poor understanding of the education-employment pathways on which they have embarked. Students demonstrated a limited understanding of the careers to which their courses might lead, and of the relevance of postgraduate study to their chosen career goals. These findings varied significantly across different course-types. Overall, these findings highlight the need for HEPs to educate their students explicitly about the education-employment pathways that are available to them.

Keywords: employability, career planning, student voice, transition, higher education, Australia, education-employment pathways

Introduction

In a world characterised by globalisation, technological development, and rapid economic change, employability has become a concept of increasing importance to all of the stakeholders involved in Australian higher education (Oliver, 2015; Artess, Hooley, & Mellors-Bourne, 2017). Leaders in government and business articulate the expectations that they hold of higher education providers (HEPs) in terms of employability (Commonwealth DET, 2018; BCA, 2018), and employers are

routinely surveyed in order to ascertain the quality of recent graduates (e.g., Quality Indicators for Learning and Teaching Employer Surveys). At the same time, HEPs consistently market themselves and their products through the lens of employability (Dawkins, Hurley, & Noonan, 2019).

Students, too, see employability as being central to higher education. In the most recent First Year Experience (FYE) survey, 87% of respondents listed 'improving my job prospects' as a reason for enrolling; furthermore, 77% of respondents stated that their enrolment choices were driven by the goal not merely of enhancing their general job prospects, but of getting training for a specific job (Baik, Naylor, & Arjoudis, 2015, p. 24). And yet despite near-ubiquitous acceptance of the concept's importance, research has shown that stakeholders have varying understandings of what 'employability' is and of what role HEPs should play with regard to this concept (Saunders & Zuzel, 2010; Sin & Neave, 2014). Whilst the perspectives of many stakeholders regarding employability are important, understanding those of students are of vital importance because they impact not only on student choices regarding higher education, but also on student success within and satisfaction with their studies. Understanding the perceptions of students regarding the relationship between their courses and their future employment is thus an important, if under-researched, topic, particularly in the Australian landscape.

Literature review

Today, HEPs are increasingly understood as being located at the nexus between prospective students and the industries and organisations that will one day employ them. Consequently, there has been great interest in the concept of 'employability' and the question of how HEPs might best support students to progress along their chosen education-employment pathways (Bates & Hayes, 2017; Jackson, 2013; Tymon, 2013). Given the increasing pressure that HEPs face regarding graduate employment outcomes, it is unsurprising that much of the focus today is on whether or not the efforts of such institutions have proven successful (Cranmer, 2006). While such research is valuable, it tends to focus upon the perspectives regarding employability of HEPs and employers. Of even greater importance are the perceptions that students have regarding their future employment (Tymon, 2013). Students' knowledge and expectations are important in relation to their choices regarding institutions and courses, but they also impact on student success (Jackson & Wilton, 2017). Research has shown that students who have a level of certainty regarding their own education-employment pathway achieve better outcomes within higher education (Graunke & Woosely, 2005), even in their first semester of study. In addition, Jackson and Wilton (2017) identified that making informed and appropriate career choices early on is positively correlated with student well-being, as well as academic performance. Research has also shown that graduates who enter their first job while uncertain about their past study choices experience greater feelings of incompetence in their new work role (Daniels et al., 2006). As such, those interested in promoting student success ought to pay attention to the expectations and knowledge that students possess regarding their education-employment pathways, even as they enter university (Daniels, et al., 2006).

The Australian higher education system, which consists of 43 universities, has expanded rapidly in the past half a century, and is characterised by trends similar to the higher education sectors of other developed countries: widening participation, declines in per-student government funding, and increasing demand for tertiary qualifications across society and industry. While it can be easy to assume that, in such a system, student choices regarding their courses are grounded in rational and informed decision-making processes (Bovill, 2012), research gives us good reason to doubt the accuracy of students' expectations and knowledge about their education-employment pathways, even once these pathways have been embarked upon (Hemsley-Brown, 2011). Of course, to raise such doubts is not to blame students; the complexity, dynamism, and ambiguity that characterise the current and future world of work mean that many stakeholders are likely to have uncertainty

about how higher education can support students to progress towards and within future employment pathways (FYA, 2017).

