Department of Education and Training

Everybody's Core Business

Research into the non-technical capabilities needed for successful participation in work or further study:
Final Report

August 2016

ithaca group
ITHACA GROUP

CONTENTS

> **A note about terminology:**
>
> There are many terms used to describe non-technical capabilities, such as general capabilities, generic skills or competencies, employability skills, core skills etc. However, for the purposes of this research we have used the term 'non-technical capabilities' and have included under this term both literacy and numeracy skills and other generic skills, knowledge and understandings that are covered by the following four national frameworks:
>
> - The Australian Core Skills Framework (ACSF)
> - The Core Skills for Work Developmental Framework (CSfW)
> - The General Capabilities from the Australian national curriculum
> - The Australian Blueprint for Career Development (ABCD).
>
> It is not intended that the term 'non-technical capabilities' replace any of the existing terminology currently in use and it was deliberately selected so as not to favour any particular current term.
>
> The project identified widespread interest in establishing agreement on common terminology to describe these capabilities, but this is an issue that will require further consultation and discussion amongst all of the stakeholder groups.

1. ABOUT THE PROJECT

This project set out to conduct research around the non-technical capabilities needed by secondary school graduates to successfully participate in work or further study.

The project examined which capabilities are most appropriately developed in a school setting, as well as what might be realistically done in schools to develop, assess and/or recognise these capabilities and how employers can support and/or add to this. It also examined what secondary schools are currently doing to support students to develop these capabilities and identified where processes are already in place to assess and/or recognise them.

The project consisted of a number of key activities:

Consultation with key stakeholders

An initial round of consultations was conducted with 34 key stakeholders from across the school sector (including Departmental staff and curriculum authority representatives from each state and territory, peak parent groups and the Australian Curriculum, Assessment and Reporting Authority), from peak industry groups, Vocational Education and Training (VET) provider peaks and other organisations with an interest in developing the work readiness of young people. A complete list of those interviewed in the initial round of consultations can be found in Attachment A.

The consultations focused on exploring:

- the ways in which these capabilities are already being developed, measured and recognised within the secondary school system, and where there are gaps

- the value of assessing and recognising non-technical capabilities and of developing a national approach to this

- the barriers and enablers to developing, measuring and recognising these capabilities on a national basis

- what the respective roles of secondary schools and employers/industry should be in terms of supporting students to develop non-technical capabilities.

Analysis of literature

A range of literature was examined in relation to the following topics:

- the benefits and challenges of assessing non-technical capabilities

- approaches to assessing non-technical capabilities in Australia and internationally

- approaches to measuring literacy and numeracy skills in Australia and internationally

- young people's transitions from school into work and further education.

The detailed findings of the literature analysis can be found in the Supplementary Report – Findings from the literature.

Investigation of current initiatives in schools

A selection of programs or initiatives aimed at developing non-technical capabilities, which are currently being used in particular schools or across education systems in particular states and territories, were investigated in order to identify:

- what capabilities are being developed

- what is proving to be effective and where the barriers and challenges are

- who is involved and how the stakeholders work together.

This investigation involved consultation with key people responsible for implementing the program or initiative, as well as document analysis where relevant.

A summary of the programs/initiatives that were examined can be found in Attachment B.

In addition, two group consultations were conducted with representatives of schools and the education system in Western Australia and South Australia. A list of participants can be found in Attachment A.

Analysis of employment and education pathways

Five different pathways that represent a cross-section of the employment or tertiary education options pursued by students post-school were analysed to determine:

- what non-technical capabilities were needed to be successful in pursuing that pathway

- what evidence is currently being used to assess whether young people possess those non-technical capabilities

- how stakeholders are working together to ensure young people develop the necessary non-technical capabilities.

This analysis was conducted using a combination of desk research and follow-up interviews with key informants.

A summary of the five pathways can be found in Attachment C.

Three final workshops were conducted in Sydney, Melbourne and Adelaide to test our thinking about the project findings and possible options for increasing the focus on the non-technical capabilities needed to be successful in work or further study. These workshops included representatives of schools, state government education departments and curriculum authorities, and other organisations delivering initiatives for young people.

A list of those involved in the final workshops can be found in Attachment A.

The report details the findings of each of these activities, as well as our conclusions from the research and considerations for progressing the issue of supporting secondary school students to develop the non-technical capabilities they need to successfully participate in work or further study.

3. WHAT THE CONSULTATIONS TOLD US

The initial round of consultations with education, industry, youth and tertiary education stakeholders highlighted a number of issues and points of view that informed investigations in the remainder of the project.

These capabilities are important, but that does not mean a national approach to measurement is needed

There is widespread recognition that non-technical capabilities are extremely important and that there is value in schools making them explicit, well known and acknowledged. However, this does not necessarily translate into support for a national approach to measuring and recognising them. Even industry representatives felt that while they would expect students to be coming to them with certain non-technical capabilities, that a national approach to measuring and reporting on them would not be of value to employers.

There are many different issues that sit behind a reluctance to measure and report:

ᴜ While some progress has been made in approaches to measuring non-technical capabilities, there is a widespread lack of understanding and/or confidence in how to measure these kinds of capabilities in a way that is authentic and meaningful.

ᴜ There are many concerns about what the results of the assessment of these capabilities might be used for and that this might further disadvantage those who are already struggling, or that results may not be interpreted accurately by employers. Some suggested that any assessment should be for diagnostic or self-reflection purposes, not for summative reporting.

ᴜ In a related issue, some of those consulted stressed that there is no point in establishing a benchmark for certain capabilities if there are not mechanisms in place for helping students to reach those benchmarks. For this reason, some suggested that any measurement of non-technical capabilities needs to take place back in Year 10 so that any gaps can be addressed before the end of secondary school.

Some suggested that there may be more value to be gained from raising awareness of these capabilities and helping teachers and students to give them an explicit focus, than on measuring them. Others suggested that rather than assessment and reporting, that the provision of information about what students had done over the course of their schooling years that involved the development and use of non-technical capabilities could be of more use to employers. One interviewee pointed out that employers currently look to work experience gained through work integrated learning, part-time work and structured work placements as a proxy for the non-technical capabilities they are seeking.

At the same time there was an acknowledgement by many of those consulted that what gets assessed or measured is what gets attention and that although General Capabilities are embedded into the curriculum, they rarely receive explicit attention in senior secondary education (outside of VET or Career Development activities) because they are not assessed.

A notable exception is the state of Victoria, which has developed learning outcomes and assessment and reporting processes against General Capabilities for students up to year 10, so that progress can be tracked.

Non-technical capabilities are context specific

There was a strong recognition that non-technical capabilities are very much context specific and it would be inappropriate to create benchmarks that are applicable to all students regardless of their intended future pathways or level of development. Others described concerns about non-technical capabilities being assessed out of context (i.e. out of domain/subject area), leading to "lowest common denominator assessment".

In addition, several of those consulted pointed out that schools cannot replicate the realities of workplaces and even if students were assessed as having demonstrated certain capabilities in a school context, that does not mean that they will be able to demonstrate them in a work environment. Therefore students cannot be assessed as 'work ready'.

