

Rethinking Pathways: Why a New Approach is Needed, A Report from Australia

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This paper reports on the findings of a three-year project in Australia funded by the National Centre for Vocational Education Research on how to improve pathways within and between education and work.²³ Governments around the world are seeking to increase the percentage in the population that have higher-level qualifications in response to demands for higher-level skills in the workforce, and to support social inclusion. Many countries have set targets to achieve these goals, and educational pathways are intrinsic to achieving them. The development of pathways between community colleges in the United States and Canada, further education colleges in the United Kingdom, and technical and further education institutes (TAFE) in Australia and universities in these respective countries is a longstanding policy objective of governments.

Educational pathways are designed to achieve three key goals in modern tertiary education systems (Wheelahan, 2009b). The first is to align educational outcomes with national economic priorities. The second is to increase the efficiency of education systems by reducing costs. Individuals need to be able to move between different types of qualifications and different occupational sectors with credit for prior learning, so reducing the time and costs to them and to governments. The third is to support equity and promote social inclusion. Pathways aim to provide opportunities for disadvantaged groups in society by mediating access to higher levels of education with appropriate credit for prior studies (OECD 1998; Raffe, 1998; Young, 2001).

In order to achieve these goals, many governments have established national qualifications frameworks to underpin lifelong learning policies and facilitate educational pathways and credit transfer (Allais, Raffe, Strathdee, Wheelahan, & Young, 2009). Qualifications frameworks are based on two assumptions: first, that qualifications frameworks and credit transfer policies and frameworks are the mechanisms through which pathways can be developed and implemented. Second, when educational pathways are in place, that they will inexorably lead to occupational progression and promote lifelong learning through facilitating access to and movement between education and work. The policy objective becomes more and more pathways. However, arguably a cargo cult mentality underpins qualifications frameworks and other pathways policies: establish pathways and students will use them, in the way we intend them to use them, with the outcomes that we intend.

Any perceived problems with pathways are attributed to reticence on the part of educational institutions in both sectors of tertiary education to cooperate appropriately. Governments routinely blame institutions in both sectors for not working together to establish pathways that provide students with opportunities for social mobility, educational pathways and occupational progression. Blame is often apportioned to the 'sending institutions' for failing to adequately prepare students for study in higher-level programs. Two-year colleges are held accountable for the number of and performance of students who transfer to four-year institutions, with fewer demands for accountability made on the four-year institutions who receive them (Wellman, 2002: vii). However, blame is also apportioned to 'receiving institutions' (universities) for elitism in refusing to provide students with appropriate access and credit (King, Widdowson, & Brown, 2008). This has led Moodie (2003: 6) to argue that universities, particularly elite universities, have to be either 'bribed or coerced' to accept transferring students and provide appropriate credit.

Relations between the sectors of tertiary education are fraught and will remain so while universities have higher status and higher funding than the colleges and TAFEs, with universities educating students for higher status occupations that lead to higher rates of pay than college and TAFE graduates (Wheelahan & Moodie, 2011). Credit transfer will also be problematic in countries such as Australia where the sectors use different and incommensurable models of curriculum.⁴ College students' often more complex and demanding lives, combined with demands for higher levels of independent learning in universities at higher levels of abstraction and lower levels of student support, can also make students' transitions from college to university more difficult (Wheelahan, Arkoudis, Moodie, Fredman, & Bexley, 2012). Consequently, government and institutional policies and collaboration will remain important in building and sustaining pathways.

However, the structures of the labour market and patterns of occupational segmentation and pathways are also fundamental, perhaps more so, in underpinning educational pathways. The research reported here sought to explore the nature of educational pathways, and how they were related to occupational progression. Whilst maintaining a focus on relations between educational institutions, this research shifted the focus to explore the relationship between structures of the labour market and educational pathways. It explored how students use qualifications and pathways in the labour market, and the types of educational pathways they used to achieve their goals.

This paper argues that while institutional collaboration, jurisdictional policy frameworks and government efforts to facilitate institutional cooperation remain important and necessary, that this is not a sufficient basis for developing educational pathways and credit transfer. The key findings from our research are that: educational pathways are shaped by the relationship between qualifications and the labour market; the nature and structure of pathways will differ between industries; and, a uniform approach to policy based on one type of pathway from lower to higher-level qualifications within the same field of education is unlikely to be effective (Wheelahan, Moodie, & Buchanan, 2012; Moodie, Fredman, Bexley, & Wheelahan, 2013a, 2013c). The conclusion we reach however is not to tie qualifications more tightly to occupations. Rather, our research leads us to conclude that a broader approach to preparation for work is needed to build more effective relationships between qualifications and the labour market.