Still, research has shown that prospective students often lack either clear expectations regarding the education-employment pathways upon which they wish to embark, or accurate knowledge regarding the nature of those pathways. For example, researchers have shown how the context in which prospective university students make their decisions about courses can negatively impact the quality of those decisions (Parks, Mills, Weber, & Westwell, 2017). Such research shows that Australian high school students often make hasty decisions due to time constraints, and that they are not well supported during their processes of decision-making. In particular, when exploring how these students select their tertiary preferences, findings demonstrated that most prospective students are uncertain not only of how to source information about university courses, but more importantly, of what information regarding university courses is of value to them (Parks et al., 2017). Further research suggests both that young people may often utilise intuitive rather than rational approaches to decision-making regarding education-employment pathways (Greenbank, 2014), and that their choices are shaped by the complex social relationships in which they are embedded (Brooks, 2003). Finally, it is worth noting that longitudinal research has also shown that the perceptions of young people regarding the employment pathways that they intend to follow often turn out to be inaccurate (Croll, 2008).

Issues relating to students' expectations and knowledge regarding employment pathways have been identified in research regarding various types of courses. Students enrolled in a Bachelor of Arts, for example, often express uncertainty regarding their future employment, both as they enter university and, for some, throughout their studies (Mestan, 2016). Even within disciplines that are aligned with specific professions, students display a lack of accurate knowledge regarding the realities of their employment pathways (Bennett et al, 2015). Engineering students may possess only limited knowledge regarding the roles that engineers undertake in the workforce, and the skills that are necessary for such roles to be undertaken (Bennett, Kapoor, Rajinder, & Maynard, 2015). Byrne and Flood (2006) noted that while many accounting and business students pursue their degrees on the grounds that they are associated with job availability, financial return and job security, those students also demonstrate a lack of knowledge of what their future employment will actually involve. Finally, within health courses, many students assume that upon graduation they will be able to be employed in the profession for which the degree is named, sometimes ignorant of the fact that such employment can require postgraduate qualifications requiring competitive entry (Sethi, Schofield, McAleer, & Ajjawi, 2018). Collectively, this research reinforces the suggestion that many students may lack either clear expectations about, or accurate knowledge of the education-employment pathways that lie before them.

The present study

This research is part of a broader project that is driven by the goal of enhancing employability teaching at Australian universities. The phrase 'employability teaching' is used here to refer to the design and delivery both of employment-focused modules, units, or subjects, and of the many activities throughout a course or program that connect students to the education-employment pathways on which they are travelling.

The research examined above suggests that there is a need to investigate the knowledge that prospective university students have regarding education and employment, but it also suggests that there might be, broadly speaking, different types of education-employment pathways that exist. This should come as no surprise given the diversity of the students who enrol in higher education, the diversity of the institutions that deliver it, and the diversity of the courses that are currently offered within the Australian higher education sector. Given this variation, the categorisation of courses into degree types offers a useful organising principle for researchers investigating this topic. Typically, two such degree-types are identified: generalist degrees and professional degrees (Graduate Careers

Australia, 2019). Generalist degrees, such as a Bachelors of Arts or a Bachelor of Science, support broad fields of study, offer considerable choice of content to students, and offer students skills that are applicable to a broad range of vocational settings. Professional degrees (also known as specialist degrees and including, for example, a Bachelor of Nursing or a Bachelor of Education P - 12) are narrow in structure and are designed to lead to specific career outcomes (Graduate Careers Australia, 2019).

Research regarding students' expectations of and knowledge regarding education-employment pathways clearly must take into account the differences between such course types. Specialist degrees are designed to prepare students to work in a particular field and thus offer students a seemingly clear and linear path from entry to university through to employment. The breadth of generalist degrees may make it challenging for students to navigate with confidence the pathways that are available to them (Baruch, Bell, & Gray, 2005), although we can also conceive of such degrees as offering students opportunities to delay employment pathway choices and to support the making of such choices within rather than prior to higher education study (Mestan, 2016; Porter & Umbach, 2006). In addition, however, not all degrees fit neatly into these two categories. More and more commonly, students are entering 'named' degrees that, while having a similar structure and appearance to specialist degrees, do not lead solely – or even primarily – to a specific career destination. For example, Bates and Hayes (2017) reviewed criminology and criminal justice degrees at Griffith University in Australia, and concluded that, while such courses have a linear structure and a discipline focus, students within them need to understand and navigate diverse career pathways to which these courses connect. These courses are not unique: it is known that psychology degrees prepare students for careers in allied health and human resources (Whitlow, 2019), that exercise science students can use their knowledge in fitness settings, training programs, or in allied health as physiologists or rehab professionals (Reddan, 2017) and that information technology graduates can pursue degrees as analysts, designers, technicians, and/or project managers (Shally-Jansen, 2016). Given these points, this research utilises a three-part typology of degrees, including specialist degrees, generalist degrees, and mixed degrees.

