Towards a new approach to mid-level qualifications

Gavin Moodie,
RMIT University

Leesa Wheelahan, Nick Fredman, Emmaline Bexley,
University of Melbourne

Australian Government
Department of Education and Training

INFORMING POLICY AND PRACTICE
IN AUSTRALIA'S TRAINING SYSTEM

Publisher's note

Additional information relating to this research is available in *Towards a new approach to mid-level qualifications: case studies — support document*. It can be accessed from NCVER's website <http://www.ncver.edu.au/publications/2784.html>.

To find other material of interest, search VOCEDplus (the UNESCO/NCVER international database <http://www.voced.edu.au>) using the following keywords: education and training reform; employment; industry; qualifications; relevance of education and training; skills and knowledge; tertiary education.

About the research

Towards a new approach to mid-level qualifications

Gavin Moodie, RMIT University; Leesa Wheelahan, Nick Fredman and Emmaline Bexley, University of Melbourne

This report is part of a wider three-year program of research, *Vocations: the link between post-compulsory education and the labour market*, which is investigating the educational and occupational paths that people take and how their study relates to their work. Previously the authors identified three main roles for mid-level qualifications, as a labour market qualification (entry or upgrade), a transition to a higher-level qualification, and to widen access to higher-level qualifications. They also proposed a new approach to qualifications based on vocational streams and productive capabilities, which would strengthen educational pathways and occupational outcomes.

In the final year of the research, the authors tested this new approach through consultations with stakeholders in four industry areas: agriculture; engineering; finance; and health and community services. This report focuses on the outcomes of those consultations and also suggests how the new approach can be progressed.

Key messages

- Support for vocational streams and productive capabilities varied by industry, with finance showing the highest overall support. Agriculture showed the least support due to a general reluctance by employers to invest in education and training.

- In order to progress the new approach to qualifications, it is suggested that the following should be implemented:

  - Tertiary education curriculum needs to emphasise the different roles of qualifications by moving from being focused on specific workplace tasks and roles to a capabilities approach, which develops a person's theoretical knowledge, technical skills and attributes in a broad field of practice along with the skills for a particular occupation.

  - All the social partners — education, industry and government — need greater involvement in the development of curriculum and qualifications. They should also have equal participation in the membership of qualification and approval bodies to enable there to be a focus on both the educational and occupational purposes of qualifications.

  - Educators and researchers need to learn more about the operation and structure of the different labour markets in which their graduates enter and progress. They should also be involved in further work to explicate and operationalise the concept of productive capabilities.

Dr Craig Fowler
Managing Director, NCVER

Contents

Executive summary

This report sets out the findings of the final year from Strand 2 of the three-year project entitled *Vocations: the link between post-compulsory education and the labour market*. The project investigated the potential to improve pathways and flows within and between education and work. It consisted of three strands: Strand 1 researched education and work outcomes from VET in Schools; Strand 2 researched the role of educational institutions in fostering educational and occupational pathways; and Strand 3 researched how to improve occupational pathways within the labour market. Each strand investigated four industries and conducted case studies in each. The industries examined were: agriculture, engineering, financial services, and health and community services.

Aim

In previous work the Strand 2 team found that the links between mid-level tertiary education qualifications are very variable. While some fields of education have high numbers of students undertaking subsequent qualifications in the same field, others have very few. The team further found that the links between tertiary education and work are also very variable. In some fields of education most graduates work in occupations associated with their qualification, while very few do so in other fields. The team particularly identified the 'hollowing out' of the middle of the skill distribution in the labour market as a key factor that inhibited the development of both the occupational pathways that link lower- and higher-skilled occupations and the educational pathways designed to support those occupational pathways. These findings led the team to develop a possible new approach to qualifications, especially mid-level qualifications, one that would strengthen educational pathways and occupational outcomes (Moodie et al. 2013). The aim of the work reported here was to test this new approach. The team's broad research questions were:

- How cogent does the new approach seem to the social partners?
- What would be needed to progress the new approach?
- How feasible is the new approach?

New approach to qualifications

The new approach to qualifications has the following components:

- four types of qualifications
- three roles of qualifications
- vocational streams
- 'productive capabilities'.

Four types of qualifications

The team identified four types of qualifications, each of which is defined by the different types of relationships that exist between the qualifications within fields of education and the occupations associated with them in the labour market.

Type 1 qualifications have strong links to education but weak links to work and are exemplified by the field of business. High numbers of students undertake a subsequent qualification within the same field

of education, but the fit between qualifications and occupations is very loose, and most graduates don't work in the occupation associated with their qualification. Type 1 qualifications prepare graduates for unregulated occupations, whereby employers use qualifications to screen employees for potential and provide enterprise and industry-specific training and development as part of their employment. Consequently, diploma and bachelor graduates compete with each other for similar jobs in type 1 occupations and diploma graduates often undertake degrees to get better jobs.

Type 2 qualifications have strong links to education and strong links to work and are exemplified by nursing. Many students undertake a subsequent qualification within the same field of education and most graduates work in the occupation associated with their qualification. These qualifications prepare graduates for regulated occupations with strong occupational pathways, which are replicated in strong educational pathways. Type 2 occupations usually have long training times and the educational programs have high input from occupational and registering bodies. Qualifications are used to broadly specify the knowledge, skills and attributes required for practice in that field.

Type 3 qualifications have weak links to education and strong links to work and are exemplified by engineering. While most students work in the occupation associated with their qualification, few undertake higher-level studies within the same field of education. Strong occupational pathways from lower- to higher-level occupations are less common (for example, from electrician to engineer). Type 3 qualifications prepare graduates for occupations that tend to be highly segmented by regulation, occupational association or less formally. Like type 2 qualifications, type 3 qualifications are used to broadly specify the knowledge, skills and attributes required for practice in that field.

Type 4 qualifications have weak links to education and weak links to work and are exemplified by the pure disciplines or the liberal arts and sciences. Very few students end up working in occupations associated with their qualification, and when they undertake further studies, it is often in a different field of education. These qualifications introduce graduates to a field of knowledge or practice without strong intrinsic links to other fields of knowledge or practice. Pathways from vocational education and training (VET) to higher education are particularly weak, because the pure disciplines are not offered in the VET sector. Like type 1 qualifications, employers use type 4 qualifications to screen employees for potential.

Three roles of qualifications

All qualifications have three roles, but they differ in the emphasis they place on each role, depending on the qualification type (as outlined above) and its links to occupations and further studies:

- as a labour market qualification — entry or upgrade

- as a transition to a higher-level qualification

- as a mechanism to widen access to higher-level qualifications.

Vocational streams

The third element of the new approach to qualifications is to base qualifications on vocational streams. A vocational stream links occupations that share common practices, knowledge, skills and personal attributes. Vocational streams increase horizontal flexibility and transferability at work by linking occupations in a broad field of practice and increase vertical flexibility by supporting education and occupational progression in a broad field of practice.

Productive capabilities

The fourth element of the new approach is a role for qualifications to develop productive capabilities. Productive capabilities develop the person in the context of their vocational stream with the broad knowledge, skills and attributes that individuals need to be productive at work, to progress in their careers, and to participate in decision-making about work and the arrangement of work. Productive capabilities also encompass the required resources and arrangements at work to enable people to use their knowledge, skills and attributes effectively. Productive capabilities thus focus on how knowledge, skills and attributes are developed through education and how they are deployed at work.

How cogent does the new approach seem to social partners?

The team answered its first broad question by preparing a different discussion paper for participants in each industry case study and an additional discussion paper for public officials; these were then used as the basis of interviews and consultations. Responses to the new approach varied by industry and among public officials, reflecting the different roles that mid-level qualifications played in occupations in each industry. Moreover, the team found that there was varying potential for vocational streams and that they would need to be constructed in different ways, again reflecting industry differences. While there is broad interest in and receptiveness to qualifications developing productive capabilities, the concept is not well understood and would have to be developed extensively and differently for each industry.

What would be needed to progress the new approach?

In answering the second broad question, the team found that taking the new approach further has implications for tertiary education policy, qualifications and approval bodies, tertiary education institutions and educators and researchers. Tertiary education policy needs to take a more differentiated approach to the purpose and design of qualifications to accommodate the different ways by which qualifications are used in the various segments of the labour market. The implications for qualifications and approval bodies are that they need to be more flexible in recognising all qualifications serve three related but distinct roles — labour market entry or progression, access to higher-level studies and widened participation for disadvantaged students — while the curricular implications are that qualifications need to support both educational and occupational progression. Tertiary education institutions would differentiate between different types of qualifications in curriculum and design, developing pathways to support educational and occupational progression that reflect the different relationships between qualifications and the labour market. Qualifications whose main role is preparing graduates for further study should emphasise educational development, while qualifications with a primary role of preparing graduates for an occupation should concentrate on broad occupational outcomes. The main new work for educators and researchers is to explicate and operationalise the concept of productive capabilities, and explore in greater depth the relationships between qualifications and the labour market. Some descriptions of the capabilities approach read like holistic statements of worker attributes, in contrast to the atomised statements of job tasks of competency-based training. But productive capabilities are not merely alternatives to competencies: they are a different way of conceptualising the relations between the worker and work. This report has suggested some principles, but these need to be elaborated and stated in terms that may be implemented in different types of qualifications.

How feasible is the new approach?

In response to its final broad question, the team found that some of the changes proposed could be adopted readily by individuals, groups and institutions, largely on their own initiative, if they agreed to do so. Other changes would be more difficult because they require the agreement and participation of different groups, while yet other changes would require a substantial reorientation of tertiary education policy, financing or qualifications and thus would require extensive development and discussion. This report seeks to launch such a discussion.

Introduction

This report is one of a series from a project entitled *Vocations: the link between post-compulsory education and the labour market*. The project investigated the potential to improve pathways and flows within and between education and work. The project was of three years' duration and comprised three interrelated strands:

- Strand 1: entry to vocations, concentrating on VET in Schools as a pathway to work or further study

- Strand 2: the role of educational institutions in fostering vocations, concentrating on vocational and higher education

- Strand 3: understanding the nature of vocations in work today and their potential improvement.

Each strand concentrated on four industries: agriculture, engineering, finance and health and community services. This report sets out the findings of the third and final year from Strand 2 on the role of educational institutions in fostering vocations.

The problems that the vocations project sought to explore were the discontinuities within and between education and work that result in underdeveloped educational and occupational pathways (Wheelahan, Moodie & Buchanan 2012). The particular focus of Strand 2 was on educational pathways within vocational education and training and between VET and higher education, and how to improve links between qualifications and occupations.

Conceptual model

In researching how to improve both educational and occupational pathways and the links between them, this project used a conceptual framework that consisted of vocations, vocational streams and the capabilities approach (Wheelahan, Moodie & Buchanan 2012). A vocation emerges from fields of practice where there are commonalities; for example, the commonalities between nursing, aged care and childcare. The vocation is care work and is located within a 'care work' vocational stream. Vocational streams consist of linked occupations that relate to the core underpinning concept and set of practices; 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. Based on a continuum of knowledge and skill that links work, VET and higher education, a vocational stream is premised on the capacity to accrue the knowledge, skills and attributes needed for the industry in a coherent, cumulative fashion. It fosters identification with the field of practice rather than with a specific employer, enterprise, job or occupation.

Vocations are underpinned by capabilities. The capabilities approach relates the conditions that individuals need to make choices about their lives, engage in work and progress through a career to the requirements of broad vocational streams. The approach focuses on what people need to be able to do to make complex judgments at work now and in the future, rather than on workplace tasks and roles based on existing or past practice. The capabilities approach 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 they need to allow them to develop as autonomous, innovative and creative workers within broad vocational streams.

The relationship between education and the labour market

This framework was useful for exploring the relationship between education and the labour market. Much research that explores the links between education and work focuses on deficits in education and 'blames' education for the mismatch between qualifications and work. However, recent research finds that the relationship between education and work is mutually constitutive, and that a greater focus is needed on the way in which skill is deployed at work and how work is organised. The links between systems of education and the labour market are important in shaping demand for qualifications and the types of labour market outcomes that graduates achieve (Bosch & Charest 2008; Buchanan et al. 2009; Keep 2013; Keep & James 2012; Wheelahan, Moodie & Buchanan 2012).