The first section of the paper outlines the 'problem' the research explored, by examining the links between qualifications and occupations in Australia. It explores these links by examining the extent to which qualifications serve three key purposes in society: to enter or progress in the labour market; to move to higher level qualifications; and, to promote social inclusion. The next section outlines our theoretical frameworks, which consist of the capabilities approach and the concept of vocational streams. The following section briefly presents the methods used in the project. Next is a discussion of our findings and conclusions, including the implications for the way we develop qualifications and pathways. We identify four types of pathways based on the extent to which students move from vocational to higher education, and the links between qualifications and occupations. This section discusses the implications for the design of qualifications and pathways.

Context

Broadly speaking, qualifications serve three purposes (Gallacher, Ingram, & Reeve, 2012), and lifelong learning policies are predicated on the effective fulfilment of these purposes:

1. As a mechanism to enter the labour market or to move to a higher occupational level.

2. As a transition to higher-level qualifications. All qualifications need to provide students with the knowledge and skills they need to study at a higher level in their field.
3. To widen access to tertiary education. All qualifications should have as one of their objectives supporting students from disadvantaged backgrounds to enter higher-level studies.

All three are needed to support both educational and occupational progression, to strengthen the links between qualifications and jobs, and to support social inclusion and social mobility. This research explored the extent to which qualifications meet these purposes. The research explored qualifications offered in Australia's two sectors of tertiary education, vocational education and training (VET) and higher education. TAFEs are the public providers of VET qualifications, and Australia's 37 public universities are the public providers of higher education qualifications.⁵

The 'problem' the research sought to explore was the weak links between educational qualifications and occupations, which in turn contribute to weak educational and occupational pathways. There have been numerous studies in Australia and overseas that find that there is a mismatch between tertiary education graduates' skills and qualifications and the jobs they end up getting (Mavromaras, Mahuteau, Sloane, & Wei, 2012; Ryan & Sinning, 2009; CEDEFOP, 2010). Problems in the economy and mismatches between skills and work are attributed to problems with tertiary education for not producing 'work-ready' graduates, even though the relationship between tertiary education and work is mutually constitutive (Keep, 2012), and problems arise from ineffective deployment of skill in workplaces (Australian Workforce and Productivity Agency, 2012).

The first purpose of qualifications, as a mechanism to enter or move to a higher level in the labour market, doesn't work as it is envisaged in policy, which is a linear link between the qualification and occupation. The links between qualifications and occupations in Australia are very weak and most people do not end up working in the occupations for which they have directly trained (Karmel, Mlotkowski, & Awodeyi, 2008; Moodie & Fredman, 2013). The 'fit' between qualifications and occupations is tighter in regulated occupations where it takes a long time to train and where the occupational and professional bodies have input into the curriculum, syllabus, assessment, and structure and often, the qualifications of those who teach in those qualifications. However, this does not characterise most qualifications in VET or higher education (Australian Workforce and Productivity Agency, 2012).⁶

In 2012, only 33% of VET graduates were employed in the occupation directly associated with their qualification six months following graduation (NCVER 2012: Table 14). The match is even lower for higher-level VET qualifications such as diplomas (Moodie, Wheelahan, Fredman, & Bexley, 2014 - forthcoming). The 'tightness of fit' between qualifications and occupations in VET is higher in regulated occupations such as apprenticeships in the regulated trades (where 77% of VET graduates worked in the occupation associated with their qualification in 2012), and lower in unregulated occupations (where, for example, only 17.4% of graduates from clerical and administrative qualifications ended up working in those occupations) (NCVER 2012: Table 14). The loose fit between qualifications and jobs is a particular issue for VET because the mandated model of curriculum is competency-based training which consists of units of competency that describe specific workplace tasks and roles. The only public funding in TAFE institutes is for competency-based qualifications. However, it is neither efficient nor effective to focus on specific workplace tasks and roles for specific occupations if students do not end up working in these occupations. The match between qualifications and occupations is also low in higher education (Graduate Careers Australia, 2010). However, the pattern is similar for higher education as for VET. There is a tighter fit between regulated occupations (such as nursing, medicine and engineering) and qualifications leading to these occupations and professions.