The aim of the present research was to investigate the expectations and knowledge of students from diverse backgrounds who have enrolled into a wide range of degree types at Australian universities. More specifically, the research examines:

- Whether or not students selected their degree with a specific career goal (that is, a concrete job) in mind;
- For those with a career goal in mind, the accuracy of their understanding of the education-employment pathway required to reach that specific job;
- For all students, the accuracy of their understanding of the careers that will be available to them as a result of completing their chosen course.

Method

Participants

Data was collected from 689 individuals following their university offer but prior to the commencement of their undergraduate university studies in February 2019. Participants were removed from the data set if they were commencing TAFE qualifications, postgraduate qualifications or if they failed to complete more than 80% of the survey successfully. Following this screening, the final participant sample comprised 462 individuals. Collectively, these participants were enrolled at 15 different universities across Australia, and in a wide range of degrees and disciplines. Of the 462 individual ages ranged from 17 to 69 years, with a mean age of 20.25 years (*SD = 6.84*). 310 of these students were 19 years of age or under and constituted as direct school leavers. In terms of gender 117 individuals identified as male, 342 as females and 3 chose not to disclose. 85.7% of the sample spoke English as a first language and 91.3% completed their final year of high school within Australia.

Materials

Through the use of the online software 'Qualtrics', a survey was developed for use in this project. The survey comprised 41 questions. Demographic questions were followed by a series of closed and open-ended questions enquiring about the process that students underwent when selecting their university and degree. The survey then contained questions regarding the career outcomes that students saw as being related to their chosen courses, and regarding the career pathways that they were interested in pursuing. All data was collated and analysed using IBM SPSS Version 25.

Procedure

Prior to the commencement of this study, ethics approval was obtained from the Victoria University Human Research Ethics Committee. Participants were recruited through university-related social media groups, in particular those targeted at commencing first year students. Individuals interested in participating could follow a direct link to the Qualtrics survey, where they were first presented with a plain language statement, and then were asked to consent prior to proceeding with the survey. It consisted of a series of pages – based around the context of each set of questions – and individuals had to complete the survey within a single session.

Data analysis

Classification of variables

So as not to prime individuals to respond in a certain way, questions related to degree choice, career goals, careers associated with their degree, and their intent to pursue postgraduate qualifications were posed as open-ended questions. To enable quantitative analysis of responses, these needed to be recoded into nominal variables. This process is outlined below.

Firstly, to evaluate the accuracy of participants' understandings of the career opportunities associated with their degrees, participants' responses had to be compared to a known source. Data was collected from the websites of the 15 universities that were present in the sample. Each degree choice was searched and the potential career outcomes associated with the degree from each university website were collated within an Excel spreadsheet. The answer the participant supplied commenting about what careers were associated with their degree choice (where they were prompted to name as many as possible) was then compared to the aggregation of careers compiled in the Excel spreadsheet. Four categories were created to evaluate the extent of the participants' knowledge in relation to the employment pathways associated with their degree: extensive, somewhat extensive, somewhat limited and limited. To determine what category a student's response belonged to, the following decision-making process was followed:

- Participants who responded with either a blank response, or a variation of 'I don't know' were categorised as having 'limited' knowledge;
- To be categorised as having 'somewhat limited' knowledge, the participant had to respond with few answers, varying only slightly from one another;
- To be categorised as having 'somewhat extensive' knowledge, the participant had to respond with multiple answers, with some variation present between job roles or discipline fields;
- To be categorised as having 'extensive' knowledge, an individual had to respond with multiple career outcomes that, in the case of mixed or generalist degrees, extended beyond the namesake of the degree and, where relevant, beyond the discipline/field. In the case of specialist degrees, 'extensive' knowledge was demonstrated through the identification of further specialisations that exist within a specific career.

In all instances the degree type and extent of the answers compiled in the spreadsheet were the primary factors considered, and all answers were considered and coded on a case by case basis.