Previous reports from Strand 2 found that there was a fragmented relationship between tertiary education and occupations (Wheelahan et al. 2012; Fredman et al. 2013). The links between qualifications and occupations are very weak, and most people do not end up working in the occupation directly associated with their qualification. 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' between qualifications and occupations is even lower for mid-level qualifications, which we define as diplomas, advanced diplomas and associate degrees.

A key finding of Strand 2's work is that the structures of the labour market and patterns of occupational segmentation help to shape educational pathways. In earlier work, Strand 2 identified the 'hollowing out' of the middle of the skill distribution in the labour market as a key factor that inhibited the development of both the occupational pathways linking lower- and higher-skilled occupations and the educational pathways that are designed to support those occupational pathways. The presence or absence of strong occupational pathways contributes to the presence or absence of strong educational pathways.

The weak links between qualifications and occupations are reflected in weak links between qualifications within fields of education. Overall, about 52% of tertiary education students who undertake a second qualification do so in a different field of education from their first. This percentage moves up or down a few points depending on whether students move from VET to higher education, from one VET qualification to another VET qualification, or from one higher education qualification to another higher education qualification (Wheelahan, Moodie & Buchanan 2012, p.32). The key difference in patterns of student movement relates to students who complete a higher education qualification first and then undertake a VET qualification; 71% of these students change their field of education when they undertake their second qualification (with most undertaking their second qualification in the management and commerce field of education). However, educational pathways vary significantly between fields of education, and this is related to the structure of the occupations served by each field of education.

Research questions and methods

Strand 2's guiding research questions during the three years of the Vocations project were:

What tertiary education policies, institutional structures and curricular models support students' educational progression from lower- to higher-level qualifications and transitions from education to work, and help overcome discontinuities in sectors, institutions, and qualifications? Can the notion of vocations help?

In the first year of the project, Strand 2 researched the tertiary education policies, institutional structures and curricular models that would support students' educational progression from lower- to higher-level qualifications and their transitions from education to work (Wheelahan et al. 2012). In its exploration of whether the notion of vocations could help in these processes, this work demonstrated differences between fields of education in the patterns of student movement within and between sectors of education. This was undertaken through an analysis of relevant data from the student statistical collections in both sectors and from the Australian Bureau of Statistics (ABS). Those differences were explored in more depth in the four industry case studies by means of an examination of statistical data, policy analysis and in-depth interviews with VET and higher education students and graduates, pathways officers and learning advisors, and teachers, managers and institutional leaders in both sectors. This research explored how the structures of education and work and institutional and workplace realities mediate different types of pathways, and how these intersect with the reality of students' lives. The research found that the notion of vocations and vocational streams was helpful in considering career structures, and supported the emergence of occupational pathways. The notion of capabilities was found to be useful in thinking about the purpose and design of qualifications to support educational and occupational progression and students in achieving their aspirations and personal objectives. This includes supporting students to develop the knowledge, skills and attributes they need to be able to exercise judgment and creativity at work.

In the second year of the project, Strand 2 explored in more depth the links between qualifications and occupations, how these links could be strengthened, and the extent to which educational institutions could foster occupational pathways by developing qualifications to fill perceived labour gaps (Moodie et al. 2013). It focused on mid-level qualifications. The research involved further analyses of student statistical collections and various surveys from the ABS across all fields of education, with in-depth exploration in the four industry case studies. This focused on graduates' employment outcomes; whether they were working in the same occupation as their training; whether they were working at a higher skill level than before their training; and whether they proceeded to further study. The research also included literature and policy reviews relating to the four industry case studies, and in-depth interviews with industry, professional and occupational bodies, employers and teaching staff in the industry case studies.

Strand 2 also organised a national conference on mid-level qualifications. This allowed for debate and discussion on emerging findings, enabling these findings to be tested; it also allowed further input from those working in related areas to the project. The research found that there is limited scope for tertiary education institutions alone to foster links between qualifications and work. This is because tertiary education institutions are mostly limited to following rather than initiating structural change in the workforce. However, new qualifications can play an important role in building links between lower- and higher-level qualifications and in professionalising and upgrading the skills of particular industries; however, this is most effective when it is done collaboratively by education and the industry social partners — employers, unions and government.

In the final year of work, Strand 2 drew from the findings of its first two years work to develop a model of mid-level qualifications that reflects the links between the labour market and qualifications, and the way this differs between industries and fields of study. The model also seeks to support both educational and occupational progression. The model uses and elaborates the concepts of vocations, vocational streams and the capaiblities approach as its broad conceptual framework. In particular, it recasts the notion of the capabilities approach as 'productive capabilities'. The final year of work was thus to develop and test the model of mid-level qualifications with the key social partners

(government, employers, unions and professional and occupational bodies). The new approach to qualifications:

- identifies different types of qualifications (four are described in the next section)
- describes different roles of qualifications (three are described in the next section)
- bases qualifications on vocational streams
- develops productive capabilities, which are described in the next section.

The team's broad research questions were:

- How cogent does the new approach seem to social partners?
- What would be needed to progress the new approach?
- How feasible is the new approach?

The methods used to test the new approach included producing discussion papers for each of our four industry case studies and a broader discussion paper for senior public officials in Australian and state bodies, including three state government jurisdictions for tertiary education. The papers synthesised Strand 2's findings from the first two stages and presented proposals for a future path for mid-level qualifications in each field. The team used the papers to consult in each of the four case study industries and with a range of tertiary education qualifications' social partners: educators, employers, unions, government and professional and occupational bodies. The papers updated data on further study and employment outcomes in tertiary education in each industry case study, with the aim of investigating the extent to which mid-level qualifications support educational and occupational pathways. The papers also explored the extent to which mid-level qualifications in each industry case study enable students from disadvantaged backgrounds to enter higher-level studies and occupations. In preparing this final report of the project, Strand 2 synthesised findings from these discussions with previous findings from the first two years of the project. These comprised a range of document analyses, participant interviews and quantitative survey and educational institutional data.

The next section sets out the key concepts of the new approach to mid-level qualifications developed by the project team. The following section reports briefly the outcomes of the case studies, which are reported more fully in the accompanying support document. The final section considers the implications of the case studies for the new approach to qualifications proposed and its feasibility.

A new approach to qualifications

The new approach to mid-level qualifications developed by the project team has four elements:

- different types of qualifications
- different roles of qualifications
- vocational streams
- 'productive capabilities'.

Different types of qualifications

As explained above, the links between tertiary education qualifications are very variable (Moodie et al. 2013). Some qualifications in some fields have a high proportion of graduates proceeding to further study, with some proceeding to further study in the same field and some in a different field. Other qualifications have a low proportion of graduates proceeding to further study, and this also varies by field and level of qualification. Conversely, some qualifications in some fields admit a high proportion of students with previous tertiary study, either in the same or in a different field. Other qualifications have low proportions of students with previous study and enrol high proportions of school leavers.

The team further found that the links between tertiary education and work are also very variable. In some fields of education there is a high proportion of graduates proceeding to occupations associated with their qualification, but this varies markedly by field and qualification level. Conversely, some occupations in some industries have a high proportion of workers with relevant educational qualifications, but this also varies markedly by occupation, occupational level and industry.

These findings led the team to develop a typology of tertiary education qualifications, which is given here (figure 1, page 17). It examines the links that qualifications have to other qualifications within the same field of education, and the links between qualifications and the occupations associated with those qualifications. Qualifications are placed along the vertical axis according to how closely they are linked to other qualifications within the same field of education: where links are weak, very few graduates who undertake a second qualification do so in the same field of education; where links are strong, most graduates who undertake a second qualification tend to progress to a second qualification within the same field of education. Qualifications are placed along the horizontal axis according to how closely they are linked to occupations: where links are weak, very few graduates work in the occupation associated with their qualification; where links are strong, most graduates work in the occupation associated with their qualification. This generates four types of qualifications, with a 'typical' example in each.

Type 1: strong links to education, weak links to occupations (business)

The first type described, shown in the top left quadrant of figure 1, has strong links to other qualifications within the same field of education but weak links to occupations. This is exemplified by the field of business, although not all business qualifications fit this type. Business qualifications are in the management and commerce field of education. Some 61.8% of students in tertiary education in the management and commerce field of education stay within that field of education when they undertake a second qualification, compared with 48% of all students (Wheelahan, Moodie & Buchanan 2012, p. 41). This varies by sector. Some 58.9% of VET business students who proceed to higher

education do so in the same field; 58.5% of business students who proceed from one VET qualification to another; 77.3% of business students who proceed from a higher education qualification to another higher education qualification; and 62.3% of business students who proceed from a higher education qualification to a VET qualification stay in the same field (Wheelahan, Moodie & Buchanan 2012, pp.41—4). Business qualifications thus have strong links to other qualifications in the same field of education. The management and commerce field of education is substantial in the VET sector, and about 33.6% of diploma graduates proceed to further studies, while in banking and finance, which is a narrow field of education within the broader management and commerce field, 41.4% of diploma graduates proceed to further study (Moodie et al. 2013, p.19). The rate for diploma and above graduates in VET overall who proceed to further study is 34.2%. Perhaps unexpectedly, business qualifications generally have weak links to occupations, as only a modest proportion of business graduates work in business fields. In VET, a low 24.8% of business graduates (from certificate I to diploma and above) work in the occupation directly associated with their qualification six months after graduation, while only 17.9% of graduates from diplomas and above work in the occupation associated with their qualification (Moodie et al. 2013 p.20). Employment rates are good, but relatively high proportions of business graduates work in non-business fields such as government and hospitality and tourism. Conversely, many workers in business do not have business qualifications but qualifications in other fields.

Type 1 occupations are mostly unregulated and employers use qualifications to screen employees for potential; these employees are given enterprise and industry-specific training and development as part of their employment. Consequently, diploma and bachelor graduates compete with each other for similar jobs in type 1 occupations and many graduates from mid-level qualifications proceed to further studies (particularly degrees) because they need to get a degree to get a good job (Wheelahan et al. 2012, p.35).

Type 2: strong links to education, strong links to occupations (nursing)

The second type is shown in the top right of the table: qualifications with strong links to education and strong links to work. Nursing is a good example. There is strong progression from the diploma to the Bachelor of Nursing, and conversely, the Bachelor of Nursing has the highest proportion of diploma graduates of all bachelor programs (Moodie 2012, p.150). A high proportion of nursing diploma graduates work as nurses (78.1%), and few if any nurses have no tertiary education nursing qualification. But not all health qualifications are of this type. There is very weak progression from nursing or other health certificates into the Diploma of Nursing, and nursing degrees do not have strong educational links to other higher education qualifications apart from nursing upgrading programs. For example, not many nurses go into medicine to become doctors or into occupational therapy or physiotherapy. The strong links between the Diploma of Nursing and the Bachelor of Nursing are related to the strong occupational pathway from enrolled nurse to registered nurse.

Nursing is within the broad health field of education. While there are discontinuities between different types of occupations within health, there are strong occupational pathways within broad occupations. Nurses study nursing-upgrading programs, doctors study medical-upgrading programs and so on. This is reflected in the patterns of student articulation within the broad health field of education. Some 58.4% of all tertiary education graduates in the broad health field of education who go on to undertake a second qualification stay within the health field of education when they do so (Wheelahan, Moodie & Buchanan 2012, p.41). Only the management and commerce field of education has a higher percentage of graduates who remain within the same field of education (61.8%). The patterns of articulation reflect occupational structures. Only 36.1% of VET graduates in health who

undertake a second qualification in vocational education stay within the health field of occupation because there isn't a strong occupational pathway from lower-level certificates to higher-level VET qualifications. In contrast, 77.6% of VET graduates who go on to undertake a higher education qualification stay within the health field of education, and most of these are students moving from the diploma to the Bachelor of Nursing. Some 67.6% of higher education graduates who undertake a second higher education qualification stay within the health field of education, reflecting occupational upgrading within their field. But only 31.2% of higher education graduates who undertake a subsequent VET qualification (a very small group) stay within the health field of education, as there are no real occupational links supported by this pathway (Wheelahan, Moodie & Buchanan 2012, p.41—4).