Pathways are also not effective in sustaining occupational progression. While education and training is meant to support educational progression, most VET graduates do not move to higher occupational skill levels following training in VET (Pocock, Skinner, McMahon, & Pritchard, 2011). So while qualifications do help graduates enter the labour market, the 'alignment' between qualifications and specific occupations is very weak, and there is not necessarily a direct link between qualifications and moving into higher-level occupations.

The second purpose of qualifications, to support students' transitions to higher-level qualifications, is not as we expect. About 52% of students change their field of education when they undertake a second qualification, despite many years of government policies that seek to encourage educational pathways between linked qualifications in the same field of education (Wheelahan, Moodie, et al., 2012). This is explored in greater depth later in this paper.

The third purpose of qualifications, to widen access to tertiary education is also problematic. Tertiary education is meant to promote social mobility, yet students from disadvantaged backgrounds are under-represented in higher education and in higher level VET qualifications, while they are over-represented in lower-level VET qualifications (Wheelahan, 2009a). The socio-economic profile of students in higher-level qualifications such as diplomas and above in VET is similar to under-graduate domestic students in universities, and this undermines the extent to which diplomas are able to support social mobility (Wheelahan, 2009a). Students from low socio-economic backgrounds are more under-represented in post-graduate programs than in under-graduate programs in higher education (Centre for the Study of Higher Education, 2008).

Improving links between qualifications and the labour market necessitates a broader analysis of the nature of each. In particular, it requires rethinking the nature of work and the type of workers that are needed for the future. The Australian Workforce and Productivity Agency (2013: 9) argues that both workers and workplaces need to have 'adaptive capacities', which consist of capacities 'to respond flexibly and creatively to changing circumstances'. We will need new types of qualifications based on understandings of the kinds of knowledge, skills and attributes individuals will need in the future, particularly if we are to support innovation. Innovative workplaces support 'discretionary learning' which in turn relies on workers having broad ranging knowledge and skills within their field (OECD 2010). This requires creative workers who are able to exercise judgement at work and respond to the unforeseen. In our research, we used the concepts of vocational streams and the capabilities approach to explore the type of qualifications needed for the future and how to improve links between qualifications and the labour market, and also to analyse and interpret our findings.

Theoretical framework

The capabilities approach was used to consider the conceptual basis of qualifications, and vocational streams was used as a conceptual framework for broadening the scope of tertiary education beyond preparation for a specific, narrowly defined occupation (Wheelahan, Moodie, et al., 2012). Vocational streams consist of families of linked occupations where there are commonalities in the core underpinning concepts and practices within an industry — for example care and care work. A vocational stream groups related clusters of knowledge and skills that allow individuals to progress and/or specialise within a field of practice, or to move laterally into related occupations. It is based on a continuum of knowledge and skill that links work, VET and higher education and is premised on the capacity to accrue knowledge, skills and attributes needed for the industry in a coherent, cumulative fashion. It fosters identification with the field of practice rather than a specific employer, enterprise, job or occupation. Vocational streams allow for policy interventions in the design and structure of qualifications, but also in supporting the development of occupations that make more effective use of students' knowledge and skills. For example, a key challenge

facing the 'social care' industries in Australia is to support the development of 'care workers' rather than distinct occupations in aged, disability, mental health and other forms of care work in response to the aging of the population and the need to care for individuals with multiple and complex needs in their homes (Community Services and Health Industry Skills Council, 2013).

The capabilities approach was developed by the economist and Nobel Laureate Amartya Sen (2009) and the philosopher Martha Nussbaum (2000). It is increasingly used by governments and international agencies to identify the individual, social and economic resources that are needed to support individual wellbeing, social inclusion and individuals' capacities to make choices about their lives, how they wish to live, and the work they engage in (Henry, 2009). We are using the capabilities approach to refer to a model of education and training that prepares individuals to work in a career rather than specific jobs. It focuses on the broad-ranging knowledge, skills and attributes that individuals need for a number of occupations within an industry and to enable them to study at higher levels within their industry. It focuses on developing the person in the context of their occupation, and what they need to be able to do to exercise complex judgements at work. This includes focusing on what they need to be able to do in the future, rather than on workplace tasks and roles that have been defined for them or based on existing or past practices. In this way, it helps individuals to develop 'adaptive capacities' which are the capacities they need to respond to changes in work and in society. It focuses on what people need to be able to do in a range of related occupations.