Secondly, the accuracy of the participants' perceptions with regard to the necessity of postgraduate qualifications was evaluated. Participants were asked to state their career goal and whether or not postgraduate qualifications would be required to meet this goal. Those who suggested that such qualifications would be necessary were asked to identify which qualifications were needed. To evaluate the accuracy of their knowledge, each individual career goal was researched against industry data. Participant answers were then cross-referenced with the actual career pathways stated by industry, and were coded as either accurate, inaccurate or somewhat accurate/somewhat inaccurate. An answer was classified as 'accurate' if there was a clear similarity between the answer the student provided and the career qualification requirements depicted by industry. Similarly, an answer was coded as 'inaccurate' if no such connection was apparent. Finally, if an individual correctly identified that postgraduate qualifications were required, but was unable to accurately identify which specific qualification was needed, their response was coded as somewhat accurate/somewhat inaccurate.

Statistical analysis

As the present study aimed to be exploratory in nature and a significant portion of the data that was collected was categorical, percentages were calculated and compared to determine differences present between groups. Percentages were presented in tables and a summary of the findings discussed. Where appropriate, chi square analyses were conducted to determine whether a significant relationship between variables was present.

Results

Career goal

In order to first evaluate how career-driven the sample was, data was analysed to determine what percentage of individuals were entering university with a clear career goal in mind. Responses were then categorised according to the degree-type each individual was undertaking. Degrees fell into 4 categories: generalist, mixed, specialist and dual. All results are as indicated in Table 1.

Table 1. Percentage of Commencing Students with a Clear Career Goal Categorised

Degree Type	Yes %	No %
Overall Sample (n = 455)	74.1%	25.9%
Generalist (n = 87)	70.1%	29.9%
Mixed (n = 103)	68.1%	31.9%
Specialist (n = 159)	89.5%	10.5%
Dual (n = 106)	58.8%	41.2%

It can be seen from Table 1 that individuals who were studying specialist degrees showed the highest rates of confidence regarding the career they wanted to pursue after leaving university. Alternatively, individuals undertaking dual degrees showed the highest rates of uncertainty. A chi square test was performed to examine the relation between degree type and students commencing university with a clear career goal in mind. The relation between these variables was significant χ (3,

N = 411) = 31.66, $p < 0.001$. This indicates that the likelihood a student has a clear career goal in mind when commencing university is significantly related to their choice of degree type.

Accuracy of knowledge: Postgraduate study and career pathways

In order to understand whether or not prospective students had an understanding of the pathway required to achieve their career goal, participants who answered yes to having a clear career goal were then questioned further about whether or not additional qualifications would be required to achieve this. The results are depicted in Table 2 below.

Table 2. Intention of Students to Pursue Postgraduate Pathways

Degree Type	Yes %	No %
Overall Sample (n = 303)	57.5%	42.5%
Generalist (n = 54)	44.2%	55.8%
Mixed (n = 64)	59.8%	40.2%
Specialist (n = 128)	59.2%	40.8%
Dual (n = 57)	66.0%	34.0%

The results displayed in Table 2 demonstrate that most individuals in the sample believe that further tertiary education will be required to reach their goals. Students commencing generalist degrees were the only degree-type where a higher percentage suggested that these qualifications would not be necessary. Furthermore, those undertaking dual degrees yielded the highest percentage of yes results when answering this question. A chi square test was performed to examine the relation between degree type and intent to undertake postgraduate study as part of their education – employment pathway. The relation between these variables was significant χ (3, N = 408) = 8.79, p = 0.032.

However, this data alone represents only the students' perceptions of their pathways. To test the accuracy of these perceptions, each case was investigated. The results of this are displayed in Table 3 below.

Table 3. Accuracy of Students' Perceptions regarding Postgraduate Requirements

Degree Type	Accurate	Somewhat Accurate Somewhat Inaccurate	Inaccurate
Overall Sample (n = 303)	45.9%	29.8%	24.4%
Generalist (n = 54)	37.9%	24.1%	24.1%
Mixed (n = 64)	33.0%	31.1%	25.2%
Specialist (n = 128)	52.2%	17.0%	20.1%
Dual (n = 57)	31.1%	39.6%	19.8%

Those individuals pursuing specialist degrees had more accurate understandings of their career pathways than other groups. Students pursuing generalist degrees had more accurate understandings than those pursuing mixed or dual degrees. A chi square test was performed to examine the relation between degree type and the accuracy of their perception of postgraduate requirements. The relation between these variables was significant χ (6, N = 405) = 23.31, p = 0.001.

Accuracy of knowledge: Career pathways linked to chosen course

Participants were also surveyed on what careers were linked to their degrees, and the accuracy of responses was then evaluated. The results of this are depicted in Table 4 below.