Type 2 occupations are regulated and have strong occupational pathways, which are replicated by strong educational pathways. Type 2 occupations generally have long training times and educational programs have high input from occupational and registering bodies.

Type 3: weak links to education, strong links to occupations (engineering)

The third type of qualification has weak links to other educational qualifications but strong links to work and is shown in the bottom right quadrant of the table. An example is engineering, where there is very little transfer between VET and higher education (Moodie 2012, p.150) but a high proportion of both VET and higher education engineering graduates work in the occupations for which they were trained. However, while those who train as electricians and engineers tend to work in those occupations, not many electricians subsequently go on to become engineers. The links between individual qualifications and occupations are strong, but occupational pathways are weak, and consequently educational pathways are weak. Some 51.2% of tertiary education graduates in engineering who undertake a second qualification change their field of education when they undertake the second qualification. The patterns of student articulation reflect the occupational segmentation in the engineering broad field of education. While 55.7% of VET graduates who undertake a second VET qualification stay within the engineering field of education (often electricians upgrading their occupational certificates), only 36.9% of VET graduates who undertake a second qualification in higher education stay within engineering. Only 37.6% of higher education graduates who undertake a second qualification in higher education stay within engineering, while only 24.5% of higher education graduates who undertake a second qualification in VET (a very small group) stay in engineering (Wheelahan, Moodie & Buchanan 2012, p. 41—4).

Type 3 occupations tend to be highly segmented with very weak occupational pathways. They are often strongly regulated, with the occupational and professional bodies having high input into the curriculum and design of the qualification. There may be few opportunities to progress to higher-level occupations in the absence of occupational pathways, so those who do seek to move to higher-level occupations receive little or no credit from their previous VET qualifications in higher education when they embark on this path (Wheelahan et al. 2012).

Type 4: weak links to education, weak links to occupations (pure disciplines)

The final type of qualifications, shown in the bottom left quadrant, has weak links to both other qualifications in the same field of education and occupations. They are exemplified by what are called here the pure disciplines, or may be called the liberal arts and sciences such as biology, chemistry, history, languages, literature, mathematics, philosophy and physics. These are small fields in the VET sector anyway, but there is little progression to higher education and most bachelor

programs in these fields do not enrol many students with a VET qualification. For example, the natural and physical sciences field of education admits the fewest number of students to higher education based on a prior VET qualification than any other field of education (Moodie 2012, p.150). Only 31.9% of tertiary education graduates from the natural and physical sciences stay within that field of education when they undertake a second tertiary education qualification. Only 26.8% of VET graduates in the natural and physical sciences (a very small group) stay within that field of education when they undertake a second VET qualification; some 63% of VET graduates who undertake a second qualification in higher education stay within the natural and physical sciences, but it is a very small group. In higher education, which is where the majority of tertiary education students in the natural and physical sciences are located, only 34.9% stay within that field of education when they study a second higher education qualification.

Type 4 qualifications have indirect links to occupations. For example, science graduates may go to the health field of education to undertake their second qualification to prepare them to become medical doctors or another health professional or to the education field of education to prepare them to become a teacher. While employment outcomes for the pure or liberal disciplines are reasonable, most are not employed in the fields in which they were educated. As with type 1 qualifications, type 4 occupations are mostly unregulated and employers use qualifications to screen employees for potential.

Figure 1   Four types of qualifications pathways
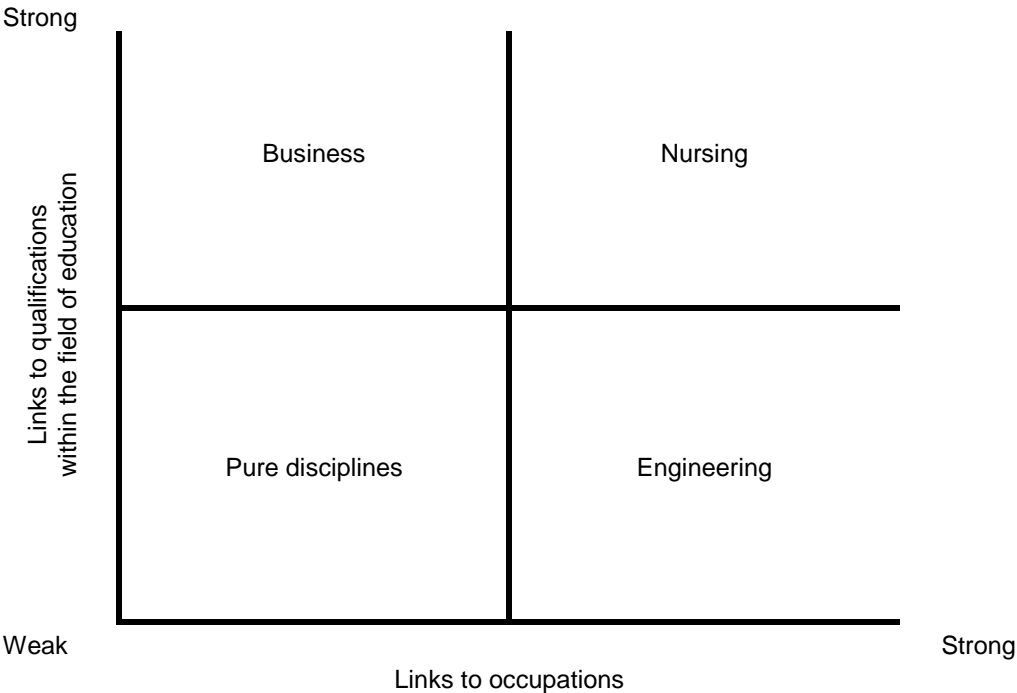
Implications of the analysis

The team draws two implications from this analysis: first, in the relationship between educational qualifications and the labour market and the implications this has for the role of educational institutions in fostering vocations; and second, the implications for policy. Thus, educational pathways are structured mostly by the labour market, not by educational institutions, structures or policies (Moodie et al. 2013). The research found two ways by which labour markets encourage

occupational and hence educational pathways. Broadly speaking, qualifications are used in two main ways:

- 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 the entry and progression requirements are specified by the occupational and professional bodies. Qualifications specify in broad terms what people should know and can do, and curriculum and skills are clearly specified and mapped. Qualifications are used as signals in both Type 1 and Type 3 qualifications and occupations. However, in Type 1, qualifications are used to move from lower to higher levels within the broad occupational field. Type 1 has strong educational pathways because there are strong occupational pathways, whereas Type 3 does not because the occupational pathways are weak. The strongest case of occupational and educational links is nursing, but there are others.

- To *screen* people for the broad attributes, capacities and potential that the 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, 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). Type 2 and Type 4 qualifications are of this type. They are differentiated because in Type 2 qualifications students stay within the same field of education (exemplified by business studies) when they undertake a second tertiary education qualification. Many employers use the bachelor of business in this way, and accordingly a high proportion of graduates of certificates IV and diplomas in business articulate to the bachelor degree. In Type 4, graduates change field of education when they undertake a second tertiary education qualification (exemplified by the pure disciplines). The pure disciplines are very weak in the VET sector because they don't fit with competency-based training models of curriculum, which is based on units of competency that describe workplace tasks and roles. The pure disciplines are stronger in higher education, and students may use them to directly enter internal labour markets or to undertake higher-level studies in regulated occupations such as medicine or teaching.

The key implication of this analysis is that educational bodies can facilitate or inhibit educational pathways, but they can't strengthen links between qualifications where there is no occupational link or labour market demand for students to transfer from one qualification to another. A corollary is that there is little point in investing much time and effort in building pathways, credit transfer agreements and other links between qualifications if students are not likely to use this educational infrastructure, regardless of how well it might be designed and built. Policy needs to focus on building pathways that students want to use or pathways that students can be encouraged to use.

The team's second implication is that different policies may be needed for qualifications of different types. Qualifications that are used mainly for screening may need to be designed differently from the fewer qualifications that are used mainly to prepare graduates for specific occupations. The next section discusses the broad roles common to all qualifications, but argues that the emphases may need to differ and depend on the type of qualification, and whether it has strong or weak links to other qualifications within the same field of education, and strong or weak links to occupations.

Roles of qualifications

The second element of the new approach is to recognise the different roles that qualifications play. In a previous report the team derived three roles of qualifications (Gallacher 2011, cited in Moodie et al. 2013, pp.12—13):

- as a labour market qualification — entry or upgrade

- as a transition to a higher-level qualification

- to widen access to higher-level qualifications.

The team noted that many qualifications serve these and indeed other roles concurrently. For example, some students may enrol in a Certificate IV in Information Technology to prepare for work in computer customer support or to upgrade from customer support to computer technician, in both cases using the certificate mainly as a labour market qualification. Other students may enrol in the same program hoping to transfer to a Diploma of Information Technology Systems Administration, using the qualification mainly as a transition to a higher-level qualification; yet other students may enrol in the certificate IV as part of a joint offer of admission to a Bachelor of Information Technology offered by a university to widen access to its undergraduate degree. Some students may enrol in the certificate to equip them to operate their home computer system or for personal interest.

Different programs may have different emphases on these roles. For example, a program with weak links to education and strong links to work such as an engineering program may emphasise preparation for work. But it should still prepare graduates for progression because at least some of its students will progress to further study, either directly upon graduating, or after some years working. And all programs should seek to widen access to their own and higher qualifications to fulfil one of the broader roles served by education. This goal of improving access to tertiary education has been shared by all governments at all levels for a considerable time. There is an extensive literature on how this may be done, but many start by seeking parity of access, participation and graduation.

Vocational streams

The third element of the new approach to qualifications developed by the project team is to base qualifications on vocational streams. As discussed earlier, vocational streams link occupations in a broad field of practice to offer horizontal flexibility and transferability between occupations and provide vertical flexibility and progression (Buchanan et al. 2009). For example, a vocational stream could be developed in rural services to allow people to work in different rural industries in a region as seasonal demand changed and to progress over time from semi-skilled to skilled and then to highly skilled occupations. This would help to improve links between qualifications and occupations, while not precluding their broader purposes.

Productive capabilities

The fourth element of the new approach to qualifications is for qualifications to develop productive capabilities. The capabilities approach to wellbeing considers what people are able to 'be and do', and suggests the resources and social arrangements necessary to achieve this (Nussbaum 2000; Sen 1999). This project has applied the capabilities approach to work. It has used this approach to refer to the resources and arrangements of work and the broad knowledge, skills and attributes that individuals need to be productive at work, to progress in their careers, and to participate in decision-making about work.

Consider transferring a patient between a bed and a chair. One of the necessary capabilities of a nurse or personal care assistant when assisting a patient to transfer between a bed and a chair is to lift the patient out of their bed or chair. In some workplaces this requires nurses to be strong and to protect their back while helping the patient out of their bed or chair. For some patients it would require nurses to work in teams. But in other workplaces bed transfers require the nurse to operate a patient lift. This requires nurses to have access to a patient lift and to know how to use it safely and effectively. Teamwork may also be required for some patients, but transferring a patient using a patient lift requires a different procedure from transferring a patient manually.

Transferring patients has additional complexities.[1] Nurses must be aware of a patient's condition and take this into account in the transfer. For example, it would be important not to displace a dressing or put pressure on a sensitive area. The nurse should also observe any change in the patient's condition and assess the implications of this for the patient's future care and prognosis. All patients should be treated with dignity and respect, particularly as they may be vulnerable. Some patients may not communicate well because English is not their first language, because of a disability or because of mental illness, dementia or some other condition. Some female patients may be uncomfortable being handled by a man they do not know. These aspects of the patient transfer depend on the nurse's skill, knowledge and attributes. This aspect of the transfer also depends on teamwork: nurses and personal care attendants sharing information about patients. This is a different kind of teamwork from that needed for the physical lift. It also requires a workplace culture that facilitates, for example, personal care attendants noting and reporting clinical and other observations about patients to other members of the team, and a system of work that supports this.