Capabilities link individuals, education and work by identifying the individual, social, economic and cultural resources that individuals need to develop as autonomous, innovative and creative workers within broad vocational streams. Capabilities are differentiated from generic skills, employability skills or graduate attributes because they are not 'general' or 'generic'. In the capabilities approach, the focus is on the development of the individual and on work, and consequently individuals need access to the knowledge, skills and capabilities they need to work in their vocational stream. While there will be some commonalities, the nature of knowledge, skills and capabilities will differ between vocational streams. For example, while there will be some overlaps, someone who chooses to work in care work will require different capabilities to those who work in agriculture, the finance industry or the electrical trades/engineering.

Methods

The project has used a variety of methods in the last three years, including industry and institutional case studies, and interviews with students, employers, teachers in VET and higher education, institutional leaders, policy leaders, government jurisdictions and industry bodies. The findings in this paper however, focus mainly on analyses of various statistical collections in Australia. It includes analyses of the Census and various surveys of education and training conducted by the Australian Bureau of Statistics, and analyses of the student statistical collections in VET and higher education respectively (Moodie & Fredman, 2013; Moodie, Fredman, Bexley, & Wheelahan, 2013b; Fredman, Moodie, Bexley, & Wheelahan, 2013; Wheelahan, Leahy, et al., 2012; Fredman, 2012).

Findings and discussion

Alignment of educational qualifications and educational pathways to occupational pathways *within* occupations can be explored by examining the extent to which students stay within the same field of education when they undertake a second qualification. Overall, we found that 52% of all students (VET and higher education) change fields of education when they move from their first to second qualification, however this varies enormously by field of education.⁷ Almost 62% of students studying in the management and commerce field of education stay within that field of education when they undertake a

second qualification. This field of education includes business studies. The next highest percentage (just over 58%) of students to stay within their field of education is health (which includes nursing). In contrast only 32% of students in natural and physical sciences who undertake a second qualification stay within that field of education, and about 47% of students in society and culture undertake a second qualification within this field. The latter is a particularly broad field of education that includes the humanities (Wheelahan, Moodie, et al., 2012: 41).

Fields of education also vary in the extent to which they support educational progression from VET to higher education. Overall, most students undertake a second qualification in the same sector as their first qualification, which reflects segmentation between occupations that the VET and higher education sectors respectively focus on (Moodie, 2012a). In 2008, about 9% of students admitted to under-graduate degrees in higher education were admitted on the basis of a prior VET qualification (Moodie, 2010: 7). There is quite wide variation however. For example, 22% of students in the narrow field of education in nursing in 2008 were admitted to higher education on the basis of a prior VET qualification. Almost 12% of students admitted to higher education in the management and commerce field of education were admitted on the basis of a prior VET qualification, but because this is a very big field of education, the *number* of students is quite high. Only 6% of students admitted to engineering and related technologies were admitted on the basis of a prior VET qualification, and only 6% and 3.5% in the society and culture field of education and the natural and physical sciences field of education respectively were admitted based on a prior VET qualification. Society and culture includes 'pure' disciplines in the humanities as well as a range of specific occupational fields (such as social care occupations), while the natural and physical sciences also comprises the 'pure' disciplines in that field.

Qualifications vary in the extent to which they support social mobility. Our research focused on 'mid-level' qualifications, which includes diplomas and advanced diplomas in VET, because they are the 'transition' qualifications that students use to enter higher education, as well as qualifications that are designed to support students to enter the labour market (Wheelahan, Fredman, Bexley, & Moodie, 2014 - forthcoming). In diplomas and other higher-level VET qualifications, students from low socio-economic status (SES) backgrounds are over-represented in nursing, even though low SES students in diplomas and other higher-level VET qualifications are generally under-represented in VET more broadly. Higher education qualifications in nursing also support social mobility because the percentage of students from low SES backgrounds who enter nursing degrees are similar to the percentage of individuals from low SES backgrounds in the population, and much higher than in the higher education sector as a whole (Moodie, 2012b: Table 4). In contrast, in the management and commerce field of education, low SES students in diploma and higher-level qualifications in VET are under-represented, and they are under-represented in higher education when compared to the percentage of people from low SES backgrounds in the population. Low SES students are under-represented in diplomas and higher-level VET qualifications in the engineering and related technologies field of education, but over-represented at lower level qualifications, particularly Certificates III which is the qualification level for the skilled trades. Low SES students are also under-represented in the engineering and related technologies field of education in higher education. In the two fields of education that include the pure disciplines – the natural and physical sciences and society and culture, low SES students are under-represented in higher education, at about the same rate as they are for higher education as a whole (Moodie, 2010).⁸

Four types of educational pathways

Analyses of these data led us to posit four types of educational pathways (broadly speaking) and these are depicted in Figure 1. Each is defined by its links to work and the type of educational pathway between sectors of education. We have defined pathways by whether they have strong links to jobs and/or strong links to education. Strong links to jobs means that most people end up working in jobs related to their

qualification (usually in regulated occupations and professions), whereas weak links to jobs means that most people don't end up working in jobs associated with their qualification.