Table 4. Extent of Student Understanding about What Careers are Linked to Their Chosen Degree

Degree Type	Extensive	Somewhat Extensive	Somewhat Limited	Limited
Overall Sample (n = 455)	12.2%	29.6%	24.4%	33.8%
Generalist (n = 87)	4.7%	12.8%	36.0%	46.5%
Mixed (n = 103)	9.7%	13.6%	34.0%	42.7%
Specialist (n = 159)	19.6%	53.8%	8.2%	18.4%
Dual (n = 106)	10.4%	20.8%	30.2%	38.7%

The results are varied but do indicate that individuals enrolled into generalist, mixed and dual degrees have limited to somewhat limited knowledge about the career possibilities associated with their degrees. Individuals undertaking specialist degrees tend to have more extensive knowledge. A chi square test was performed to examine the relation between degree type and knowledge about careers linked to degree choice. The relation between these variables was significant χ (9, N = 453) = 109.01, $p < 0.001$.

Discussion

The present study aimed to explore the expectations and knowledge that prospective Australian undergraduate students hold regarding education-employment pathways. This research identified several findings that warrant further investigation if curriculum designers are to better understand, respond to, and manage the expectations of students with regard to their future careers. Below, findings are considered as they relate to, firstly, the expectations and knowledge that students hold regarding their choice of undergraduate course and, secondly, those regarding the relevance of postgraduate qualifications to their respective career goals.

Undergraduate course choice: Expectations and knowledge

In general, a substantial majority of respondents (74.1%) were entering undergraduate study with the expectation that doing so will help them to achieve a clear career goal. This aligns with existing research that suggests that 77% of Australian students see higher education as a means of helping them “to get training for a specific job” (Baik et al., 2015). Within these general findings lies important variation, however. It is, perhaps, unsurprising that the vast majority of respondents who

had chosen to enrol in specialist degrees had a clear career goal in mind prior to beginning their university studies, and that, of those who had chosen to enrol into generalist degrees, a much smaller proportion of respondents held clear career goals. After all, it would be expected that students who are less certain regarding the career they might wish to pursue would choose to enrol into degrees which offer flexibility and choice rather than narrow vocational outcomes.

Two further findings are more startling. The first of these is that the proportion of respondents enrolling into mixed degrees who held clear career goals was marginally below that of those who had enrolled into generalist degrees. This finding is surprising to the extent that we might expect that students who choose mixed degrees – that is, courses with a primary professional focus – would do so with a clear career outcome in mind, or at least with greater clarity than is true of those who enrol into generalist degrees. The second finding worthy of particular note is that the students who appeared least likely to possess a clear career objective were those who had enrolled in dual degrees. This suggests that more than two out of five students enrolling into dual degrees may be doing so in order to expand rather than narrow their career options; their choice of course may represent an attempt to delay career choices rather than an expression of a prior career choice. Dual degrees in Australia tend to have higher entrance requirements than single degrees and may seem like a valuable investment in terms of time and money (Russell, Dolnicar, & Ayoub, 2007). Furthermore, students who achieve highly but are most uncertain may be drawn to these degrees as they often cover more than one discipline area and may initially be suited to providing a breadth of education that graduates and employers would evaluate favourably (Batson, Sharp, Ramsay, & Mackinnon, 2002).

This research also examined the accuracy of students' knowledge regarding the education-employment pathways that they have chosen. After all, it is not merely whether or not students have expectations regarding the links between their course choice and career outcomes that is important; so too is the alignment between their expectations and the reality of the education-employment pathways upon which they have embarked. Perhaps the most striking finding from this research is that only a little over 10% of respondents demonstrated an extensive knowledge, and fully one third of students showed very limited knowledge of the career outcomes related to courses in which they were already enrolled. While this research is exploratory, the suggestion that more than half of students hold somewhat limited or limited knowledge regarding the career possibilities to which their courses lead clearly warrants attention. Parks and colleagues (2017) identified that due to limited support, uncertainty about where to source valuable information, and the pressure to make a timely decision, students in their final year of high school tend to make hasty, ill-informed decisions, and often hope to find clarity at a later point. However, the results of the present study indicate that, in many cases, such clarity has not been found by students before they have made important and impactful decisions about their university study.