Productive capabilities thus involve a combination of work resources, work arrangements and worker knowledge, skills and attributes. The attributes needed by workers depend on the resources and arrangements of their work. As Corbel and his colleagues (2014) note, productive capabilities are not independent of work, but neither are they so embedded in a particular workplace that they are of marginal relevance to other workplaces. Productive capabilities are located in and concentrate on an intermediate specialised level, the vocational stream.

Productive capabilities also rest upon broader social, economic, cultural and technological resources. For example, individuals need to have the language, literacy and mathematical skills for engaging and progressing in study and work. They need to have access to the social and economic resources that facilitate their participation in study and work, such as the necessary housing, healthcare, transport and childcare, as well as enable their participation in civic society and in their communities. And they need to have the knowledge, skills and attributes required to navigate, negotiate and engage in these aspects of life; the capacity to be skilful at work emerges from broader knowledge, skills and attributes. While the focus of education must necessarily be on the broad field of practice for which students are being prepared, education should also contribute to and benefit from helping students to develop the building blocks of these broader capabilities. Qualifications may do this in different ways, depending on their relationship with the structures of the labour market.

Education and training based on productive capabilities would focus on developing individuals in three domains (Wheelahan & Moodie 2011).

▪ *The knowledge base of practice*: this includes the theoretical knowledge needed for the field of practice, but also for higher-level study within the occupation.

---

[1] We are indebted to Dr Mary Leahy at the University of Melbourne, for this insight.

- *The technical base of practice*: this includes industry skills, or the ability to perform particular roles and tasks, that transcend particular workplaces.

- *The attributes the person needs for that occupation or profession*: this includes attributes such as ethical practice, but also effective communication skills, the capacity to work autonomously and in teams, creativity, information management and so forth. While these are sometimes described as generic, they are understood differently in different fields of practice and need to be developed in specific disciplines and vocations.

Comparison with current approaches

This section contrasts the new approach to mid-level qualifications with current approaches to qualifications.

Explicit differentiation and possible tacit variation

The new approach to qualifications differentiates their policy, financing, curriculum, pedagogy, pathways, accreditation and quality assurance explicitly according to their links to education and work. Current policies and arrangements for mid-level qualifications differentiate explicitly and sharply between VET and higher education, but not between types of qualifications within sectors. Current policies may be flexible enough to allow different arrangements for different types of qualifications, but they don't promote such differentiation. In vocational education and training, qualifications must be based on competencies, which describe specific workplace tasks, roles and requirements, even if the vast majority of graduates don't work in the occupations associated with those qualifications.

Policy statements and implementation

The new approach to qualifications posits three roles for qualifications: preparation for work, preparation for further education, and widening access. The dual roles of preparation for work and further education are now provided in the Australian Qualifications Framework (AQF) for all qualifications except the highest, the doctorate, which is not expected to prepare graduates for further education. However, preparation for further education is yet to be implemented fully for some VET qualifications. This may be achieved in time, with the 'strengthened' AQF introduced relatively recently, in July 2011. Widening access to mid-level (and other) qualifications has been an explicit policy of all governments for some considerable time. At least in principle, current policies expect all mid-level qualifications to serve all three roles equally. The new approach expects different types of qualifications to continue to serve each role, but to emphasise different roles. This currently happens in practice by a combination of institutions' and programs coordinators' policies and practices. The new approach would make these different emphases explicit and systematic.

Broad paths and specific links

The current approach of all mid-level VET and some higher education qualifications is to prepare graduates for one specific occupation, whereas the new approach would have qualifications that prepared graduates for a group of related occupations within vocational streams. The new approach would support progression between qualifications. The current policies and practices that differentiate sharply between VET and higher education are obstacles to such progression. Of course graduates already use their mid-level qualifications to enter a range of occupations, even when their

diploma or higher-level VET qualification isn't directly associated with their occupation. And, in some fields there is extensive transfer between VET and higher education. But this horizontal and vertical flexibility occurs regardless or even despite current policies: the new approach would design mid-level qualifications for horizontal and vertical flexibility.

Productive capabilities and competencies

The capabilities approach is least well understood, partly because it is new, partly because capabilities can seem to be just broader descriptions of competences, and partly because 'capabilities' has been used in different ways in the higher education literature. For this reason the team coined the term 'productive capabilities' to refer to the specific application of the capabilities approach it developed. Productive capabilities have three characteristics that distinguish them from the current approaches to mid-level qualifications: composition, progression and decision-making.

Productive capabilities are the result of the combination of graduates' characteristics, work resources and work arrangement. Improving a worker's productivity may involve improving their knowledge, skills and/or attributes, but it may also or alternatively involve improving work resources and/or the arrangement of work. Developing productive capabilities therefore involves developing graduates' capacity to identify the need for and improve their knowledge, skills and/or attributes, but it also involves developing graduates' capacity to identify and promote desirable changes to work resourcing and arrangement. This contrasts with most current approaches, which accept current work resources and arrangements and seek to adapt workers to them.

Furthermore, where they develop graduates' knowledge, skills and attributes, productive capabilities start with the knowledge, skills and attributes needed by the graduate. This includes the broader knowledge, skills and attributes graduates need to successfully manage all aspects of their lives: their lives at work and in their communities and personal lives. In contrast, training packages start with the requirements of the workplace: 'Units of competency specify the standards of performance required in the workplace' (National Skills Standards Council 2012a, p.3). This is significant because productive capabilities seek to develop graduates' productivity in their current and future potentially different occupations, while training packages develop graduates for the current workplace and possibly for its future changes but within more narrowly defined parameters. The current approach also assumes that graduates' working lives are distinct from their broader lives, whereas the capacity to be skilful at work emerges from the broader knowledge, skills and attributes that graduates use in their lives more broadly.

This leads to the second distinctive characteristic of productive capabilities, their advancement of graduates' progression in their careers. Careers may involve different occupations, industries and fields. They may also involve periods and combinations of work, education and time out of the paid workforce. Preparing graduates for careers is thus much broader than the current approaches to mid-level qualifications, which may prepare graduates for progression in work and education, but usually in the same industry, occupation or field.

The third distinctive characteristic of productive capabilities is their development of individuals' capacity to participate in decision-making about work. While some mid-level qualifications seek to develop graduates' teamwork and possibly even promote the sharing of responsibility for achieving common work goals, participating in decision-making about work is rather broader.

Social partnership

In the last section of this report, which considers the implications for tertiary education, the team notes that to be implemented the new approach would require the equal participation and cooperation of qualifications' social partners: educators, employee representatives, employers and government. Yet, in the current approach employee representatives are being steadily marginalised in deciding policy on mid-level qualifications, while educators are specifically excluded from developing and approving vocational qualifications (National Skills Standards Council 2012b, p.4).

The next section reports the results from testing the new approach to qualifications with public officials and the social partners in the four industry fields.

Testing the model: case studies

This section reports briefly on the case studies conducted in the third year of the project. Each case study is elaborated in the accompanying support document. The aim of the case studies was to test the concepts introduced in the previous section with the people and bodies most involved in qualifications — the qualifications' social partners: educators, employers, unions, and government and occupational bodies. A specific discussion paper was prepared for each case study and a range of people were interviewed; details are reported for each case study below. Since one of the findings from earlier stages of the project was that different arrangements are needed for qualifications of different types and in different fields and industries, the discussion papers and interviews were tailored to each case study. Nonetheless, the interviews covered these questions.

- Given the nature of skill formation within your industry, what should the main purpose of mid-level qualifications be?

- What should be the 'logic' of qualifications in your industry? All qualifications need to achieve three purposes: as a labour market entry qualification, to progress to higher-level studies, and to widen access to higher-level studies for students from disadvantaged backgrounds. What should the balance be in your industry and why? What is the best way to achieve this balance?

- Is there potential for basing qualifications on vocational streams in your industry? Are there occupations that are linked by commonalities in knowledge, skills and attributes? If there are, could you elaborate on which occupations you are thinking of and how they are linked?

- Is there potential for qualifications to be based on capabilities in your sector? In particular, can the capabilities approach help to devise relevant, quality qualifications for mid-level jobs?

- How could qualifications be developed and implemented? What would they look like? Who needs to be involved?

- What would need to change to implement this approach? Who would need to be involved? What strategies would you recommend?

Consultations with public officials and government officials

The team interviewed three senior officials from two national statutory bodies and four senior officials from three state VET bodies. In one state the interviewee was a senior official in the VET sector. There were two interviewees in the second state: one was a member of the key training advisory board for vocational education and training in that state, while the other was a senior VET official. In the third state the interviewee was the chair of the state's regulatory board for vocational education and training.

Overall, these public officials showed interest in the capabilities approach but differed over whether a major change or reorientation was needed in the conceptual basis of qualifications. One senior official thought that the notion of capabilities was in some ways a refinement of the existing notion of competencies, while in other ways it was a return to the original intention of policy when competency-based training was introduced in VET as the mandatory basis of qualifications in the 1990s. This official argued that training packages, which are the current model of qualifications in VET, have become too narrow and over-specified. The capabilities approach offered more scope for focusing on the personal development of the individual by linking their development to the

requirements of work, which in the opinion of this official, was the original intention of competency-based training.

Another official drew a sharp distinction between competency-based training and the capabilities approach and argued that vocational education and training in Australia needed to move to the capabilities approach. This official argued that VET qualifications in Australia were 'hyper-specified' and that this didn't reflect the reality of work or the way work was developing. The loose fit between qualifications and occupations in most areas of the labour market made this approach wasteful and ineffective. This official argued that VET was currently delivering 'just in time training' in contrast to focusing on the broader development of individuals, who could embark on careers, make meaningful contributions at work, and undertake further study. One of the problems in the VET system was that 'there are too many voices in the system who don't actually get at the end of the day that this is an education and training process'. Having too tight a relationship between education and work resulted in impoverished preparation for work and impoverished education and training because it resulted in hyper-specification of qualifications.

Two officials interviewed from one national statutory body thought that qualifications needed to be more differentiated to reflect the different needs of students and their circumstances. They felt that (broadly speaking) there was a place for both competency-based training and qualifications underpinned by a broader approach such as the capabilities approach. They considered that we needed to differentiate between those who are already in an occupation and are undertaking training to support their role in that occupation on the one hand, and, on the other, those who were not yet employed in the area in which they were training. In the case of the former, competency-based training may be more appropriate and aligned to the employer's specific requirements, whereas in the latter case, students needed a broader education, one that would prepare them to enter and progress in an occupation. Generally speaking, they felt that 'we should be educating for careers rather than specific occupations' because of the loose fit between specific qualifications and specific occupations which characterised the workforce overall. In general, there are only a small number of qualifications where the fit between the qualification and the specific job is very tight, and these are usually in regulated occupations, where it takes a long time to train individuals and where the professional and occupational bodies have had significant input into the design and specification of the qualification.

The official from the other national statutory body felt that the system design in vocational education and training was appropriate, but that the sector's qualifications needed to be tightened because they weren't explicit enough. The official argued that if aspects of performance were critical to jobs, then they must be clearly specified in the qualification and that this needs to be improved. Broader qualifications would be appropriate if that reflected the requirements of occupations served by those qualifications, but overall, the problem with VET qualifications was the lack of specificity. Moreover, the system made sufficient provision for broader qualifications at present because many units of competency were common to a number of qualifications within an industry and good educators could make these connections. The official argued that the main problems in VET were not the design of qualifications; rather, they arose from the quality of pedagogy and the learning environment. This, combined with the overly general nature of many units of competency, meant that the quality of the system suffered and also made it difficult for regulatory and quality assurance bodies in VET to implement appropriate audits of provision.

In many of the interviews, respondents differentiated between the capabilities approach as a conceptual basis for qualifications and vocational streams, which could be used to think about the

occupational domain associated with each qualification. The notion of vocational streams was largely supported, with the exception of one official from one national statutory body. Most interviewees felt that a broader approach, one that focused on preparing individuals for families of related occupations in vocational streams, responded more effectively to the current realities of the labour market and the existing weak links between qualifications and the specific occupations with which they were associated. They mostly agreed with the notion that we needed to differentiate our approach according to the nature of the vocational stream. This would allow more specificity in those occupations where the link between qualifications and the occupation was tighter, but more flexibility where these links were looser.