Strong links to education means that many students take a second qualification within the same field of education when they move from VET to higher education, whereas weak links to education means that few students undertake a second qualification within the same field of education when they move from VET to higher education. There are two types of educational pathways with weak links to education; the first is that not many students go on to undertake a second qualification in higher education when they finish their VET qualification; and, the second is that many students undertake a second qualification, but usually in a different field of education. This is elaborated below. Educational pathways can have:

- Strong links to work and strong educational pathways;
- Strong links to work and weak educational pathways;
- Weak links to work and strong educational pathways; and,
- Weak links to work and weak educational pathways.

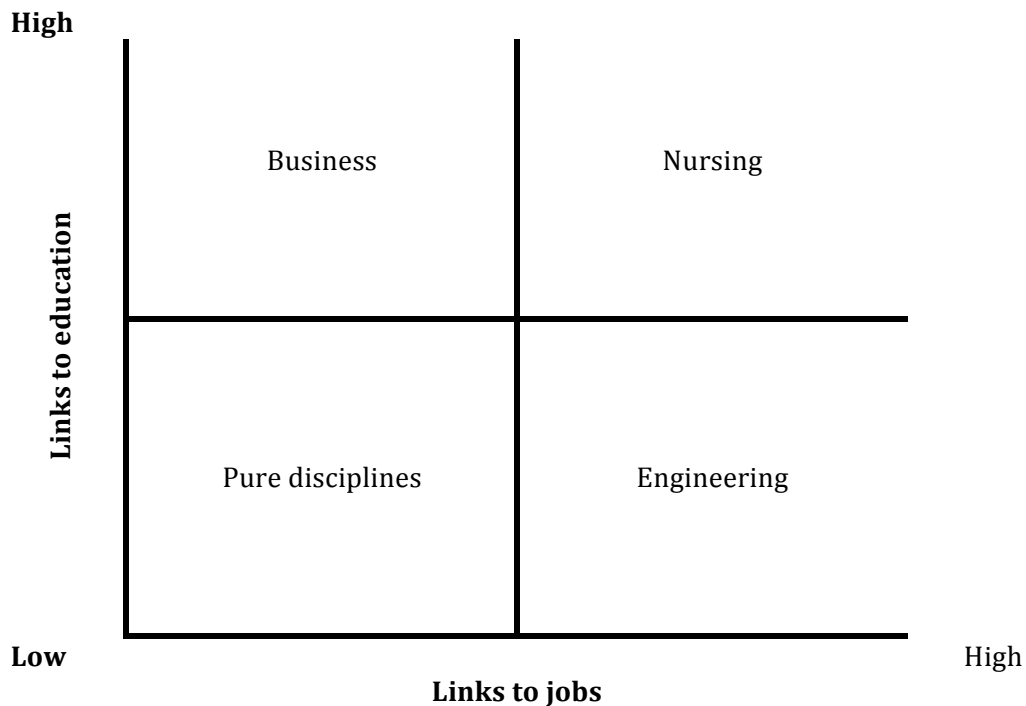


Figure 1: four types of educational pathways

1. Strong links to work and strong educational pathways

In this type of pathway, most students work in jobs linked to their qualification, and there are strong occupational pathways so many students study a subsequent qualification in their field. The clearest example is nursing. There is a strong occupational pathway for nurses with a diploma from VET who continue to a nursing degree in higher education.⁹ Nursing is a regulated occupation and like many other regulated occupations, the profession has had significant input into the structure of the occupational

pathway *and* in the structure and design of qualifications, pathways, and the amount of credit that can be granted for a VET qualification when students move to a higher education qualification.

2. Strong links to work and weak educational pathways

In this type of pathway, most students work in the job associated with their qualification, but not many people who complete a qualification in VET go on to undertake a second qualification in higher education. The clearest example is engineering. Not many tradespeople (for example, electricians) become engineers (for example, electrical engineers). While there are some jobs that can act as a stepping-stone for the trades to the professions (for example, technicians or technologists), they comprise a very small percentage of the occupational grouping. The occupational or professional bodies often regulate these occupations, and they specify the entry requirements for the occupation and the broad features of the qualification, its curriculum and the qualifications needed to teach in it. However, while there is a strong link between qualifications and occupations, there is a high degree of occupational segmentation between occupations, and occupational pathways are not strong. Consequently, educational pathways are not strong.