The results of the present study indicated that the accuracy of students' knowledge of the career outcomes to which their respective courses may lead varies according to course type. Respondents enrolling into specialised courses demonstrated the highest levels of accuracy of knowledge regarding the career outcomes to which their chosen degrees could lead. This finding may represent evidence that the students who have chosen specialised courses tend to have the aptitude to seek out detailed knowledge. For example, Ross, Hannah and Van Huizen (2016) explored what motives underpinned the desire for paramedic students to pursue their course. The findings of this study yielded results that were directly related to the career outcome of their degree (e.g. attending emergencies, saving lives). What is notable here, is that despite this cohort of students demonstrating relatively high levels of accuracy of knowledge regarding education-employment pathways, more than one in four students enrolling into specialised courses demonstrated either limited or somewhat limited knowledge of the careers to which their chosen course might lead.

The findings regarding student knowledge of the education-employment pathways flowing through generalist, mixed, and dual degrees are even more alarming. In each of these cases, majorities of

students demonstrated either somewhat limited or limited knowledge of the career outcomes related to their respective courses. This lack of accurate knowledge regarding career outcomes may be unsurprising insofar as it is evident in students enrolling into generalist degrees. Firstly, online descriptions of the career possibilities linked to such degrees typically list a very wide variety of potential career outcomes, accurate knowledge of which may be difficult to possess. Indeed, it may be that the limited knowledge of career outcomes expressed by many of these students results not from a lack of vocational purpose, but instead from their possession of a narrow focus on a specific goal (which over 70% of generalist degree students identified themselves as having). Secondly, it is often assumed that generalist degrees are more likely to be chosen by students who lack confidence about their vocational potential. In direct contrast to the clear motivators Ross and colleagues (2017) found, Mestan (2016) found that relatively high attrition rates in Bachelor of Arts courses could be traced to the lack of clear purpose and specific career direction of students enrolled in such courses. Mestan (2016) noted that students at the completion of their first year often still expressed high levels of uncertainty in relation to the careers linked to their degree, despite having completed one third of their undergraduate studies. The similarities between the findings of the present study and Mestan (2016) cannot be ignored, and the fact that four out of five students enrolled in generalist degrees demonstrated a lack of accuracy of knowledge about career outcomes associated with their studies suggests that curriculum designers in such courses have much work to do.

The findings regarding students enrolling into mixed degrees are also concerning, though for different reasons. These students demonstrated slightly greater knowledge regarding potential career outcomes than did those enrolling into generalist degrees. Still, however, more than three-quarters of mixed degree respondents demonstrated somewhat limited or limited knowledge of the career outcomes associated with their chosen course, which means that the accuracy of knowledge demonstrated by these students remains far lower than that of specialist course students. This is true despite the fact that mixed degrees are narrower in focus than are generalist degrees, and more similar in structure and scope to specialised courses. Bates and Hayes (2017) investigated the knowledge that current criminology students held and found that while most had some idea of career outcomes, the breadth of outcomes available was largely misunderstood. Furthermore, Kelly and Lock (2019) highlight that a similar pattern is seen in psychology students, as did Shally-Jansen (2016) for information technology students. The findings of these papers demonstrate a similar pattern to that of the present study; that is, many students carry some knowledge about the career outcomes associated with their degree, however, this knowledge is often narrow and lacks the cross-sector breadth that is characteristic of many mixed degrees.

Finally, students enrolling into dual degrees, whilst demonstrating concerning levels of accuracy of knowledge regarding career outcomes, are more knowledgeable than those enrolling into either generalist or mixed degrees. Interpreting this finding is not easy. On the one hand, the fact that only a little more than 30% of dual degree students expressed extensive or somewhat extensive knowledge regarding the career outcomes linked to their courses is, of course, worrying. On the other hand, the somewhat higher levels of accuracy of knowledge regarding career outcomes held by dual degree as opposed to mixed and generalist degree students is interesting given that comparatively low numbers of dual degree students identified themselves as being motivated by a clear career goal. This could be due to the fact that while uncertain, a number of dual degree students are drawn to this type of degree due to the breadth of career options available to them, as they hold the belief that they will have more choice upon graduation (Russell et al., 2007).

Postgraduate study: Expectations and knowledge

As well as examining prospective students' expectations and knowledge regarding the links between their yet-to-be-started undergraduate degrees and future employment pathways, this research also investigated students' expectations and knowledge regarding the relevance of postgraduate qualifications to their future careers. Knowledge regarding this topic is important to the extent that

it might help us to better understand how students perceive the longer-term education-employment pathways upon which they are embarking.