Officials with responsibility for VET funding from the states were particularly attracted to the notion of vocational streams. This is because they found that existing approaches to VET funding, which are based on specific qualifications, were problematic when state governments were seeking to prioritise funding for qualifications that would result in good employment outcomes. Given the loose link between specific qualifications and the occupations with which they are associated, the states found it difficult to either identify or specify which qualifications should receive government subsidies amongst the hundreds available, often within one industry. For example, one senior official argued:

> What we're trying to do … is fund qualifications for jobs, specifically related to labour market demand and the ability to map qualifications to occupations is just impossible, and to identify the occupations and a job opening as a result of funding these qualifications is impossible.

This official argued that there is no alignment between qualifications and occupations in the current system, but instead, we have a system that confuses employers and students because of the plethora of qualifications. The official thought that there needed to be greater consistency in the 'level' of qualifications and the way they aligned with job roles. The huge variability at present meant there is little consistency between and within industry sectors. For example, in some industries a certificate III is a basic entry-level qualification, whereas it is a skilled worker in other industries. Greater consistency and better alignment between qualification level and job roles would 'create pathways both in the job in terms of career progression and career structure'.

Agriculture

A number of recent reports have examined the agricultural industry and the nature of its workforce and its education and training and skills development needs. The importance of agriculture at a time of global population growth and climate change is widely recognised, not just for the national economy but also as increasingly central to international relations, with a vital role in both trade and aid. The development of agriculture in the most efficient and sustainable way however faces a number of challenges. Agriculture consists of a more loosely structured labour market than most other industries, with the prevalence of small firms and barriers to advancement and insecure work making overall planning difficult. Similar to other areas of work however (discussed in the next section on engineering), there has been a decline in former modes of training such as apprenticeships. In agriculture there has also been a marked decline in state government provision of advice and informal training. Also in common with other industries, the decline of these former modes of training and education has occurred concurrently with technological change and industry restructuring, which necessitates new and often more complex forms of skill and knowledge. Broad development of knowledge and skills however appears to be quite a challenge in an industry that faces an ageing workforce and declining enrolments in mid-level qualifications in recent years (ACIL Allen Consulting Group 2012; Australian Workplace Productivity Agency 2013a; Pratley 2012).

The team consulted people from areas and bodies that represented a range of interests and contrasting views in agricultural education and work:

- three educators:
  - a former higher education dean of agriculture
  - a higher education agriculture bachelor program course coordinator
  - a TAFE agriculture head teacher

- four representatives of groups involved in agricultural work with a particular focus on education and training:
  - one union organiser who is also involved in the relevant industry skills council
  - a consultant for agricultural employers
  - a consultant for the relevant industry skills council
  - an education and training consultant.

These consultations were supported by an analysis of education and occupation data, which is presented in the supporting document. In the first stage of the project we interviewed teachers, managers, students and graduates in agriculture in higher education and VET (Fredman 2013; Wheelahan et al. 2012). Our interviewees involved in agriculture emphasised a range of purposes for study in the field. They projected a strong vocational identity; a sense of participation in the field linked to relationships with land, family enterprises and backgrounds; concern with developing the industry generally in more sustainable ways; and concern with how education and work can address some of the social issues of rural life such as relative lack of opportunities for women. They also emphasised some of the weak links between education and work, particularly in mid-level qualifications: while certificate-level study had some clear links with skilled farm labouring and higher education with professional and research work, the labour market did not seem to be creating opportunities for the skilled and technical work for which mid-level qualifications should be well suited. The VET students and graduates in the case study appreciated the way in which programs were individually tailored to their current employment or business, but this seemed very labour-intensive for teaching staff if larger numbers of graduates are actually needed.

These factors were explored in the discussion paper prepared for the third stage of the project and in interviews with participants. Among the third stage participants there was general support for a capabilities approach of developing broad-ranging knowledge and skills throughout careers and for building the social arrangements to achieve this:

> There's functional skills as core, then there's the higher level ones that you need for a particular job … Then when you're in an animal system or plant system, what you need to know is the particular skills to go to the next level, growing cotton or growing wheat … I think there's an underpinning layer of skills then you move into the second layer of skills heading into the area you're in.
>
> (Skills council consultant)

Participants also discussed perceived barriers to the approach. One participant saw the current funding mechanisms as one barrier to a capabilities approach:

> You try and do lifelong learning with the current funding mechanisms we've got currently and it doesn't happen. You get one shot at it and that's it. Everything else you've got to pay for, and if you've got a degree in something forget actually trying to get a diploma in something because it's coming down the ladder and you're not allowed to get access to it. You've got to be able to move

> across and up and down and come back in, that sort of thing, and we should be recognising that ability and provide some funding there or the capacity for it to be funded at a reasonable rate anyway.   (Training consultant)

Another barrier raised by several participants is the aversion of employers to supporting training at all:

> There are good employers out there that will say to get good people we've got to pay them good money and they're probably only about 40—60% of the market and they're producing 90% of the product. The other ones that get all the oxygen are the ones that whinge and scream; we've got to pay them another $10 a week when the national wage thing comes out every year. Well hang on, you go and buy a bloody $40,000 quad bike or spend $100,000 on a new heater or $25,000 on a new dog, but you won't pay your apprentice another $2 a week.   (Training consultant)

The university lecturer interviewee saw the lack of underpinning conceptual knowledge in VET programs as another barrier.

Third stage participants generally gave the concept of vocational streams cautious support as it was viewed as relevant to limited areas in agriculture. They supported, to differing degrees, a more regional design of qualifications, but pointed to a range of issues that needed to be considered to ensure that high-quality and nationally recognised qualifications were available to all who needed them in agriculture.

Implicit in many of the comments from third stage participants was the need for renewed social partnerships in the governance of education and training and their links to work. Participants expressed the view that employers need more support (and sometimes they need more sanctions, as the union organiser pointed out about the rorting of subsidies); that the dairy industry involvement in developing qualifications and pathways was a good model; and also needed were aspects of regionality, particularly regional partnerships, and certainly more flexibility in the design of VET qualifications.

The need for new arrangements in agriculture has been supported by projects such as the Make it Work project based in Narrabri, which, with the support of the Agrifoods Industry Skills Council, brings together the local council, employers and educational providers to create both more secure work and continuing educational opportunities within a region (Yu, Bretherton & Buchanan 2013, pp.31—2, 37). The need for new arrangements at a national level is also supported by other recent reports. The Australian Workforce Productivity Agency (2013a, p.13) states: 'The central finding of this food and beverage workforce study is that responsibility for developing the industry workforce development agenda, much of which is outlined in this report, should be invested in a fully representative and authoritative body with the necessary mandate'. ACIL Allen Consulting (2012, p.58) urges the creation of an 'Agriculture Education Council', which would 'comprise representatives of higher education, vocational education, school science education, industry and government'.

These findings suggest that there is support for change in agricultural education and work and that debate needs to continue over the forms this change should take.

Engineering

In previous work in the project we observed that engineering exists within strong occupational labour markets with strong structures and connections between employers, unions and professional associations, but has highly differentiated trades and professional segments, which contributes to the

lack of progression in education and work (Moodie & Fredman 2013; Moodie et al. 2013; Wheelahan et al. 2012). A number of changes are occurring in the industries most related to the work of engineering, changes that affect the nature of qualifications and work, not least in recasting and creating new needs for mid-level work. Manufacturing, in both absolute employment and as a proportion of total national economic activity, is experiencing a long-term decline in most of its sub-branches (except, with some connection to agriculture, food and beverage manufacture). In particular, routine process work is increasingly being displaced by automation, which however creates new needs for skilled workers to monitor and maintain systems (Australian Workforce Productivity Agency 2013b).

In a previous paper in the project we noted that there had been increasing shortages of a range of engineering skills. This resulted from a combination of supply and demand factors. The supply of graduates has been limited by the collapse of previous modes of education and training such as cadetships, apprenticeships and graduate programs, which were formerly much more common in public utilities and some private employers (Fredman et al. 2013). Demand had more recently increased strongly by the expansion of mining (Australian Workforce Productivity Agency 2012). However, the most recent data on the engineering workforce (Engineers Australia 2013) suggests that the 'skills shortage' in engineering is less of an issue than when the project previously discussed the drivers for a change in approach to engineering qualifications (Fredman et al. 2013). Engineers Australia's (2013) data show that a lower proportion of qualified engineers are working in engineering occupations and a lower proportion of employers are reporting difficulties in filling positions. Thus, an interviewee informed the team:

> We used to talk about an engineering skills shortage; we don't anymore because they've all getting fired within the past year. I do believe there is still a systemic problem with the supply of the engineering workforce. We think a lot of that stems from the privatisation of public utility organisations and other government departments and agencies that really acted as the breeding grounds for engineers but then go to the private sector. That doesn't exist anymore; it's now the private sector that's responsible for that training. The private sector in our view understands this and takes it on — is fine with that idea, but we don't think that clients understand or respect the cost of doing that. So the jobs that they win don't really have enough margin to invest an awful lot of it back into training.

A new approach to engineering qualifications is thus no longer so urgent for meeting skills shortages. However, it is still needed to deal with long-standing limits to the supply of graduates with engineering skills and to overcome the weak links between VET and higher education engineering qualifications.

The eight participants chosen as representing a range of interest groups and contrasting views in engineering education and work consisted of:

- four educators:
  - a higher education dean of engineering
  - two engineering teachers in the TAFE division of a dual-sector university
  - an engineering lecturer in the higher education division of this dual-sector university
- four representatives of groups involved in engineering with a particular focus on education and training:
  - one union official who is also involved in the relevant industry skills council

- a consultant for engineering employers
- a mining industry representative
- a representative from a relevant professional body.

Views on the purposes of mid-level qualifications varied markedly among our stage three participants, by the social institutions they represented and by the branches of engineering in which they were most directly involved. The participant who represented civil and construction engineering employers saw a clear primary role for mid-level qualifications in preparing graduates for entry to the labour market and clear secondary roles in supporting educational and occupational progression. The mining industry participant expressed a very strong focus on occupational progression as a key purpose for mid-level qualifications, in particular for the Minerals Industry National Associate Degree project, described in the accompanying supporting document, which we put forward as a model in our discussion paper for engineering participants. For this participant, the current and future skills of the industry point to the need for a substantial mid-level qualification, which the Minerals Council of Australia views as being possible with associate degrees. The union participant argued very strongly for a direct vocational purpose, claiming that current diplomas and advanced diplomas, if delivered by good-quality and well-regulated providers, were suitable preparation for high-skilled and some managerial roles in manufacturing. He saw, however, an overly marketised system undermining the quality of training, and along with an overly 'educational' focus, creating a negative 'purpose' of profiteering by less scrupulous private providers. By contrast, three of the educator participants, involved in a range of VET and higher education programs in a dual-sector university, saw different if overlapping educational progression and work preparation purposes for mid-level qualifications, and in this argued that there was space for both advanced diplomas and associate degrees. One VET sector educator pointed to the problem of a lack of industry recognition of mid-level qualifications while arguing that advanced diplomas still fulfil some work roles.

Our engineering participants in this third stage were similar to those in other case studies in that they generally supported the capabilities approach to education and work:

> Senior engineers within our member firms … are making a lot of comments [that] there needs to be a greater emphasis on maps and principles behind what students are learning … employers are talking about making sure the student has not so much specific capability but a broad understanding … I just get a sense that employers really want to make sure students come out with a deep broad understanding of the principles, and I get a sense that the skills council, as a whole keeper of curriculum, is keen to make sure that it is very competencies based.
>
> (Representative of employers in civil and construction engineering)

This broader role of qualifications was said to contribute to lifelong education and progression. The mining industry participant called this conception 'the uninterrupted education and training pathway'. It is noteworthy that the process of developing a national framework for minerals and geoscience associate degrees had been refined to some extent from the purpose of creating more professional engineers to creating more skills and knowledge within the engineering team.