Some also acknowledged that the world in which young people will work is rapidly changing and will continue to do so. So the non-technical capabilities they develop need to be ones that will see them through into a changing future.

Literacy and numeracy skills are of a different nature to other non-technical capabilities

There appears to be widespread recognition that literacy and numeracy skills underpin ongoing success in learning and work performance and in the development and application of other capabilities. The critical importance and enabling functions of these skills and the fact that they are considered to be more easily assessed and reported on than other non-technical capabilities, sets them apart to a certain extent.

Several states and territories have already established literacy and numeracy requirements that students must meet before being issued with a Senior Secondary Certificate of Education and a number of literacy and numeracy assessment tools based on the ACSF are in use.

However, we know that literacy and numeracy skills are also very much context specific and that minimum standards will not be enough for pursuing many occupations. Therefore the purpose and use of any assessments need to be carefully considered.

A national approach would be challenging

Many of those consulted could not see a need for a national approach to recognising non-technical capabilities at the end of secondary school, although some could see possibilities for a set of national principles or similar.

There is certainly no appetite for revisiting the process of identifying which capabilities are important. Those consulted pointed to the various national frameworks that already exist, which outline what the skills are and how to develop them, including:

- The Australian Core Skills Framework (ACSF)
- The Core Skills for Work Developmental Framework (CSfW)
- The General Capabilities from the national curriculum
- The Australian Blueprint for Career Development (ABCD).

Many spoke about the need for a common language to talk about these capabilities – and one that is simple and easily understood by both students and employers and that will still be relevant to the world of work of the future.

However, many indicated that achieving a consistent approach to recognising these capabilities across the states and territories, particularly in relation to Year 11 and 12 outcomes would be extremely difficult.

The exception is literacy and numeracy skills, which as explained above, are viewed in a different way to other non-technical capabilities. There appears to be significant interest across a number of jurisdictions in establishing benchmarks and common assessment tools for measuring and reporting on these skills.
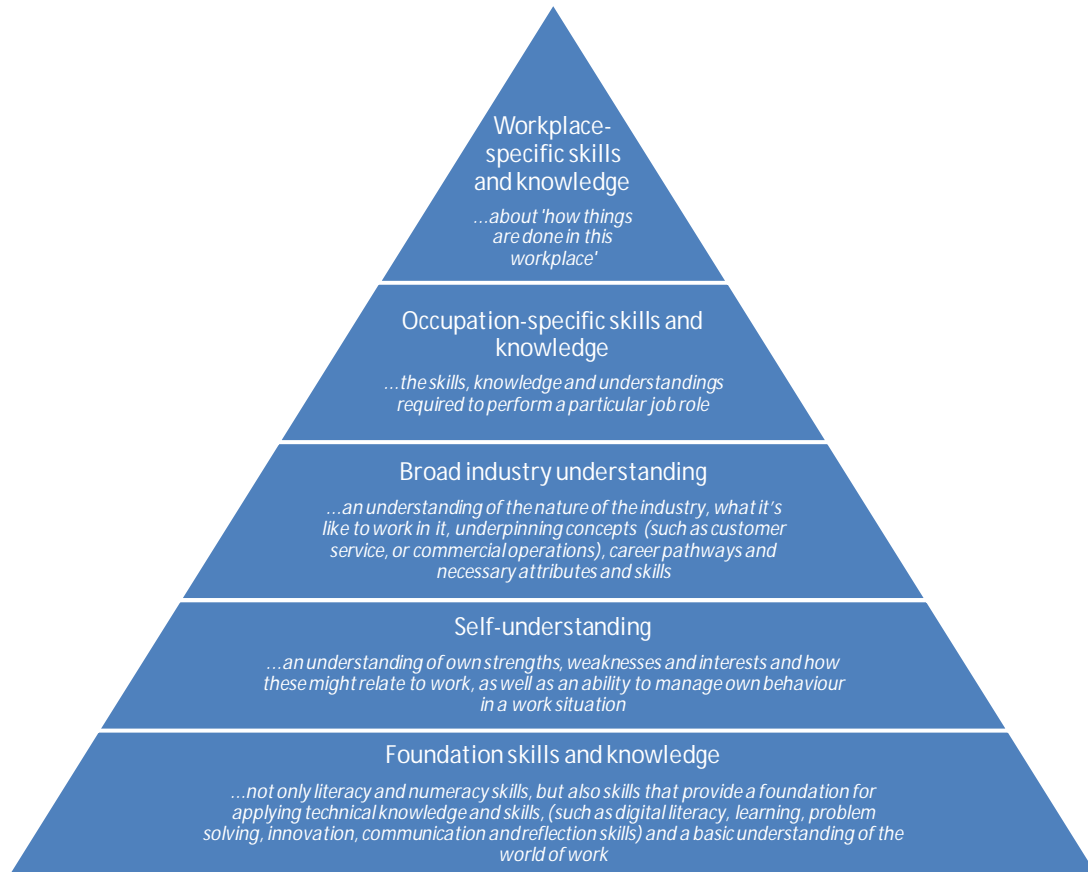
The development of work or study 'readiness' is a joint responsibility

The Ithaca Group Work Readiness Conceptual Framework (Figure 1 on the following page) was seen to be a useful means of framing conversations about roles and responsibilities and the theme of collaboration and partnership between schools, families and employers was prominent. It also highlights that there are common non-technical capabilities that are needed, as well as skills, knowledge and understandings that are more specific to the work or study pathway being pursued.

Although many felt that both schools and employers have a role to play in all layers of the pyramid, there was a fairly consistent view that:

- Schools (and families) predominantly had responsibility for assisting young people to start the development of Foundation Skills and Knowledge and Self-understanding

- Some exposure to Broad Industry Understanding can take place at school, but that it requires the input of employers and industry

- Tertiary education providers and employers are responsible for helping young people to develop Occupation-specific Skills and Knowledge

- Employers are responsible supporting the development of Workplace-specific Skills and Knowledge, including making expectations of workplace behaviour and performance clear to young people.

Figure 1. The Work Readiness Conceptual Framework

Workplace-specific skills and knowledge

...about 'how things are done in this workplace'

Occupation-specific skills and knowledge

...the skills, knowledge and understandings required to perform a particular job role

Broad industry understanding

...an understanding of the nature of the industry, what it's like to work in it, underpinning concepts (such as customer service, or commercial operations), career pathways and necessary attributes and skills

Self-understanding

...an understanding of own strengths, weaknesses and interests and how these might relate to work, as well as an ability to manage own behaviour in a work situation

Foundation skills and knowledge

...not only literacy and numeracy skills, but also skills that provide a foundation for applying technical knowledge and skills, (such as digital literacy, learning, problem solving, innovation, communication and reflection skills) and a basic understanding of the world of work

Some of those consulted felt that some employers have unrealistic expectations of young people. Many recognised that it takes a period of time in a new context (e.g. a new workplace) to become productive and acknowledged that schools have a responsibility to prepare young people with the capabilities needed to enter a workplace and become productive in a reasonable period of time, but also that employers have an important role to play in supporting young people to apply these capabilities in the workplace in order to become productive.