In general, this research found that a majority of students who had a clear career goal in mind prior to commencing an undergraduate degree also intended to pursue postgraduate qualifications in order to reach their stated career goal. Such findings are not surprising given the wide-held view that, due in part to the widening of access to higher education, undergraduate degrees may increasingly be regarded as a necessary-but-not-sufficient requirement for employment (Clements & Kamau, 2017). It is worth noting that, here again, variation in student expectations can be linked to the types of undergraduate degree into which students have chosen to enrol. Students in both specialised degrees and mixed degrees reported similar levels of anticipation regarding the need for further study. In contrast, less than half of generalist degree students anticipated undertaking postgraduate qualifications, while two-thirds of dual-degree students intended to do so. These latter results are particularly interesting. On the one hand, following the logic embodied in the 'Melbourne Model' (Maslen, 2006), one might expect that generalist degrees would be seen as a natural precursor to post-graduate study, wherein students start with a broad undergraduate degree before narrowing their studies through enrolment in a professional postgraduate course. On the other hand, the comparatively high proportion of dual degree students that anticipate completion of postgraduate qualifications might be interpreted as evidence that such students see the accumulation of degrees as a means to achieve employability and economic security.

Of greater concern, however, are the high rates of inaccurate knowledge expressed by students regarding the need for postgraduate qualifications. Again, variation across course-types was evident and, again, students enrolled into specialist degrees demonstrated the most accurate knowledge regarding this matter. Students enrolling into generalist, mixed and dual degrees demonstrated markedly lower levels of accuracy in terms of their knowledge regarding postgraduate qualifications. The finding that less than a third of dual degree students had accurate knowledge regarding the place of postgraduate qualifications in their pursuit of their career goals is of particular concern, especially given the tendency of such students to express an intention to extend their investment in education by following the completion of a dual undergraduate degree with enrolment in postgraduate courses.

Implications

These findings hold important implications with regard to curriculum design and, in particular, the delivery of support within the curriculum regarding career awareness (Choate, et al., 2019). If, as prior research suggests, a lack of confidence or clarity regarding career destinations impacts upon students' academic success, well-being, and satisfaction (Jackson & Wilton, 2017), then knowing that, across mixed, generalist, and dual-degree cohorts, 30-40% of students lack a clear career goal presents curriculum designers in such courses an important challenge. What is even more concerning is the lack of accurate knowledge regarding where students' already chosen degrees might take them; less than half of respondents had even somewhat extensive knowledge of the career outcomes associated with their chosen courses. Any efforts to address employability within higher education must recognise the diverse needs of students from varied backgrounds, as research has shown that knowledge and expectations regarding education-employment pathways are influenced by an array of factors (including such things as parental support and socioeconomic status) (Batson et al., 2002). However, existing research also suggests that there are some common features that curriculum designers ought to incorporate into their planned responses to this challenge. Firstly, the development of employability skills in general, and of career awareness in particular, must be deeply connected to the regular curriculum of students if it is to be meaningful; extracurricular employability or careers advice has been shown to be of little value (Jorre de St Jorre & Oliver, 2018). Secondly, as these findings make clear, employability and career awareness are

issues that must be addressed from the very outset of a student's undergraduate studies; no longer can they be left to the final year of study.

In addition, it is clear from these findings that efforts to generate career awareness will need to be tailored to the needs of cohorts in different degree-types; curriculum designers working with each type of degree will face different challenges and different opportunities when it comes to supporting students to generate greater career awareness. Curriculum designers in specialised courses appear to face a lesser burden in this regard; students in such degrees were the most likely to have a clear career goal, and most accurate in their knowledge of the career outcomes that are available to them. Still, one in ten such students lacked a clear career goal, and more than one in four lacked even somewhat extensive knowledge about possible career outcomes. Finding ways to support such students within specialised courses remains necessary, but this might prove challenging given that such courses are typically tightly focused and regulated by professional associations, leaving less scope for adding curricular content.

Course teams working in generalist programs face a far greater need to promote career awareness amongst their students: nearly half of such students held only limited knowledge of relevant career outcomes. In one sense, this challenge might be exacerbated by the broad nature of these degrees and the wide array of career outcomes to which they can lead. Crucially, however, whilst the breadth of such degrees will no doubt pose a challenge, the structure of generalist degrees offers important opportunities. Because such degrees ask students to make choices regarding the trajectory of their education-employment pathways, first-year curriculum designers can take advantage of the opportunity to link career and employability advice to the decisions regarding which major/s to take that students have in front of them. This could involve the explicit exploration of the knowledge and skills being acquired and of how they can be applied within a broad range of vocational sectors.