As a group our engineering third stage participants were similar to our agriculture participants in expressing more limited support for the vocational streams concepts. In common with the participants in agriculture, engineering participants saw some limited validity in the concept of vocational streams within specific areas in engineering. Those representing civil and construction employers stated that 'the concept is certainly relevant in management, as many firms have engineering associates as

managers or part of a management team'. The need to teach management in context and being part of the engineering team was seen as important by the VET educator participants.

Engineering participants in the project's third stage raised a number of examples of, and ideas relating to, new forms of social partnerships that could better develop education and work in engineering. The mining industry representative discussed the progress of the Minerals Industry National Associate Degree process as an example of collaboration, stressing that this is very much led by industry — politely contrasting this with our discussion paper's focus on educational providers initiating new qualifications — in defining the needs in skills and work roles, with educational providers responsible for the best way to fulfil these.

The findings from the three years of the project suggest that there are diverse views among those involved in engineering education and work, but there is widespread recognition of the need for change and that the debate on these issues needs to continue.

Financial services

The financial services industry has undergone structural change, which is consistent with, and exemplifies, the broader view that there has been a 'hollowing out' of the middle of the skill distribution, while there have been increases in the share of workers at the high and low ends of the skill distribution (see Cully 2003, cited in Wheelahan, Moodie & Buchanan 2012, p.30). The financial services industry also exemplifies the trend the team noted in previous work when we cited Curtain's (2003, p.1) argument that there has been insufficient policy attention on intermediate skills and the adequacy of formation of intermediate skills. The financial services industry is shifting from an industry to a profession, which is widening the gap between lower-skilled and semi-administrative work such as product selling on the one hand, and, on the other, high-skilled professional work such as advising and funds management. This has been accompanied by a move away from diplomas to degrees, which are increasingly the entry-level qualification to the field. In the process of professionalisation, the financial services industry is characterised by the tensions that result from the increasing specification of the qualifications needed to perform specific roles, combined with pressure for higher-level qualifications as the basic entry-level requirement to the industry. This is occurring in an industry where degrees are used mainly as a screen for potential, rather than as a signal of required knowledge, skills and attributes.

These changes in education and training in financial services are reinforced by increased regulatory requirements, particularly in financial advising, administered by the Australian Securities and Investments Commission (ASIC). The financial services industry is regulated under the *Financial Services Reform Act 2001* (FSRA), which requires people providing financial advice to comply with Regulatory Guide 146: Licensing: Training of financial product advisers. This covers securities; derivatives; managed investments; superannuation; insurance — general, life and broking; deposit products and non-cash payment products; foreign exchange; first home-saver accounts; margin lending facilities; and regulated emissions units. RG 146 requires those offering financial advice to have undertaken training at the equivalent of at least the Australian Qualifications Framework (AQF) certificate III level for Tier 2 (financial product sellers) or AQF diploma level for Tier 1 (those providing independent financial advice) (Australian Securities and Investments Commission 2012). Training is likely to be continuing, for RG 146 requires that practitioners be trained in the particular areas in which they are providing advice and that their knowledge be up to date. Until 2013 training had to be completed via a course listed on the ASIC Training Register.

However, in response to the increasing complexity of the sector, the level of education and training required in financial services has recently been increased by the *ASIC (Corporations Amendment (Future of Financial Advice) Act 2012* and the *Corporations Amendment (Further Future of Financial Advice Measures) Act 2012*. From 2019, Tier 1 advisors will require a bachelor-level qualification to practise (AQF Level 7) and Tier 2 advisors a diploma (AQF Level 5). The generic and specific areas of knowledge required will also be substantially broadened. After 2019, the generic areas will include areas such as: 'Concepts in behavioural economics'; 'Risk profiling/risk tolerance'; 'Life stages and their characteristics'; 'Life events and their characteristics', and 'Ethics' (Australian Securities and Investments Commission 2013).

To understand the impact these changes were having on the industry and the extent to which notions such as vocations, vocational streams and the capabilities approach were relevant in this context, the team interviewed the following people involved in financial services:

- three education leaders/scholars:
  - a dean of business
  - two senior prominent scholars of business and finance education
- two educators:
  - a higher education course coordinator of a bachelor degree specialising in financial planning
  - a VET business head teacher
- one industry body representative
- one education-based professional involved in education and employment partnerships programs.

These consultations were supported by an analysis of the regulatory environment of the financial services sector and an analysis of education and occupation data.

In Strand 3 of the project the team found industry support for broad education and training programs that develop employability skills and vocationally specific knowledge (for example, knowledge of financial assets, risk and governance, and accounting) to support a range of career directions. The team proposed a vocational stream in funds management, general insurance and banking, which included a range of occupations, both within and between firms, such as compliance clerk, business analyst, risk analyst and financial dealer. Another suggestion was a stream that facilitated movement between equities analyst, derivatives analyst, financial broker and financial dealer. Respondents regarded such transitions as common and which were typically supported by some core disciplinary studies, and/or strong on-the-job learning (Yu, Bretherton & Buchanan 2013, p.26).

Strand 3 also found very widespread support for the concept of a vocational stream in financial services, one that could prepare individuals to work in a career rather than a specific job. It was felt that the traditional bachelor path from a management and commerce degree was too broad, particularly after the Global Financial Crisis, with retail roles beginning to replace traditional investment house roles. Workers need to be able to work within the range of roles regulated under RG 146: securities; derivatives; managed investments; superannuation; general, life and broking of insurance; deposit and non-cash payment products; foreign exchange; first home-saver accounts; margin lending facilities; and regulated emissions units:

> There is a tension at the moment between traditional finance/banking programs and financial
> planning programs ... Pathways to corporate and investment banking have disappeared post GFC.
> [There are] more banking retail and personal finance roles [and] these are more geared to

someone with a Financial Planning degree than the Accounting degree. [Graduates] need to be RG146 compliant and that comes from financial planning not corporate finance. Those emerging tensions make it hard to break up qualifications and occupational roles.

Yet to be able to navigate a career in financial services in the future, workers will also require the new skills to be incorporated from 2019 into regulation, as mentioned above (Australian Securities and Investments Commission 2013).

Strand 3 (Yu, Bretherton & Buchanan 2013) also found that the current settings in the financial services industry already foster strong occupational mobility and workers who are adaptable across the vocational stream. The team for this strand agrees, although with the caveat that for mid-level qualifications mobility is limited to specialisation via diplomas and other shorter qualifications *post bachelor degree*, and that these qualifications are mostly not used to facilitate entry to the occupation by people from disadvantaged backgrounds. Therefore, we need not recommend the *creation* of a vocational stream in the financial services industry, but rather the purposeful refinement of one that is already nascent. There are a number of key challenges for ensuring that the vocational stream in financial services grows in a healthy direction. The team concluded from the case study that the following developments are needed to meet challenges in the financial services industry:

- 'Soft' analytical skills need to be integrated into all levels of education in the financial services sector. These include: professional ethics, professional identity, professional awareness, and self-efficacy. Therefore, VET-level education in financial services needs to be broadened and deepened in a way that does not seem possible under the present system.

- Curricula also need to include the broader knowledge and skills particular to the sector: economics, statistics, financial planning, and client relationships. While this knowledge and these skills are broader, they need to be contextualised by the field of practice for which students are being prepared and need to be embedded into all levels of education.

- While it is true that *within* large organisations such as banks and insurance companies mid-level qualifications often form the basis of an explicit and well-organised progression within a structured labour market, this is not so outside such organisations. Therefore, other providers need to build stronger relations with employers to improve work placements and workplace-based learning. If not, there is the potential for creating two streams of education with unequal graduate employability.

- Similarly, there needs to be a greater focus on teaching and learning needs in finance education. Participants reported great variation in the quality and structure of finance education across the country. It is unsurprising that mobility occurs in corporations if education providers have uneven quality of provision.

These findings are broadly consistent with a capabilities approach and vocational streams. The findings and the analysis of this case study are expanded in the accompanying support document.

Health and community services

The health and community services industries are confronting major upheavals, with increasing demand for care as the population ages and the number of older people with physical and mental disabilities and multiple and complex needs increases (Community Services and Health Industry Skills Council 2013, p.6). Various government changes (such as the National Disability Insurance Scheme and

other changes in aged care and health) are adopting 'person-centred' models of care, which require integrated and holistic approaches of care for individuals to support their multiple needs. However, tensions arise as governments seek to constrain increases in or even cut funding in combination with increasing costs in the sector, such as Fair Work Australia's decision to increase the wages of community services workers by 19% to 41% over the next eight years.

Moreover, attention to the future development of the health and community services sector has been mixed. For example, the Community Services and Health Industry Skills Council (2013) noted that Health Workforce Australia has concentrated on the professional degree-qualified workforce and that more attention is needed on community services, particularly as government changes are implemented. A differentiated approach to workforce development is needed because the structures of the health and community services industries are quite different. As discussed earlier, nursing is a regulated occupation with a strong occupational pathway from enrolled to registered nurse, requiring qualifications from VET and higher education respectively. The result is that the links between qualifications and jobs are very strong.

This is not the case in community services. While there are quite strong links between qualifications and jobs at certificate III level, these links are very weak for mid-level qualifications such as diplomas. For example, only 17.7% of graduates from diploma and higher-level VET qualifications from the narrow human welfare studies and services field of education (which is where community service qualifications are located) work in the occupation associated with their qualification.[2] This reflects the fact that, until relatively recently, community services has been less regulated than other industries and that there is a relative absence of occupational pathways in the labour market. Other differences between the health and community services industries are that community services: is funded at a lower rate; has a high prevalence of casualised, part-time or agency employment; has high workloads, lower pay rates and problems with retention; and limited access to training and a lack of occupational pathways at lower levels of the sector. All this contributes to poor perceptions of care work and difficulty in attracting workers (Leahy 2013; Yu, Bretherton & Buchanan 2013).

Both the health and community services industries face challenges in adapting to client-led models of care, particularly within autonomous care environments, and this will require new skills from both managers and workers (Community Services and Health Industry Skills Council 2013). Funding and other changes will require the development of more generalist roles and more efficient use of VET and higher education based roles (Community Services and Health Industry Skills Council 2013). To explore these challenges and the potential for the new approach to qualifications outlined in this report, the team consulted people from the following areas and bodies in community services and health:

- a representative from a large union who is also on the board of a relevant industry advisory body

- a representative of a relevant professional body with responsibility for accrediting professional courses in higher education and continuing professional development for its members

- a manager of a large youth support service in regional Australia

- the director of vocational education in a large aged care provider that specialises in dementia and aged care, palliative care, rehabilitation and older persons' mental health

---

[2] See the associated health and community services case study in the support document for an analysis of the links between qualifications and occupational outcomes in VET at each qualification level.

- two senior TAFE teachers, one of whom teaches in community services, while the other teaches in nursing

- two senior academics in nursing in Australian universities, one of whom is a head of school of nursing and midwifery, while the other is a senior academic in nursing who has had a leadership role in the Australian Nursing and Midwifery Accreditation Council and is now a dean of a faculty that includes nursing

- a pro-vice chancellor at a regional university with responsibility for health and community services

- an academic teaching in the social sciences in a regional university.

The notion of capabilities and how the capabilities approach differs from competency-based training models of curriculum was explored with all interviewees. They varied in the extent to which they were familiar with either or both approaches and had considered the issues. While some interviewees were able to make clear distinctions between the two approaches, others were either unclear about what each would involve because they weren't necessarily engaged in providing education or developing curriculum. Alternatively, a few interviewees didn't distinguish between capabilities and competencies, considering them to be different versions of the same thing. Others strongly supported the notion of capabilities. However, overall all interviewees were in favour of a broad approach to curriculum, one that was holistic and ensured students had access to the theoretical basis of practice as well as opportunities to develop the skills needed to work in the field. This was needed, according to some interviewees, to overcome increasing fragmentation of the qualifications and skills required:

> Locally we have an aged care facility designed purely for people with dementia. And there are people who are employed and care for people with dementia and aged care called dementia specialists who have done a component of a Certificate IV and their supervision is to a registered nurse on the phone and there are a hundred residents.
>
> (Senior higher education nursing educator)

Interviewees argued for a broader approach to equip graduates for a variety of related roles. They saw knowledge and skills as intrinsically related, and in part this is related to the philosophy in health and community services, which emphasises human rights and empowerment.