Others also acknowledged that many of the problems employers experience with young people are because some young people have yet to mature emotionally, or that they are not aware of workplace expectations, not that they are lacking in skills.

4. WHAT THE LITERATURE TOLD US

Assessment of non-technical capabilities

At the macro level, assessing non-technical capabilities puts a national focus on the skills that are so vital to the success of our economy, of individual businesses and of young people themselves. It puts responsibility on individuals, educators and employers to focus on the development of these skills and gives them a common language for conversations about what's being aimed for, who does what, and the skill levels of individuals.

At a more micro level, students and teachers in schools that are collecting data on non-technical capabilities report positive influences on teaching and learning, and school performance.

The research highlights that:

- u effective assessment gives teachers information they wouldn't otherwise have and information that will help students improve their performance

- u the right kind of assessment results can improve communication and motivation

- u having concrete data can help teachers become more intentional about fostering these capabilities, and can encourage teachers to meet regularly to discuss student needs.

At the same time, non-technical capabilities can be difficult to assess because of their more tacit and context-dependent nature, difficulties in creating realistic contexts in which to assess them, the time and resources needed for assessment, and a lack of knowledge and confidence amongst teachers in how to assess these kinds of capabilities.

The literature points to a number of criteria to be considered when determining the effectiveness of any approach to assessment of non-technical capabilities:

- u Fitness for purpose – and purpose will vary for different stakeholder groups (e.g. learners may need information about their performance to make decisions about work and study and where and how they can improve their capabilities, teachers need information that will inform their practice and how they can help individual students, schools want to know how they are performing in equipping students for work and further learning and employers want information about the capabilities someone can bring to their workplace)

- u Cost – which tends to be driven by the complexity of the assessment format

- u Logistics – including technological considerations and professional development needed for teachers to administer the assessment

- u Reliability – in terms of both consistency and in terms of assessment over time

- u Validity – which is often ensured by drawing upon a number of sources of evidence

- u Fairness – by avoiding any bias created by elements that are not being assessed (such as lack of familiarity with the language or context)

- u Credibility – amongst those who have a stake in the outcomes of the assessment

- u Simplicity and clarity – so as to not need large amounts of specialised training to administer and ensure the requirements are explicit for students and those involved in the assessment.

Assessment of non-technical capabilities can be either discrete or integrated with other academic learning. The benefit of assessing separately is that the capabilities become a focus in themselves, emphasising their importance and allowing teachers and students to concentrate solely on those capabilities. The benefit of integrated assessment is that it is more contextual and accurate to situations where capabilities are exercised in order to achieve a work or study task.

A range of examples of formats and approaches to assessing non-technical capabilities can be found in the Supplementary Report – Findings from the literature.

Assessment of Literacy and Numeracy Skills

In Australia and the United Kingdom, there appears to be a trend towards greater use of assessment in an effort to improve young people's literacy and numeracy skills.

In England and Northern Ireland, changes to the General Certificate of Secondary Education (GCSE), which is equivalent to year 9 or 10, mean that assessment of literacy and numeracy takes place predominantly through exams, rather than coursework. Similar reforms are being introduced for A levels, which are equivalent to year 12.

Although these measures have been criticised for their impact on disadvantaged learners who have traditionally relied on vocational subjects to achieve their GCSE, the Government has responded that the 'dumbing down' of curriculum and assessment does not benefit disadvantaged learners and that they have not been well-served by qualifications with little or no labour market value.

In Scotland, literacy and numeracy levels are monitored through the random selection of students to complete literacy or numeracy tasks. This annual survey is conducted at the educational equivalent of ages 8-9, 11-12 and 13-14.

Ireland has also prioritised the improvement of literacy and numeracy outcomes for school students and is introducing a number of strategies for this, including extending National Assessments in Reading and Mathematics (NAERM) into secondary school.

In Australia, literacy and numeracy skills are gaining a stronger focus in senior secondary school exit requirements (see further details in the following section). Western Australia has very recently introduced a benchmark that all students must meet in order to receive their senior school exit certificate and which is determined through standardised testing (either NAPLAN or the new Online Literacy and Numeracy Assessment). Students completing year 12 in 2016 are the first cohort to have to meet this benchmark.

New South Wales has also recently announced that it will introduce similar requirements for students to receive their Higher School Certificate.

Further details of approaches to the assessment of literacy and numeracy skills can be found in the Supplementary Report – Findings from the literature.

To what extent do secondary school graduates have the necessary skills?

There is no nationally-consistent data collected on the non-technical capabilities that students have when they complete year 12.

Senior Secondary Certificates of Education currently report on a range of different achievements, some of which include non-technical capabilities or are proxy indicators of non-technical capabilities.

The Northern Territory, South Australia, Western Australia, Tasmania and Queensland all have literacy and numeracy requirements for students to achieve a Senior Secondary Certificate of Education. In Victoria, the VCAL has specific literacy and numeracy requirements for students. In NSW those who are not going to complete Year 12 may elect to complete literacy and numeracy as part of their Record of School Achievement (ROSA). However, new literacy and numeracy requirements for HSC will soon be introduced.

Other requirements include:

u   In South Australia and the Northern Territory, students must complete a Personal Learning Plan (which builds self-reflection and career development capabilities) to achieve their exit certificate

u   The Western Australian Statement of Student Achievement records whether students have achieved the literacy and numeracy standards, as well as records achievement of awards and any community service undertaken

u   The award of a Tasmanian Certificate of Education (TCE) requires achieving the 'everyday adult reading, writing and communication skills standard', the 'everyday adult mathematics skills standard' and the standard for 'pathways planning'

u   The Victorian Certificate of Applied Learning includes work-related and personal development skills, in addition to literacy and numeracy skill requirements

u   The NSW Higher School Certificate includes a Life Skills Profile of Student Achievement, which records successful completion of a Life Skills course. The

NSW Record of School Achievement is for students who leave school before achieving a Higher School Certificate, and includes an ongoing learning portfolio.

However, the lack of consistency in school exit reporting makes it difficult to make any assessment of the extent to which secondary school graduates do have the capabilities necessary to participate in work or further study. One alternative is to look at the literature on the success of young people's transitions to various education, training and employment pathways after school. An overview of findings from several different sources can be found in the Supplementary Report – Findings from the literature.

The findings highlight some useful points:

- At age 19 (by which time most young people will have finished secondary school) only slightly more than half of all young people are participating in education or training. In one study[1], 2014 data indicates that of those aged 19:

  - § 26% of males and 37% of females were participating in higher education

  - § 14% of males and 5% of females were undertaking an apprenticeship or traineeship

  - § 10% of males and 13% of females were participating in other VET studies

  - § 48% of males and 43% of females were not involved in education and training (i.e. were employed, unemployed or not in the labour market)

- Undertaking VET courses while at school improves post-school outcomes for many young people. In a study[2] of students who were in year 11 in 2006, of those who did not go on to higher education:

  - § the rate of full engagement in work or study five years later for those who did VET subjects while they were at school was 3 - 4% higher than that of the overall group of those who did not go on to higher education

  - § the rate of full engagement in work or study five years later for those who completed a Certificate III or higher while at school was 4 – 5% higher than for those that had completed a Certificate I or II

- The average age at which young people transition to work has increased significantly as has the gap between completing full-time study and participating in full-time employment. Other transitions, such as moving out of home, starting a family etc, are also happening later[3].