A very different problem may be faced by curriculum designers in mixed degrees. Such degrees have a narrower professional focus than do generalist degrees, but still, 30% of students enrolled in such courses are selecting them without a clear career goal in mind, and less than 25% of those students have at least a somewhat extensive knowledge about possible career outcomes. However, while there is a clear need to support students in such courses to develop greater career awareness, doing so may prove challenging in practice. Many mixed degrees are similar to specialist degrees in that they have a narrow primary professional focus, and remain subject to accreditation rules that limit the flexibility of course designers, and implicitly emphasise to students the primacy of that central profession. Under such conditions, generating awareness in students of 'alternative' career outcomes, that utilise their seemingly specific developed skill sets, may prove to be a complex task.

Perhaps the greatest challenge is faced by those seeking to support dual degree students. It is striking that students enrolling into dual degrees showed the lowest likelihood of having clear career goals, and while the accuracy of their knowledge regarding career outcomes was a little higher than that of generalist and mixed degree students, it remained low. However, while there is a clear need to support the enhancement of career awareness in dual degree students, doing so may prove tricky. Responsibility for the delivery of such courses is often distributed across organisational units, and opportunities for offering first-year employability teaching that is tailored to the distinct needs of dual degree students may be limited. Often, such degrees are built through the combination of units from standalone degrees, the result being that even if each part of a dual degree is designed to support employability teaching for 'their' students, the distinct needs of dual degree students may remain unmet.

Finally, the findings of this research regarding students' expectations regarding and knowledge of the place of postgraduate qualifications within their education-employment pathways reinforces the need for curriculum designers to support students to develop greater career awareness early during their undergraduate studies. This research strongly suggests that students are entering undergraduate study with important gaps in their knowledge about how both their current

undergraduate study and anticipated postgraduate study might be linked to their attainment of career outcomes. Student choices regarding university study are linked to heavy investments of time, money and effort, and HEIs have an obligation to ensure that students, as early as is possible, develop a clear understanding of the education-employment pathways that they embark upon and how the skills and knowledge they acquire at university can be applied and contextualised within the workplace. Furthermore, supporting students to develop career awareness has been shown to promote improved student retention, success, and satisfaction, thus suggesting that by addressing the knowledge gaps detailed above will serve the interests of HEPs, as well as helping them to meet their obligation to students.

Limitations and future research

This exploratory study has identified key patterns of perceptions in prospective students across Australia, and while these findings are promising they are not without limitations. Firstly, quantitative data is inherently limited as it provides numerical descriptions as opposed to a detailed narrative. The descriptions provided by the data gathered in the present study should not be undervalued; instead future research should seek to unpack the patterns of beliefs identified and undertake a more detailed investigation into the relationship between course type and the expectations of students. Secondly, the present study surveyed only prospective university students. The findings highlight that some students are commencing their courses with uncertainty about how their degree connects to future employment. It is the responsibility of HEPs to address this uncertainty, however, the findings are unable to indicate if this is occurring within existing undergraduate courses. Further research should seek to determine whether or not this uncertainty is being addressed during students' undergraduate degrees. Furthermore, a deeper understanding of students' decision-making processes in relation to their education-employment pathways would be useful for HEPs and, more specifically, for curriculum designers.

Methodologically it should be noted that while the sample was large and generally representative of the commencing student cohort there are some aspects that should encourage some caution in the interpretation of the results. Most obviously, 75% of the sample identified as female. While it is unknown specifically what impact this may have had, future research should aim to recruit a balance of gender that is representative of the general population. There was also a slight age skew. 74% of the present sample were under the age of 25. This is higher than the national average which states 58% of undergraduate university students are under the age of 25 (Edwards & van der Brugge, 2018). This could have been due to the fact that all advertising was conducted through social media which may have attracted a younger sample. Finally, this research investigates the expectations and perceptions of students within an Australian context only; comparative research across multiple higher education systems could also be warranted.

HEPs occupy a position of great importance with regard to the shaping of the education–employment pathways that their students pursue. While it is exploratory in nature, by highlighting the uncertainty that commencing students bring with them regarding these pathways, this research serves to clarify the need for HEPs to enhance the career awareness of their students, and to do so in ways that respond to the distinct characteristics of different degree-types.

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