The main debate was about how to constitute vocational streams, in particular, over whether nursing and community services should be considered as one vocational stream or two separate vocational streams. Most respondents did not include childcare in the vocational stream to avoid the impression that older people or people with disabilities can be treated like children. However, people who work with children may have a different perspective. In interviews, the team used as a starting point research in an earlier project in which participants from aged and disability services considered that community service and health (particularly nursing) should constitute different vocational streams for two main reasons: first, they thought that one vocational stream would result in nursing imposing a 'medical model' of care on community services. Second, each industry has very different employment structures and funding rates. Health occupations are more regulated, have education requirements, are more structured and pay more than those in community services. Generally speaking, this perspective was not well supported by interviewees in this project, particularly those in nursing who thought that the overlap in practices between community service and health would support a common vocational stream.

The conclusion we drew from the research for this component of the project is that the different structures in each industry make the construction of one vocational stream that encompasses nursing and community services quite difficult. The increasing regulation of community services by

governments may structure its labour market in time, but in the meantime if vocational graduates are to achieve occupational progression, qualifications will need to be structured to support progression by emphasising the knowledge, skills and attributes needed to study at a higher level.

Discussion and conclusions

This section answers the team's broad research questions posed at the start of this report:

- How cogent does the new approach seem to the social partners?
- What would be needed to progress the new approach?
- How feasible is the new approach?

How cogent does the new approach seem to the social partners?

The case studies reported in the previous section and more fully in the accompanying support document indicate different responses to the new approach proposed to mid-level qualifications in each industry. Some of these differences are no doubt due to the different perspectives of the bodies and people consulted. However, many of these differences are due to the differences between industries: in the way they construct occupations; their labour markets; and the role of tertiary education in gaining entry to and progression in those labour markets. One motive for developing a new approach to qualifications was to support occupational progression to address the hollowing-out of the labour market. However, this isn't necessarily an issue for all industries and accordingly not all supported change to address the hollowing-out of the labour market.

The findings of the case studies are summarised in table 1. *The first row shows how heavily occupations in the industry are regulated*, ranging from very little occupational regulation in agriculture, to very strong occupational regulation in health.

The second row summarises industries' occupational structure. Agriculture has a weak occupational structure. Community services has had a weak occupational structure and is still weakened by low funding, but it is being strengthened by increasing occupational regulation, particularly at lower levels. Some finance occupations are regulated, but most are not. Accordingly, there is little external structuring of finance occupations. However, finance occupations are heavily shaped by very large employers who have strong internal occupational structures. There are strong pathways in health, such as between the regulated nursing occupations, but otherwise health is segmented. There are weak occupational pathways between lower unregulated and higher highly regulated nursing occupations, and no or weak pathways between nursing and other health occupations.

The third row shows current workforce conditions. Agriculture employers have difficulty recruiting workers over an extended period and recognise that this is at least partly due to the seasonality and other conditions of the employment they offer. While engineering employers no longer experience major skills shortages, there remain long-standing limits to the supply of graduates with engineering skills and weak links between segments of the engineering workforce, which inhibits flexibility and may limit productivity. Community services and health employers have challenges meeting current labour force needs and anticipate that these will increase with the ageing population, changes in the nature of community services and health work, and changes in government policy.

These characteristics shape qualifications' *links to other qualifications, shown in the fourth row, and their links to occupations, shown in the fifth row*. These are the criteria used for the main typology of qualifications used in this study.

Table 1 Summary of the case studies

Item	Agriculture	Engineering	Finance (business)	Health	Community services
Occupational regulation	Very little	Strong	Little, but some at lower levels	Strong	Increasing
Occupational structure	Weak	Segmented	Internal to big employers	Some pathways, others segmented	Weak, but increasingly structured
Workforce conditions	Difficult to attract and retain skilled workers	Supply of graduates remains limited and siloed	Able and well-educated recruits readily attracted by good conditions	Major recruitment and retraining challenges expected	Poor pay and conditions
Links to qualifications within field of education	Weak	Weak	Strong	Strong	Mixed
Links to occupations	Weak	Strong	Weak	Strong	Growing stronger
Main role in employment	Screening	Signalling	Screening	Signalling	Screening, more signalling at lower levels
Emphasis on qualification purposes	Access	Labour market	Further education and access	Labour market	Further education and access
Views on vocational streams	Cautious support	Limited support	Widespread support	Broad support but debate on its construction	Broad support but debate on its construction
Views on capabilities	General support	General support	Widespread support	Broad support – aligned to industry philosophy	Broad support – aligned to industry philosophy
Overall	More debate needed	Diverse views overall	High support overall	Focus: how to constitute vocational streams	Focus: how to constitute vocational streams

The previous characteristics also shape *qualifications' main role in employment, shown in row six*. Because of the strong regulation of occupations in health and engineering, their qualifications have mainly a signalling role in employment: they are used by employers to certify that graduates have developed the specific attributes needed to undertake skilled roles in that industry. Because occupational structures in finance are internal to large employers, employers use business qualifications, not to ensure that recruits have specific knowledge or skills, but to screen out applicants who are assumed not to have the general level of aptitude because they lack the qualification. Qualifications have weaker roles in agriculture and human services because of their weaker links to education and to jobs, although their roles are increasing in human services as occupations are increasingly regulated.

Qualifications' main focus or emphasis on the purpose of qualifications is shown in row seven. This is a consequence of the structure of the labour market; the employment outcomes that graduates achieve; the types of educational and occupational pathways that are possible; and the links between lower- and higher-level qualifications within the same field of education. Where qualifications are strongly linked to occupations, the main emphasis will be on preparation for entry to or upgrading in the labour market. Where there are strong links to higher-level qualifications within the same field of education but weak links to occupations, the main emphasis will be on preparation for higher-level studies. Where employment outcomes are weak and diffuse, and where articulation between lower-

and higher-level qualifications is low (as in agriculture), then access comes to the fore, along with supporting students to access higher-level studies. However, all qualifications should serve all three purposes but the emphasis they place on each may differ.

The last three rows of the summary table summarise interviewees' responses to the vocational streams and capabilities approach proposed for their industry. Most of the conditions for a new approach to qualifications are present in agriculture. Employers recognise that at least some of their difficulties in recruiting workers are due to the structure of their labour market, and rural employers value workers who have multiple skills, are flexible and able to accommodate the changes that are anticipated for rural industries. Most rural agricultural regions have strong traditions of collective interests, in supporting local institutions and their region over sectoral interests and in collective action such as fire prevention and fighting. However, rural employers are most reluctant to invest in education and training, making the development of a new approach to qualifications heavily dependent on the initiative and support of governments, often at all three levels: Commonwealth, state and local.

The overlaps in practice and in the skills needs of community services and health meet one of the conditions for establishing a vocational stream in community services and health. However, community services and health have very different labour market structures and dynamics. Health has labour markets that are strongly structured by government regulation, occupational roles and educational preparation, and nursing qualifications exemplify type 1 qualifications: qualifications are of medium to long duration; many are reasonably long-standing; occupational bodies have a strong role in specifying them; and some have a strong role in accrediting relevant qualifications. Many health qualifications are accredited externally by bodies with legislative authority. The workforce challenges for health are to develop enough graduates to meet the anticipated greatly increased need for health graduates, to extend continuing education to equip workers to manage changes arising from the introduction of new technologies, and to contain cost increases by broadening work roles and making them more flexible.

In contrast, community services' labour market is more open and is weakly structured, with tertiary education making a modest to weak contribution to many community service occupations, particularly at the mid-level qualification level of diplomas, advanced diplomas and associate degrees. The challenges of the community services workforce are to attract and retain enough workers to meet current workforce needs, let alone recruit more workers for the anticipated increases in needs. Community services will also need more highly skilled and trained workers in future. But currently mid-level community services qualifications seem to be mainly located in type 4 qualifications (weak links to qualifications within the field of education and weak links to occupations). While mid-level VET graduates in community services undertake further studies at about the same rate as other graduates of diplomas and higher-level VET qualifications, the available evidence suggests that these further studies are not within the same field of education.[3] The links between lower-level community

---

3 Community services are part of the narrow human welfare studies and services field of education, which is in the broader social and culture field of education. Overall, the relationship between qualifications within the society and culture field of education is not particularly strong. Some 47.4% of tertiary education graduates stay within that field of education when they undertake a second qualification. However, this is a very diverse and large field of education and it includes the pure disciplines such as humanities, philosophy and literature, and vocationally focused narrow fields of education such as human welfare studies and services. The analysis of the extent to which students stay within fields of education when they undertake a subsequent qualification is only available for broad fields of education and not the narrow fields of education. Consequently, it is possible that there may be stronger links between qualifications within the human welfare studies and services narrow field of education than for the broader society and culture field of education. Some 55% of VET graduates in the society and culture field of education who

services qualifications and occupations are stronger. The differences between the community services and health labour markets suggest that they should have different approaches to qualifications.

There are arguments for a new approach to business qualifications: they are weakly related to work and there is a hollowing-out in business occupations. But financial services employers pay well, have attractive work conditions and invest substantially in internal training and formal and informal staff development. They therefore don't experience shortages of highly qualified and motivated workers and accordingly have little interest in supporting changes to business qualifications. However, very few students from disadvantaged backgrounds undertake these qualifications, so access is important.

What would be needed to progress the new approach?

The focus of this strand of work over the three years of the project was on the role of educational institutions in fostering vocations: how to improve occupational outcomes and educational pathways within vocational education and training and between VET and higher education. This section addresses the research questions that guided this strand of the research: What tertiary education policies, institutional structures and curricular models support students' educational progression from lower- to higher-level qualifications and transitions from education to work, and help overcome discontinuities in sectors, institutions, and qualifications? Can the notion of vocations help?

The new approach to mid-level qualifications has implications for tertiary education policy, qualifications and approval bodies, tertiary education institutions, and educators and researchers.

Tertiary education policy

This research suggests at least three implications for tertiary education policy. First, policy-makers reduce their effectiveness if they seek to make and implement tertiary education policy isolated or even separate from the labour market, which structures tertiary education and influences so much of its operation — student demand, curriculum, performance standards, student outcomes, pathways and teachers' supply and demand.

Secondly, tertiary education policy should reflect the different labour market characteristics of different qualifications. Most tertiary education policy, particularly in the VET sector, treats qualifications as if they were of a uniform type and serve a uniform purpose. Yet qualifications at the same level have markedly different labour market characteristics in different fields or industries. And qualifications in the same field or industry have markedly different labour market characteristics at different levels. This argues for tertiary education policy to be much more differentiated than it currently is, at least by the four types identified in this work or by some similar appropriate typology.

Thirdly, the different emphases of qualifications should be reflected in their curriculum. Each qualification's curriculum should serve each of the three roles of labour market qualification: entry to the labour market, transition to a higher-level qualification and widen access to higher-level qualifications. This suggests a broader approach to the design of qualifications in the VET sector than

---

undertake a subsequent VET qualification stay within that field of education. This suggests stronger links between occupations and qualifications at lower levels. However, only 39.7% of VET graduates in the society and culture field of education who undertake a subsequent qualification in higher education stay within that field of education. Given that the pure disciplines are not offered in VET, this suggests weak links between occupationally focused VET and higher education qualifications within this field of education. Similarly, 48% of higher education graduates who undertake a second qualification in this field stay within the same field of education, which doesn't suggest particularly strong links, although this would need further exploration (Wheelahan, Moodie & Buchanan 2012).

is currently the case. The proposed approach argues for a move from basing the curriculum on specific workplace tasks and roles to a capabilities approach, which develops the person for the occupation for which they are being prepared and equips them with the theoretical knowledge, technical skills and attributes needed for that broad field of practice. In addition, each qualification's curriculum should advance its main goal. For example, a qualification such as nursing, which mainly prepares graduates for the labour market, should reflect the outcomes broadly specified by its social partners, and a qualification such as business, which is an important transition qualification to higher qualifications should emphasise students' educational development.