- The proportion of young people not in employment, education or training is also increasing[4]

- An evaluation of a program[5] that supports young people through transitions to work or study found that low self-esteem, behavioural problems, low literacy and numeracy skills and socialisation issues were the biggest barriers to successful transitions

- Another study of youth transitions[6] defined a 'good transition' as individuals having been fully-engaged in full-time work or study (at Certificate III above) or a

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[1] *Australian vocational education and training statistics: Young people in education and training 2014*, NCVER

[2] *Outcomes from Vocational Education and Training in Schools, experimental estimates, Australia 2006-2011*, ABS

[3] *Evaluation of the National Partnership on Youth Attainment and Transitions: A report for the Department of Education*, 16 January 2014, Dandolo Partners

[4] *How young people are faring in the transition from school to work*, Foundation for Young Australians

[5] *Evaluation of the National Partnership on Youth Attainment and Transitions: A report for the Department of Education*, 16 January 2014, Dandolo Partners

[6] *Youth Transitions Evidence Base: 2012 Update*, Deloitte Access Economics

combination of both. The study reported that 82% of young people are making good transitions, 14% are making mixed transitions and only 4% are making poor transitions.

This final point indicates that overall, the vast majority of young people are making good transitions, but that there are some who may need additional support. They include:

- § Those who do not complete year 12
- § Those who do not work part-time while at school
- § Indigenous Australians
- § Those with a disability
- § Those with low levels of literacy and numeracy
- § Those from remote and very remote areas
- § Those with lower socio-economic backgrounds[7].

Other important implications of these findings are that:

- u Although the numbers of young people participating in higher education has been increasing for some time, they still account for only about one-third of young people at age 19. While the proportions of students entering higher education will vary from school to school, a focus on achieving ATAR/tertiary entrance scores should not be allowed to overshadow a focus on preparing many other young people for VET, for employment or for a combination of work and training

- u Participation in VET while at school can help to improve transitions to work or further study. However, low literacy and numeracy skills and underlying emotional, socialisation and behavioural issues also need to be addressed to improve the transitions for some young people

- u Part-time work while at school is a useful proxy indicator of exposure to the realities of the 'world of work'. The research shows that those young people who have not had this exposure do not fare as well in post-school transitions.

The fact that young people are making all of life's transitions much later and in less direct ways than they once did, suggests that expectations about the capabilities of young people may need to be adjusted to reflect these new realities. It may well be that we need to think about today's 19 year olds in the same way we once thought about 15 year olds and accept that they may have similar levels of maturity and life experience and need the same kinds of support to make successful transitions into work. Comments made in consultations also highlight this issue, with several people pointing out that many of the complaints about young people's lack of work readiness are due to the fact that they are aged 15-19, not to a lack of skills.

However, this needs to be balanced with recognition that many of today's workplaces require more complex and sophisticated capabilities than those of the past - an issue that is highlighted in Section 6 of this report.

5. WHAT'S ALREADY BEING DONE?

As part of our research we examined 21 different initiatives currently being delivered to young people across Australian schools, schooling systems and in the wider community to help them to develop non-technical capabilities. A summary of these initiatives can be found in Attachment B.

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[7] *Youth Transitions Evidence Base: 2012 Update*, Deloitte Access Economics

The investigation of these initiatives highlighted that many efforts are being made to provide young people with opportunities to build skills, knowledge, understanding and networks that will help them to be successful beyond school. However, these efforts are, for the most part, directed at selected students or cohorts of students.

It also enabled us to identify a range of features or factors that make some initiatives more effective than others. And while these investigations were focused on efforts to develop 'work readiness', the findings can, in most cases, be equally applied to efforts to prepare young people for further study.

Literacy and numeracy skills

As mentioned earlier in this report, several Australian states and territories have literacy and numeracy requirements that students must meet in order to receive their Senior Secondary Certificate of Education. The experience of Western Australia, however, provides additional insight into the kinds of literacy and numeracy skills that are required. Prior to this year, students needed to gain a grade of C or higher in English to receive their Western Australian Certificate of Education (WACE). However, they were still receiving complaints that some school graduates did not have the fundamental literacy and numeracy skills needed for work or further study.

So they have introduced new requirements, which mean that from 2016, in order to receive the WACE, students must:

- ⊔ have achieved Band 8 or more in the Year 9 NAPLAN test, or
- ⊔ pass the Online Literacy and Numeracy Assessment (OLNA).

OLNA is aligned to Level 3 of the ACSF in literacy (reading and writing) and numeracy and is based on the literacy and numeracy demands of "everyday life and work in a knowledge-based economy"[8]. The reading and numeracy components of the assessment each comprise 45 multiple choice questions. Students have 50 minutes to complete each of these components. The writing component is a typed response of up to 600 words. Students have 60 minutes to complete the writing component. Assessment rounds are conducted twice per year.

Students who do not achieve the necessary results in the Year 9 NAPLAN test have the opportunity for multiple attempts at the OLNA through years 10 – 12. If they have not achieved the literacy and numeracy standard by the time they leave school, they cannot be awarded the WACE, but they can apply to the Authority to re-sit the literacy and numeracy assessment at any age.

The new data being collected in relation to these new requirements has enabled the School Curriculum and Standards Authority Western Australia to track the progress of students' literacy and numeracy skill development. They have found that 61% of students who had not yet met the new requirements in the early stages of year 12 were below the NAPLAN national mean in Year 5 (which is as far back as NAPLAN data goes). This highlights the need for literacy and numeracy issues to be identified and addressed as early as possible.

Interestingly, they have also found that since introducing the new requirements for literacy and numeracy, year 9 NAPLAN results in Western Australia have improved dramatically, which may indicate that greater attention and effort is being paid to literacy and numeracy skills or to the NAPLAN test itself.

How do young people develop non-technical capabilities?

There appears to be widespread acceptance that one of the best ways for young people to develop the non-technical capabilities needed to be successful in work is through workplace experience. However, to be of use the experience should:

- ⊔ be authentic and incorporate real life problems to work on

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[8] _http://senior-secondary.scsa.wa.edu.au/assessment/olna_

u   have support provided by appropriately skilled and experienced mentors

u   incorporate preparation prior to the experience, as well as opportunities to reflect on the experience.

Although authentic work experience can be time-consuming and costly to arrange, there are numerous examples of it being done well.

Students who are planning to undertake tertiary education also need to have opportunities to build an understanding of what it will be like and what the expectations are. One of the schools we spoke to provides all year 11 students with the opportunity to partake in a residential study at a local university, in which students live on campus for three days and two nights and focus on developing leadership and study skills.