3. Weak links to work and strong educational pathways

In this type of pathway, the link between qualifications and jobs is very weak and most students end up in jobs that aren't directly associated with their qualification. However, when they finish their vocational education qualification significant numbers move to higher education to do a degree in the same field of education because it is necessary to have a degree to get a good job. These jobs tend to be unregulated, and employers use qualifications as a 'screening device' so that possession of a degree is a general indicator of capability, application and potential. The 'management and commerce' field of education in Australia is the best example of this, and it includes the broad area of business studies. This is one of the strongest educational pathways in Australia.

4. Weak links to work and weak educational pathways

In this type of pathway, the link between qualifications and jobs is very weak and most students end up in jobs that aren't directly associated with their qualification. However, educational pathways between VET and higher education are also very weak. This type of pathway describes the 'pure disciplines' such as the natural and physical sciences and the humanities. The reason there are very few pathways between VET and higher education is that in Australia, the VET sector doesn't offer the pure disciplines because all qualifications must be occupationally focused using competency-based qualifications where each unit of competency relates to a specific workplace requirement. The pure sciences and humanities don't fit easily within this framework. However, there are high numbers of students who undertake a second qualification *within* the higher education sector, but in a *different* field of education (Wheelan, Moodie, et al., 2012: 45). So, many science and humanities graduates in higher education will subsequently undertake a qualification in health or teaching or in another field of education that has tighter links to occupations. We have described this as a weak educational pathway for two reasons: first, there is very little movement from VET to higher education; and second, when students do undertake a second qualification, it is usually in a different field of education. When students directly use a qualification from the pure disciplines to get a job, it is usually in unregulated occupations and employers use qualifications as screening devices, as in the third type of pathway above.

The nature of qualifications – as signalling or screening devices

These findings led us to think about the nature and purpose of qualifications and their relationship to educational pathways. Broadly speaking, qualifications are used in two main ways:

- As a *signalling device*, to signal that the person has obtained the necessary knowledge, skills and attributes required for that particular occupation or profession. Qualifications are used in *occupational labour markets* where entry and progression requirements are specified by the occupational and professional bodies. Qualifications specify in broad terms what people can know and do, and curriculum and skills are clearly specified and mapped. Qualifications are used to move from lower to higher levels within the broad occupational field.
- As a *screening device*, to signal that the person has the broad attributes, capacities and potential employers require of 'good' employees. Qualifications are used in *internal labour markets* where the specific requirements for the job are learnt on the job, and entry requirements are varied and not tightly specified (beyond usually requiring a qualification at a particular level – mostly degrees). Generally speaking, progression within the broad occupation is not tightly linked to specific qualifications (other than as an initial hurdle for employment, and many different qualifications can serve this purpose). In this scenario, while VET qualifications in Australia specify the knowledge, skills and attributes associated with that qualification because they are competency-based, it would be more appropriate if knowledge, skills and attributes were less tightly specified and broader in scope.

Thinking about policy – the purpose of qualifications

This analysis allows us to revisit the three purposes of qualifications. It shows that qualifications can meet the three purposes in different ways, and this has implications for policy and for the design of qualifications and educational pathways.

1. As a mechanism to enter the labour market or to move to a higher occupational level. All qualifications need to provide access to the labour market and they do, although they do so in different ways. Qualifications in occupational labour markets specify the occupational requirements, whereas qualifications in internal labour markets specify the broad attributes, capacities and potential of the individual. The way they are designed needs to reflect the different ways in which they act as qualifications for the labour market.
2. As a transition to higher-level qualifications. All qualifications need to provide students with the knowledge and skills they need to study at a higher level in their field. The nature of the knowledge (whether it is more or less tightly specified) will differ according to whether it is an occupational or internal labour market. This has implications for how tightly pathways are defined (this is discussed further below). The new Australian Qualifications Framework requires that all qualifications, with the exception of the doctoral qualification, ensure graduates have the knowledge and skills they need for work *and further study* (AQF Council 2013). However, the extent to which Australia's competency-based VET qualifications meet this requirement is questionable.
3. To widen access to tertiary education. All qualifications should have as one of their objectives supporting students from disadvantaged backgrounds to enter higher-level studies. Middle level vocational qualifications such as diplomas are particularly important for equity for two reasons: first, they provide better labour market outcomes than lower level VET qualifications; and second, they are the transition qualification to higher level studies, particularly degrees. These middle level qualifications are consequently the link between lower qualifications in VET and higher level qualifications in higher education (Wheelahan, 2010). This means they matter, even when there are not related to strongly defined occupational pathways.