Qualifications and approval bodies

Australian vocational education has been 'industry led' since the mid-1990s and vocational qualifications are based on workplace competencies determined by industry bodies. Vocational education provided in workplaces is crucial to vocational qualifications, and enterprise registered training organisations are important providers of VET. Yet most VET provision reported by NCVER is provided by educational institutions on their premises (NCVER 2010). Educational institutions remain central to VET, but their emphasis is different from that of industry. In some ways there seems to be a divide in Australian VET between those aspects mostly determined by industry and those mostly determined by educational institutions.

This has resulted in criticisms of industry bodies for taking insufficient account of educational issues when determining their aspects of vocational education. Conversely, this report argues that education bodies have not taken enough account of broad labour market issues in determining their aspects of vocational education. Rather than dividing vocational education between those aspects in which industry has primary influence or responsibility and those in which educational institutions have primary influence or responsibility, this research argues for a partnership between industry and education in all aspects of vocational education, including curriculum and qualification design. Since governments provide most of the funding for VET and establish the policy, legislation and much of the structure for VET, governments should be part of the vocational education partnership. Previous reports have described these as the social partners for VET: educators, employees, employers and government.

This would have several implications for qualifications and approval bodies. First, particularly in VET, it means envisaging a broader role for VET qualifications beyond preparation for workplace tasks and roles. Even in qualifications where there are tight links to specific occupations, if the focus is on developing the person in the context of the occupation, there would need to be a greater emphasis on theoretical knowledge underpinning practice as well as technical skills and attributes. In VET qualifications, where the main focus is educational transition or widening participation, a broader and more inclusive approach to curriculum would be needed to support these outcomes.

Second, the membership of qualifications and approval bodies would have to be changed to have equal participation by the social partners, including educational partners. And third, their scope would have to be broadened to include all three purposes of qualifications: labour market entry or upgrade, transition to higher-level qualifications, and widening access. This would require a focus by qualifications and approval bodies on the educational purposes as well as the occupational purposes of qualifications, and the broad structuring of curriculum and pedagogy to achieve these outcomes. This necessitates input by those with expertise in these areas — educational institutions. At the same time, it gives other social partners (employers, unions, professional and occupational bodies, and government) more input into the design of curriculum and pedagogy than is currently the case.

Because strong educational programs align curriculum, pedagogy and assessment, this would also have the potential to address some of the issues of variable assessment reported elsewhere.

Tertiary education institutions

The research suggests that tertiary education institutions should reflect the different roles of qualifications in their curriculum, pedagogy and broad approach to each qualification. Qualifications whose main role is preparing graduates for further study should emphasise educational development, while those qualifications with mainly a role in preparing graduates for an occupation should concentrate on broad occupational outcomes. This has implications for pathways. Each qualification pathway should not be developed with similar characteristics, but should be constructed differently to reflect the qualification's role. For example, qualifications with strong educational links should have pathways that facilitate those progressions. However, qualifications that don't have strong educational links such as in engineering could have pathways to business and management that facilitate horizontal flexibility. Qualifications with strong links to both education and occupations may be harder to change, precisely because of those strong links, yet they may also benefit from a new approach to qualifications. For example, the health case study found that a new approach is sought to respond to the increasing complexity and cost of health care. While tertiary education institutions are clearly central to a new approach to qualifications, their role is limited: the proposed new approach will require and be most effective when it is undertaken collaboratively by the education sector with its social partners — employers, unions and government.

Educators and researchers

Finally, this research has implications for educators and researchers. Most educators and educational researchers naturally concentrate on educational bodies and processes. This research has shown the importance of educators and researchers learning much more about the operation and structure of the several labour markets their graduates enter and progress in. The main new work for educators and researchers is to explicate and operationalise the concept of productive capabilities. Some descriptions of the capabilities approach read like holistic statements of worker attributes, in contrast to the atomised statements of the job tasks of competency-based training. But productive capabilities are not alternatives to competencies: they are a different way of conceptualising the relations between worker and work. This report has suggested some principles, but these need to be elaborated and stated in terms that may be implemented in different types of qualifications.

How feasible is the new approach?

Some of these changes may be implemented by individuals, groups and institutions largely on their own initiative, if they agreed to do so. For example, tertiary education policy-makers could, without too much disruption, take more account of the labour market in setting policy, and qualifications could be given different emphases in labour market development, preparing for further study and widening access. Institutions could construct different pathways to reflect the different roles of their qualifications. Educators and researchers could examine more closely the labour markets their graduates enter and examine the notion of productive capabilities. Other changes would be more difficult because they require the agreement and participation of different groups. Yet other changes would require a substantial reorientation of tertiary education policy, financing or qualifications, and thus would require extensive development and discussion. This report seeks to launch such a discussion.

References

ACIL Allen Consulting Group 2012, *Rebuilding the agricultural workforce*, Canberra.

Australian Securities and Investment Commission (ASIC) 2013, *Licensing: training of financial product advisers —update to RG 146*, viewed 6 January 2014, <http://www.asic.gov.au/asic/pdflib.nsf/LookupByFileName/cp212-published-24-June-2013.pdf/$file/cp212-published-24-June-2013.pdf>.

Australian Workforce Productivity Agency 2012, *Resource sector skills needs*, AWPA, Canberra.

——2013a, *Food and beverage workforce study*, AWPA, Canberra.

——2013b, *Manufacturing workforce issues paper*, AWPA, Canberra.

Bosch, G & Charest, J 2008, 'Vocational training and the labour market in liberal and coordinated economies', *Industrial Relations Journal*, vol.39, no.5, pp.428—47.

Buchanan, J, Yu, S, Marginson, S, & Wheelahan, L 2009, *Education, work and economic renewal: an issues paper prepared for the Australian Education Union,* Sydney, Workplace Research Centre, University of Sydney, viewed 28 March 2014 <http://www.aeufederal.org.au/Publications/2009/JBuchananreport2009.pdf>.

Clark, RE & Vogel, A 1985, 'Transfer of training principles for instructional design', *Educational Communication and Technology*, vol.33, no.2, pp.113—23.

Community Services and Health Industry Skills Council 2013, *The care industry: a time for action environmental Scan 2013,* Sydney, viewed 11 November 2013, <http://www.cshisc.com.au/media/171360/Environmental_Scan_2013__2.7mb.pdf>.

Corbel, C, Wheelahan, L, Forward, P & Darwin, S 2014, *Building future capabilities for vocational education: why high-level teaching qualifications matter for TAFE teachers,* Australian Education Union, Melbourne.

Curtain, R 2003, *The Intermediate skills pool, new apprenticeships and skill shortages*, Curtain Consulting, Melbourne, viewed 12 September 2010, <http://www.curtain- consulting.net.au/download_controlled/Skill 20formation/sub101.pdf>.

Engineers Australia 2013, *The engineering profession: a statistical overview*, Engineers Australia, Canberra.

Fredman, N 2013, 'Pathways, student motivations and human capital theory', *21st National Vocational Education and Training Research Conference*, Adelaide.

Fredman, N, Moodie, G, Bexley, E & Wheelahan, L 2013, *Vocational education's variable links to vocations: support document,* NCVER, Adelaide.

Gallacher, J 2011, *Enhancing the role of higher education in Scotland's colleges: a discussion paper*, Centre for Research in Lifelong Learning, Glasgow Caledonian University, Glasgow.

Keep, E 2013, *Education, skills, and empowering the individual*, ESRC Centre on Skills, Knowledge and Organisational Performance, School of Social Sciences, Cardiff University, viewed 28 January 2013, <http://www.skope.ox.ac.uk/events/2013/01/17/public-lecture-prof-ewart-keep-titled-education-skill-and-empowering-individual-la>.

Keep, E & James, S 2012, 'A Bermuda triangle of policy? 'Bad jobs', skills policy and incentives to learn at the bottom end of the labour market', *Journal of Education Policy*, vol.27, no.2, pp.211—30.

Leahy, M 2013, 'Aged care and disability services sector paper for the "From competencies to capabilities project"', LH Martin Institute for Tertiary Education Leadership and Management, University of Melbourne, Melbourne.

Moodie, G 2012, 'Variations in the rate at which students cross the boundaries between Australian vocational and higher education', *Australian Educational Researcher*, vol.39, no.2, pp.143—58.

Moodie, G, & Fredman, N 2013, *Student load and employment outcomes attached to mid-level qualifications*, NCVER, Adelaide.

Moodie, G, Fredman, N, Bexley, E & Wheelahan, L 2013, *Vocational education's variable links to vocations*, NCVER, Adelaide, viewed 18 December 2013, <http://www.ncver.edu.au/publications/2689.html>.

NCVER (National Centre for Vocational Education Research) 2010, 'Delivery hours by selected training characteristics and state and territory, 1996—2009', in *Vocational education & training in Australia from 1981*, NCVER, Adelaide, viewed 15 November 2010, <http://www.ncver.edu.au/statistic/publications/2244.html>.

——2012, *Australian vocational education and training statistics: student outcomes 2012*, NCVER, Adelaide, viewed 28 March 2014, <http://www.voced.edu.au/content/ngv54102>.

National Skills Standards Council 2012a, *Standards for training packages*, NSSC, Melbourne, viewed 3 March 2013, <http://www.nssc.natese.gov.au/training_packages/standards_and_policies>.

——2012b, *Training package development and endorsement process*, NSSC, Melbourne, viewed 3 March 2013, <http://www.nssc.natese.gov.au/training_packages/standards_and_policies>.

Nussbaum, MC 2000, *Women and human development: the capabilities approach*, Cambridge University Press, Cambridge.

Pratley, J 2012, *Review into agricultural education and training in New South Wales — issues paper*, NSW Government, Sydney.

Sen, A 1999, *Development as freedom*, Anchor Books, New York.

Wheelahan, L & Moodie, G 2011, *Rethinking skills in vocational education and training: from competencies to capabilities,* Board of Vocational Education and Training, Sydney, viewed 17 November 2011, <http://www.bvet.nsw.gov.au/pdf/rethinking_skills.pdf>

Wheelahan, L, Moodie, G, & Buchanan, J 2012, *Revitalising the vocational in flows of learning and labour,* NCVER, Adelaide, viewed 30 October 2012, <http://www.ncver.edu.au/publications/2535>.

Wheelahan, L, Leahy, M, Fredman, N, Moodie, G, Arkoudis, S & Bexley, E 2012, *Missing links: the fragmented relation between tertiary education and jobs,* NCVER, Adelaide.

Yu, S 2015, *Creating vocational streams: what will it take?* NCVER, Adelaide.

Yu, S, Bretherton, T & Buchanan, J 2013, *Defining vocational streams: insights from the engineering, finance, agriculture and care sectors,* NCVER, Adelaide, viewed 26 November 2013, <http://www.ncver.edu.au/publications/2667.html>.

NVETR Program funding

The National Vocational Education and Training Research (NVETR) Program is coordinated and managed by NCVER on behalf of the Australian Government and state and territory governments. Funding is provided through the Australian Government Department of Education and Training.

The NVETR Program is based on national research priorities and aims to improve policy and practice in the VET sector. The research effort itself is collaborative and requires strong relationships with the research community in Australia's universities and beyond. NCVER may also involve various stakeholders, including state and territory governments, industry and practitioners, to inform the commissioned research, and use a variety of mechanisms such as project roundtables and forums.

Research grants are awarded to organisations through a competitive process, in which NCVER does not participate. To ensure the quality and relevance of the research, projects are selected using an independent and transparent process and research reports are peer-reviewed.

From 2012 some of the NVETR Program funding was made available for research and policy advice to National Senior Officials of the then Standing Council for Tertiary Education, Skills and Employment (SCOTESE) Principal Committees. They were responsible for determining suitable and relevant research projects aligned to the immediate priority needs in support of the national VET reform agenda.

For further information about the program go to the NCVER Portal <http://www.ncver.edu.au>.