Extra-curricular activities undertaken as a part of broader school activities or within the wider community are another common way in which young people develop non-technical capabilities. Participation in extra-curricular activities such as cultural and sporting programs and events, volunteering and community service, is recognised in the certification issued by some jurisdictions and many employers also look to evidence of participation in such activities as an indicator of young peoples' development of non-technical capabilities.

Career development activities are also an essential means of preparing for work or further study in terms of building self-understanding, exploring work options, learning about requirements and expectations of work and further study and developing the skills and behaviours needed to meet these. However, both the literature and those consulted emphasised that in order to be most effective, career development competencies should be a part of every aspect of the curriculum so that everything that students are learning is linked to its potential relevance and application in other contexts and into the future.

Who needs to be involved?

Strong engagement with employers and industry groups and high level support within the school are key features of successful initiatives to help students develop non-technical capabilities.

The initiatives examined also point to the importance of:

u   students taking responsibility for their own learning (e.g. through research and portfolio based initiatives)

u   employers having adequate support to prepare them for taking on students for work placements

u   partnerships with external organisations (such as the Smith Family, Foundation for Young Australians and the Beacon Foundation) and with universities to deliver learning and experience opportunities for students

u   involving students' families in initiatives where possible so that they can provide encouragement and support.

What are the barriers and challenges to developing these capabilities?

Although many well-designed initiatives and programs (along with supporting resources and professional development) are available to support the development of career and 'work readiness' skills, the key challenge for many schools lies in the lack of time available to fit in these 'extra' activities. Outside of VET programs in which workplace learning may be mandatory, the majority of initiatives and programs are implemented at the discretion of the school or teachers.

School culture and teacher attitudes can also be a significant challenge. Some schools see the development of non-technical capabilities as being essential for all students and the programs and range of subjects on offer reflect this. However, in other schools there is a very strong distinction

between 'ATAR' or tertiary entrance pathways and vocational pathways, with vocational courses still seen as being for the 'less able'.

The focus on developing non-technical capabilities seems to stop in years 11 and 12. When you look at the role of the teacher in the primary school it is more about the development of the whole child and in years 7-10 there is a considerable focus on General Capabilities and career learning. However, in senior secondary school the focus tends to shift to discipline knowledge, multiple teachers operating in silos and less consideration to the development of the child as a whole. So it is much harder for schools to consider and place an emphasis on the development of non-technical capabilities.

Sitting alongside the lack of capacity to implement new initiatives is a shortage of capability amongst teachers. In most cases career learning and the development of work readiness is implemented by specialist career or VET practitioners. However, best practice thinking indicates that these kinds of capabilities should be built into every part of the curriculum and delivered by every teacher. Consultations indicate that barriers to a wider approach to developing non-technical capabilities include:

- ᴜ Many teachers don't have an understanding what the 'real' world of work is like

- ᴜ Despite the availability of good resources, many teachers are unaware of them or how they might use them in conjunction with discipline-based materials

- ᴜ There is a lack of awareness and/or confidence amongst teachers about how to develop and assess non-technical capabilities, and in some cases, a belief that it is not possible to teach them

- ᴜ Some teachers don't see the preparation of students for the world of work as part of their job.

This final point highlights a need for broader cultural change in which all members of the school community see themselves as having a role to play in preparing students for whatever is to come after school.

The research shows that young people benefit from multiple 'career conversations' – with employers, teachers and parents, as part of their career and work explorations. Vocation learning activities and programs conducted in schools play an important part in facilitating these explorations.

6. POST-SCHOOL PATHWAYS

As part of the research we explored five different pathways that reflect a range of destinations for students after the completion of year 12. They were:

1. A trade-based industry that is accessed through apprenticeship pathways – Building and Construction

2. An industry that young people frequently enter directly from school – a combination of Retail and Hospitality

3. A higher education pathway that leads to a variety of professional occupations – Bachelor of Science

4. An industry that employs young people through a mix of pathways, including directly from school and through VET and higher education study, which has been active in thinking about workforce development and skilling issues – Manufacturing

5. An industry that will be experiencing growth into the future and also employs young people through a mix of pathways – Early Childhood Education.

This exploration enabled us to examine what kinds of non-technical capabilities were needed by young people to be successful in these particular pathways, what evidence is being used to

determine whether young people have those capabilities and how stakeholders are working together to help young people develop them.

The non-technical capabilities needed to be successful

The explorations highlight a number of different non-technical skills and other capabilities that are considered to be important to success.

Pathway	Skills	Other capabilities and attributes
Building and Construction	Literacy and numeracy Work safely	Self-motivation Positive attitude Resilience Exposure to the industry and to VET Healthy lifestyle
Retail	Sophisticated interpersonal skills Advanced problem-solving Digital literacy Specialist technology Data analysis	'the right fit' with the product image
Hospitality	Interpersonal skills Teamwork skills Decision-making and problem solving Literacy and numeracy	'the right attitude'
Science	Numeracy Critical thinking Complex and creative problem-solving Data analysis Communication Logical reasoning	An enquiring mind Practical intelligence
Manufacturing	Literacy and numeracy (including digital literacy) Problem solving Creative thinking Ability to adapt and work across traditional skill boundaries Collaboration	Resilience Flexibility Self-awareness Genuine interest in the industry and occupations
Early Childhood	Collaboration Communication Shared decision-making	

Given that these five pathways involve a mix of employment, vocational and higher education destinations, it is particularly interesting to note some commonalities across them in terms of the importance of:

- Literacy and numeracy skills
- Problem-solving skills
- Interpersonal/teamwork/collaboration skills.

Resilience and a positive attitude also feature a number of times.

Another point that arose from the investigation of the Higher Education Science pathway was that in many of today's workplaces, employers need staff who are good at critical thinking, solving complex problems, and creative problem-solving.[9] Those non-technical capabilities are also an outcome of the current focus on the development of Science, Technology, Engineering and Maths (STEM) skills, and the literature suggests that these are capabilities that many more young people should be developing to meet the demands of technological change and an increasing need for innovation capacity.

The need for these kinds of problem-solving and higher order thinking capabilities was also raised in the investigation into the Manufacturing pathway, along with the need for digital literacy, due to the increasing digitisation of tasks. The increasingly complexity of technology and customer interactions is also affecting the level of capabilities needed in the retail and hospitality industries.

Evidence

Although there are particular capabilities that are important for each pathway, our explorations found that specific assessments of those capabilities are not necessarily a feature of the evidence that employers or tertiary education providers look to when 'recruiting' school graduates into that pathway.

In higher education, course entry is based on meeting academic pre-requisites (such as subject prerequisites and tertiary entrance scores). Whilst we have been told anecdotally that some universities are starting to look more broadly at the skills and experience of potential entrants, we could find no written evidence of this.

Similarly, in VET, literacy and numeracy skills are the only ones that tend to assessed as a pre-cursor to entry. Entrance to an apprenticeship or traineeship is a different case due to the employment component.

Employers tend to use 'proxies' as evidence of non-technical capabilities, such as:

- links to local schools so that they have some knowledge of individual students in the school
- consideration of any prior work experience the young person has
- referrals of young people who are known within the employer's networks
- references
- consideration of the non school based activities of the young person
- interview performance.