Overall, while all qualifications serve these three purposes they do so in different ways and the design of qualifications should reflect these differences. Currently, Australia's VET policy framework does not recognise these differences. Insisting that all qualifications be occupationally specific and competency-based is based on the assumption that all industries share the characteristics of an occupational labour market with tight links between education and jobs, *and* strong occupational pathways. However, most industries are not like that, and as we have seen, the link between qualifications and jobs is very weak. Moreover, such a model is too tight even for strong occupational labour markets with strong occupational pathways. First, it doesn't emphasise the emergent nature of knowledge and skills needed for skilful performance at work and the exercise of judgement and discretion because it focuses on existing workplace tasks and roles. Second, a greater emphasis on the educational purposes of VET is needed to ensure that students have the knowledge and skills they need to study at a higher level within their broad field. This is important for all students, but particularly students from disadvantaged backgrounds.

Thinking about policy - implications for pathways

The above analysis also has implications for pathways. Government policies which seeks more pathways based on linear connections between qualifications within the same field of education does not reflect the different kinds of pathways that are needed to reflect the different relationships between qualifications and the labour market. The implication is that a uniform policy approach to educational pathways will not achieve government objectives. Policy to promote, develop and support pathways needs to reflect the different relationships between qualifications and jobs.

1. Strong links to work and strong educational pathways

In general, these types of pathways work well. They need to be supported by the occupational and licencing bodies and underpinned by the occupational pathway, and educational institutions need to be encouraged to work with these bodies to develop, maintain and sustain the educational pathways that are needed to support them. This matters because while these pathways tend to work well, they are not problem-free. For example, the relationship between VET trained and higher education trained nurses in Australia is quite fraught, reflecting industrial tensions in the hospitals. This is reproduced in the academy, and overlain with the usual tensions that arise when trying to get the two sectors of tertiary education to work together. Students will use this educational pathway where it exists, because it offers access to the occupational pathway.

2. Strong links to work and weak educational pathways

These types of pathways will remain weak while the occupational pathways remain weak. If governments wish to increase educational pathways in these areas, the key focus should be to work with the occupational and professional bodies and employers and unions to create more effective occupational pathways or ladders. The notion of vocational streams offers some potential here. Blaming educational institutions for the lack of educational pathways fails to locate the source of the problem, which is strong labour market segmentation. Educational institutions are implicated however, because the design and structure of qualifications and the amount of credit higher-level qualifications will provide for lower-level qualifications can often be parsimonious (and to be fair, this is often an outcome of the accreditation requirements of the professional body). Broader policy approaches need to be considered to support these types of pathways. Our research found that the pathway from skilled trade to professional (for example, in engineering) is just too long and difficult and does not take account of the reality of students' lives, and their family and personal obligations (Wheelahan, Leahy, et al., 2012). However, pathways are still important because they provide an opportunity for students from disadvantaged backgrounds to gain

access to higher-level qualifications. The design of lower level qualifications needs to ensure students are well prepared to study at a higher level.

3. Weak links to work and strong educational pathways

While preparing students for a broad vocational field (for example, business studies) these types of pathways need to emphasise educational transition. Attention also needs to be given to whether they support students from disadvantaged backgrounds to enter higher-level studies. As we have seen, the management and commerce field of education does relatively poorly in providing opportunities for low SES students. For example, our research has found that the narrow field of education of financial services within the broad management and commerce field of education has high levels of articulation from VET to higher education, but does very poorly in providing access to students from disadvantaged backgrounds. The challenges in supporting students from disadvantaged backgrounds to progress in these qualifications are different compared to nursing and other social care occupations. This reflects different socio-economic composition of these qualifications and the occupations they serve, where students from disadvantaged backgrounds have traditionally had more access to social care occupations than they have in business. Both qualifications and pathways in these types of fields need to take a broad approach to preparation for work, as well as supporting students to study at the next higher level within their field.