However, in some cases they do use direct evidence, such as:

- observation when the young person is on work placement or doing a traineeship or apprenticeship
- school assessments.

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[9]   Prinsley, R., & Baranyai, K. (2015). STEM skills in the workforce: what do employers want. Office of the Chief Scientist, Canberra.

How stakeholders can work together

There are many ways in which stakeholders can work together to support young people in achieving a successful transition into the various pathways, including:

- providing pathways into employment or further VET studies through school-based apprenticeship and traineeship programs or other pre-vocational courses (but only if those courses have the support of industry as a valid pathway)

- through work experience and structured workplace learning programs

- employers providing good recruitment, induction and mentoring processes for new employees

- ensuring all students develop STEM skills at school

- careers fairs and forums, employer and tertiary education provider talks

- delivery of VET courses by trainers with real industry experience.

7. WHAT'S NEEDED FOR SUCCESSFUL PARTICIPATION IN WORK OR FURTHER STUDY?

Issues to consider

One of the key aims of this project was to shed some light on which non-technical capabilities are needed by secondary school graduates to successfully participate in work or further study. In order to do this, there are several issues arising from the consultations and literature that need to be taken into consideration:

- In terms of skills, literacy and numeracy appear to be the most common culprit in complaints of lack of 'readiness' from employers and tertiary education providers

- A lack of the 'right attitude' is probably even more common. It's hard to pin down exactly what the right attitude is, but it is probably well captured in the words of one interviewee as "pleasant, polite and presents well". The issue is perhaps better described in terms of knowing what behaviours are appropriate in a workplace and being able to demonstrate them, especially to potential employers who rate particular attributes very highly when looking for work ready employees

- From a global workforce perspective, Australian graduates are often seen as lacking in problem solving and innovation skills. This points to the need for all students to develop abilities in critical thinking, solving complex problems, and creative problem-solving – all of which are elements of the STEM focus that has been receiving greater attention of late

- Knowledge of what it's like to be a participant in the world of work or in a tertiary education institution and understanding of what is expected in those environments in terms of behaviour and performance are big contributors to young people's success post-school

- Young people need capabilities that will enable them to successfully navigate the short-term and the 'known', as well as the longer-term future and the 'unknown'. This means having non-technical capabilities that enable to them to learn, and to adapt and apply their learning to new situations (i.e. to be independent learners). It also requires emotional capabilities such as courage and resilience.

These issues point to the need for students to explore and prepare for the specific pathways that they intend to pursue post-school, as well as to develop other non-technical capabilities that will enable them to make a successful transition into that pathway and make other successful transitions into the future.

Literature relating to transitions from school to university highlights a few useful points:

u Success at university is highly dependent on an individual's ability to be an independent learner, which includes having:

§ an understanding of how they best learn

§ the motivation to take responsibility for their own learning

§ the ability to work with others to enhance that learning[10]

u Another study[11] identified a three 'intrinsic' factors that have a significantly positive effect on students' transitions to university:

§ Study-related skills, including time management and willingness to seek assistance and guidance

§ Effort-related attributes, such as motivation, commitment and willingness to work hard and interact with others

§ Orientation to the university environment prior to commencing studies

u State school graduates and those from Catholic schools do better at University than elite private school graduates with the same end-of-school tertiary entrance score[12]. Amongst other reasons, one suggestion is that the high pressure, close supervision and narrow focus on tertiary entrance scores at many elite private schools is at the expense of opportunities to develop independent, self-motivated learning skills or the personal and social skills needed for success at university

u A framework for transitions from school to post-secondary career contexts that was developed in the USA focuses on four essential components:

§ Key cognitive strategies

§ The ability to process content knowledge using those cognitive strategies

§ Academic and self-management behaviours

§ Contextual skills and awareness (e.g. understanding the culture of university or workplaces).[13]

There is no similar literature relating to young people's transitions from school to VET, but the USA framework described in the final point above has been developed with consideration of a range of post-secondary school contexts, not just in relation to transition from school to college.

In terms of transitions to work, the consultations throughout the project found widespread agreement that the 'Work Readiness Conceptual Framework' (see page 7) does in fact capture all of the necessary capabilities, including

u foundation skills

u self-understanding

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[10] Zimmerman, B.J. (1986) Becoming a self-regulated learner: Which are the key sub processes? *Contemporary Educational Psychology*, 11, p308

[11] Bowles, A., Dobson, A., Fisher, R & McPhail, R (2011). *An Exploratory Investigation into First Year Student Transition to University*. In Krause, K., Buckridge, M., Grimmer, C. and Purbrick-Illek, S. (Eds.) Research and Development in Higher Education: Reshaping Higher Education, 34 (pp. 61 – 71).

[12] http://theconversation.com/state-school-kids-do-better-at-uni-29155

[13] Conley, D. T. (2010). *College and Career Ready: Helping all Students Succeed Beyond High School*. San Francisco: Jossey-Bass.

- broad industry understanding
- occupation-specific skills and knowledge
- workplace-specific skills and knowledge.

The analysis of different post-school pathways also gave some insights into which foundation skills and aspects of self-understanding were seen as most valuable. They included:

- Literacy and numeracy skills (including digital literacy)
- Problem-solving skills
- Creative and critical thinking skills
- Interpersonal and teamwork/collaboration skills
- Attributes such as resilience and a positive attitude.

A new way of thinking about these skills and capabilities

These findings have led us to think about the non-technical capabilities and the pathway-specific capabilities needed by secondary school graduates to successfully participate in work or further study in terms of their role in enabling successful transitions post-school.

We have called the collection of capabilities '**Tools for Transitions'** and have grouped them under two broad headings:

Development of pathway skills and knowledge

For young people who are pursuing **work pathways** directly from school, these include:

- having the relevant occupation-specific skills and knowledge – which are developed through their academic/vocational studies
- understanding the nature of the industry they intend to enter – which is developed through career exploration activities and work experience or structured workplace learning
- understanding the workplace-specific requirements (including understanding what attributes and behaviours are appropriate and valued) – which is developed through work experience or structured workplace learning and/or during the initial period of their employment.

For young people who are pursuing post-school **study pathways**, these include:

- having the relevant course pre-requisites – which are achieved through their academic/vocational studies
- understanding the nature of tertiary study – which is developed through career exploration activities and opportunities to be exposed to university or VET life
- understanding of course and institution-specific requirements – which are developed through career exploration activities and orientation activities during their initial period at the tertiary education institution.

Application of core skills and knowledge

These are the capabilities to apply core skills and knowledge, which are required by all students. They underpin the development of pathway skills and knowledge, as well as enable individuals to make successful transitions throughout their life. They include the ability to:

- apply literacy and numeracy skills (including digital literacy skills) in 'real life' or further learning contexts

- apply thinking strategies to learning, creating and problem-solving

- take responsibility for one's own learning

- use self-awareness to reflect on choices, behaviour and performance

- use self-management skills to monitor and regulate behaviour and performance

- use social awareness and social management skills to interact with others

- use career development competencies to explore, make and manage career choices.

There are a number of existing national frameworks that provide guidance as to what these core skills and knowledge look like in practice and how they can be developed over time. Students then need opportunities to adapt and apply them in a range of contexts (including authentic work contexts where appropriate) over their time at school.

8. OUR CONCLUSIONS

The frameworks are already there

All of the non-technical capabilities needed to successfully participate in work or further study are already captured in the following four national frameworks:

- General Capabilities from the national curriculum

- Core Skills for Work Developmental Framework

- Australian Core Skills Framework

- Australian Blueprint for Career Development.

Everyone seems to agree that the capabilities described in these frameworks are important – and not only for work or further study – they are also the capabilities needed to successfully participate in life and society. However, they are not getting the attention they need and deserve in any consistent way either within or across Australia's secondary schooling systems.

Being 'work ready' or 'study ready' requires the ability to *apply* skills and knowledge

A key finding of Ithaca Group's previous research on work readiness and employability skills was that the core problem for many young people is not a lack of skills, but a lack of understanding or capability to apply them in a new work context. Our findings in this current piece of research have confirmed this, with both the literature and those we consulted stressing that students need opportunities to adapt and apply their skills and knowledge in a range of authentic contexts (and to reflect on their performance) if they are to become 'work ready'.

The research on successful transitions to university also indicates that students need similar opportunities to develop an understanding of tertiary education contexts and opportunities to develop, adapt and apply the skills needed to be an effective independent learner, if they are to become 'study ready'.

It is therefore perhaps useful to think about these capabilities as 'tools for transitions', as a way of focusing in on what students need to understand and be able to do by the time they finish secondary school, so that they are equipped to make a successful transition to work or further study. These tools for transitions will also equip them with the ability to successfully adapt to new and

changing work and learning environments, many of which we cannot yet imagine, well into the future.

These 'tools for transitions' are needed by *all* secondary school graduates

Our research findings confirm that *all* secondary school graduates need the ability to apply a set of core skills and knowledge in different contexts, as well as to have developed the set of skills, knowledge and understandings necessary for the particular work or study pathway they wish to pursue.

For many students, the pursuit of good academic results means that they miss out on opportunities to develop the broader capabilities needed for successful transitions.

Other students may have missed out on the development of literacy and numeracy skills, or on the development of the skills needed for critical and creative thinking, independent learning and complex problem-solving, which will create significant barriers to successful participation in work or further study.

The experience of Western Australia with the introduction of their new literacy and numeracy requirements has highlighted the fact that barriers to successful participation in work or study start to develop as far back as primary school when students miss out on the development of fundamental capabilities.

All of the necessary capabilities develop over time and they will be developed at different rates by different students depending on the opportunities for experience and reflection and the support they receive. Students will also start from different baselines and some may need additional support to overcome factors of relative disadvantage.

Therefore progress in this development needs to be tracked over time, so that by the end of secondary school all young people have had opportunities and support to build all of these non-technical capabilities and pathway-specific capabilities.

As illustrated in Figure 2 on the following page, all students need to know that these 'tools for transitions' are important and that they need to make the most of opportunities for building them. At the same time schools, in partnership with other stakeholders in their communities, need to ensure that opportunities and appropriate levels of support are available for all students to build these capabilities, regardless of the pathway they intend to pursue post-school.

Recognition also needs to be given to the 'messy' nature of careers, with young people likely to cycle between work and study at various points along the way, or to both work and study at the same time. The tools for transitions are necessary for becoming work ready and/or study ready at all of these points.

Tools for Transitions
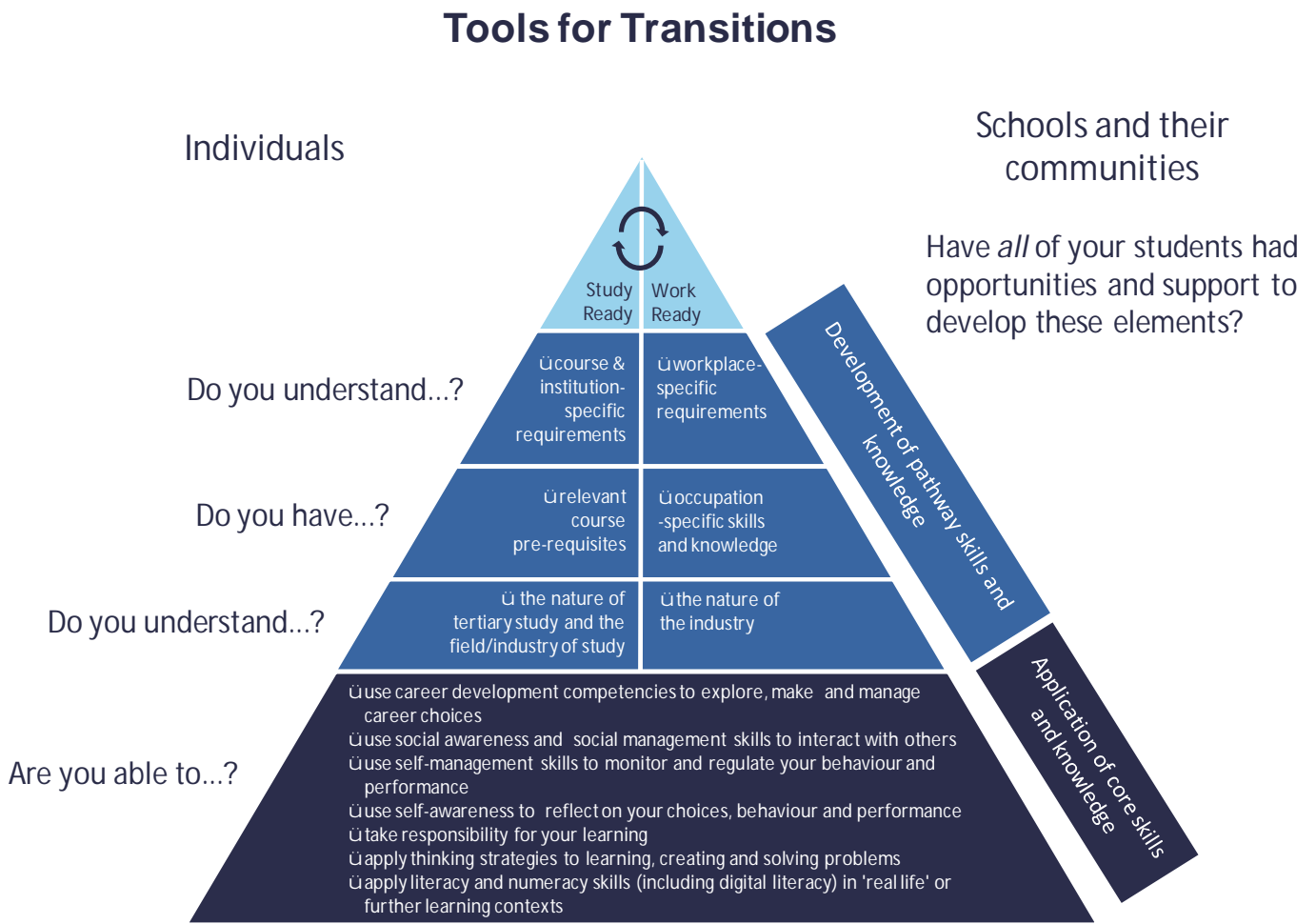
The development of these 'tools' should be everybody's core business

Whilst there is widespread agreement that these 'tools' are important, our consultations alerted us to the fact that there are teachers and schools that do not see the development of them as their 'core business'. Many of those we consulted however were emphatic that schools have a duty to equip young people with them.