4. Weak links to work and weak educational pathways

Generally speaking, unless and until VET adopts a broader approach to qualifications and moves away from tying qualifications to specific occupations using competency-based models of curriculum, there will be little or no pressure to develop pathways in these types of field. This is because VET doesn't offer the pure disciplines associated with these types of pathways. However, there are implications *within higher education*, and they are that pathways should include more explicit attention to preparing students to study in different, more occupationally focused, fields of study in subsequent qualifications. While many of these pathways are implicit and well understood (for example, from science or humanities to teaching), it may be possible to support students to enter less traditional fields of education linked to other occupational areas. This doesn't imply the introduction of more vocationally specific elements in degrees in the disciplines; it is rather to ensure that links are made to subsequent qualifications so students have advice and guidance on how navigate pathways, and also that they have the broad ranging knowledge and skills that will allow them to study at the next level.

Conclusion

The implications from this research are that a more differentiated approach is needed in designing qualifications and pathways. Qualifications and pathways differ in balancing the three purposes of qualifications (labour market entry or progression; higher level studies; widening access for disadvantaged students). In part this is a reflection of whether they are designed for occupations in strongly defined occupational labour markets or whether they are designed for occupations in internal labour markets. It is also a reflection on the type and nature of occupational pathways within each broad area. The *curricular* implications are also important, and these are that tying qualifications too tightly to specific occupational outcomes undermines the potential of qualifications to support both occupational and educational progression. Rather, preparation for work needs to prepare students for broad fields of practice and equip them to study at higher levels. However, qualifications and pathways will need to do that in different ways, reflecting the different kinds of relationships between qualifications and occupations and the different kinds of labour markets they serve.

The capabilities approach and vocational streams offer frameworks for the design of qualifications, and also for improving links between qualifications and jobs while not imposing templates on how this must be done. They provide new ways of thinking about how the supply side (education) and the demand side (the labour market) can interact by exploring the potential for the construction of broader occupational pathways that are supported by more open qualifications. Such qualifications would emphasise the development of the person in the context of the occupation, the knowledge, skills and attributes they need for both educational and occupational progression, and the social, economic and other arrangements that are needed to support better connections between education and work, and between individuals and the labour market.

¹ Leesa Wheelahan moved from the University of Melbourne to OISE at the University of Toronto at the beginning of 2014.

² The University of Melbourne's Human Ethics Research Committee approved the research.

³ The NCVER neither endorses nor rejects the research reported in this paper. All research produced by NCVER is freely available. It is necessary to first register with NCVER at no cost. See www.ncver.edu.au. The project team included staff from the LH Martin Institute for Tertiary Education and Leadership, the Centre for the Study for Higher Education, and the Education and Policy Leadership group at the University of Melbourne; the Workplace Research Centre at the University of Sydney; and, RMIT in Melbourne.

⁴ For example, competency-based training is the mandated model of all publicly funded qualifications in TAFEs in Australia. In contrast, universities have more freedom in the models of curriculum they are able to use, and focus on knowledge-based approaches, while including an orientation to workplace learning. This presents difficulties – real and perceived – in developing educational pathways that emphasise coherent approaches to learning and assessment in both sectors (Wheelahan, 2008).

⁵ Many TAFEs offer degrees, and many universities offer VET qualifications, particularly higher level VET qualifications. However, TAFEs are not provided with public funding to offer higher education (with a very limited number of exceptions), while universities can access public funding for VET qualifications in most states. However, the level of provision of qualifications associated with the other sector is still very small, although it is growing and is contributing to the blurring of the sectoral divide.

⁶ The Australian Workforce and Productivity Agency suggests about 20% of jobs have a tight fit with the qualification leading to that occupation, usually in regulated occupations where there it takes a long time to train, and the occupational and professional bodies have had high input.

⁷ For a full report of the statistical analyses, see Fredman (2012)

⁸ An analysis of students' socio-economic backgrounds wasn't undertaken for the natural and physical sciences field of education in VET in this analysis because it is very small, 0.4% of all VET students in 2012 (NCVER 2013: Table 4). The broad society and culture field of education in VET is also over-represented by students from low SES backgrounds, but was not included in the analysis in the text because, unlike higher education, there are very few students in the pure disciplines in VET in this field of education. This is because all publicly funded qualifications in VET must be competency-based and occupationally focused. To compare the society and culture field of education in VET and higher education would not be to compare like with like. While society and culture field of education in higher education includes specific occupations such as social work and other care occupations (among others), it also includes elite occupations such as law, and disciplines such as literature, politics, economics, philosophy, anthropology, and so forth. Given these areas don't exist in VET, a comparison was not undertaken.

⁹ Indeed, the narrow field of education of nursing has one of the highest number of students moving from VET to higher education of any field of education in Australia (Moodie, 2010).

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