The research has shown that the most effective way for schools to assist students to develop these tools for transitions is in partnership with employers, industry, tertiary education providers and other external organisations. Families also need to be engaged in the process as much as possible.

Those involved in consultations throughout the project also stressed the importance of building the development of these capabilities into all aspects of the school curriculum and not consider them to be 'add-ons'.

The table below suggests some of the roles that the various stakeholders might play[14].

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[14] The publication *Being Work Ready – A guide to what employers want*, which was recently released by the Business Council of Australia, also provides a useful way of thinking about the roles that various stakeholders might play

Stakeholders	Possible Roles
Students	u Take responsibility and ownership of their development of tools for transitions u Engage in opportunities for experience, learning and skill development u Reflect on progress towards the development of the necessary tools
Families	u Provide support u Reinforce the importance of the tools for transitions u Help to identify opportunities for experience, learning and skill development
Schools and Education systems	u Support and provide opportunities for all students to develop the tools for transitions u Build a focus on the development and application of the relevant capabilities across all aspects of the curriculum u Equip teachers with the skills and knowledge to help all students to develop non-technical capabilities across the curriculum u Develop networks and partnerships for providing support and opportunities u Track progress over time u Identify and work to mitigate areas of disadvantage
Employers	u Provide opportunities for students to build their experience and capabilities u Work with schools to provide support and opportunities to their students u Make clear which behaviours and attributes are appropriate and valued in the workplace u Appropriately induct, support and mentor young people as they make the transition to work
Tertiary education	u Work with schools to provide information, support and opportunities to their students u Appropriately induct, support and mentor young people as they make the transition to further study
Industry	u Work with schools to provide information, support and opportunities to their students u Assist employers in their efforts to induct, support and mentor young people as they make the transition to work

Action is needed to increase the attention on these tools for transitions

Mechanisms are needed to increase the value placed on, and attention given to, the development of these tools for transitions. While our research found that there was no appetite for national assessment and reporting, the literature and consultations suggest that some form of assessment or measurement would be useful for raising awareness of the importance of these capabilities and for tracking progress over time.

Those who participated in the final round of workshops were very supportive of self-assessment as a means of raising awareness and tracking progress, as well as an avenue for students to develop skills in self-reflection, self-awareness and self-management. They also stressed the need for training and supporting secondary school teachers so that they can all take responsibility for helping students to develop the tools for transitions, as well as the need for examples of good practice that will help schools and teachers in their efforts.

This highlights the need for attention to be given to addressing existing barriers such as school culture, teacher attitudes and lack of capacity and capability within schools.

Our research found that amongst schools, teachers and those responsible for school systems considerable effort is already being put into helping students build these tools. At the same time, many of those consulted recognised that if schools are not held accountable in some way for supporting students to build these tools, then they will be lost amongst the many other pressures and priorities placed on schools.

In recognition of the commonly accepted wisdom that 'what gets measured gets valued', we have drawn some conclusions from our research about the possible uses of measurement:

Measuring individual achievements

- There is growing evidence that it is possible to assess non-technical capabilities in an authentic way (including with the use of technology); it just depends how much schools are willing to spend and whether they think it is worth it

- Depending on the purpose of the assessment and the intend use of the results, assessment at the individual level could be one, or a combination of:
    - § self-assessment
    - § school assessment
    - § external validation (such as feedback from employers).

- Any approach to assessment would also need to recognise that non-technical capabilities are context specific and develop over time, with individuals developing at different rates

- Research shows that the right kind of assessment results can improve communication and motivation and that having concrete data can help teachers become more intentional about fostering these capabilities

- There are legitimate concerns that reporting achievements at an individual level could further disadvantage those that are already at risk, so ideally, individual assessment would only be used for diagnostic purposes and for tracking progress

- Given the importance and different nature of literacy and numeracy skills, there may be particular benefits to be gained from individual assessments of those capabilities – providing that this results in students receiving additional support to help them reach the required standards.

Measuring student outcomes at a school level

- In the same way that some schools gain status for the number of students who get high tertiary entrance scores, measuring how successful students are in terms of employment and tertiary education outcomes is another way in which the value of preparing students for life after school could be increased

- However, tracking student destinations is notoriously difficult. An alternative could be for schools to gather evidence and report on outcomes at a whole of school level (e.g. the number of students who have achievement a specified level of literacy and numeracy or the number who have participated in work experience or structured work-based learning).

Measuring exposure to experiences and opportunities

- Employer and industry group consultations told us that while employers expect students to be coming to them with certain non-technical capabilities, a standardised approach to measuring them and reporting on them would not be of value to employers. However, they do use proxies to identify these capabilities,

such as evidence of work experience (particularly paid employment). So from an employer perspective, it may be more useful to focus on reporting on students' successful participation in opportunities for the development of tools for transitions (e.g. work experience, extra-curricular activities, relevant school activities).

- u This could occur at an individual level (which could be useful in providing evidence to potential employers or tertiary education providers) and/or at a school level (which could help to increase the focus on providing opportunities for the development of tools for transitions).

However, there are many alternatives to measurement in order to bring about cultural change and they also need further consideration. Possible alternatives include implementing benchmarking approaches (see the School Career Development Service Benchmarking Resource for an example[15]), documenting good practice examples that provide clear guidance on what to do and how to do it, developing and promoting a strategy that any school can implement in a way that suits their particular circumstances (several people talked about the 'Mind Matters' mental health initiative for secondary schools as a good example[16]).

9. CONSIDERATIONS FOR A WAY FORWARD

The research has confirmed that there is a need for a greater and more consistent focus on ensuring young people are adequately prepared for work or further study. Focusing on the tools for transitions outlined in this report and on the skills and knowledge involved in building those tools, would be a useful starting point.

What remains to be determined is the best way to increase that focus.

Issues that need to be considered in order to determine an effective way forward include:

1. Language – There are so many ways in which the necessary non-technical capabilities are described across the various frameworks. Many of those consulted are calling out for common terminology so that young people can more easily describe their capabilities to employers and others. We have drawn most of the language in our description of the 'tools for transitions' from the existing national frameworks. However further work needs to be done to test and build agreement around the best ways to describe the various elements.

2. To measure or not – The research has identified many different initiatives that are helping young people to build their readiness for work or further study. However, very few of them have any measurement or reporting built into them. The exceptions tend to be initiatives that are based on a 'portfolio learning' approach in which students document their skills, learning or experience in some way (see examples in Attachment B). There are certainly other measurement tools and approaches that are being used (see examples in the Supplementary Report) and others that are being developed (such as the Foundation Skills Assessment Tool). Further consideration needs to be given to the value and purpose of measurement as a means of increasing the attention given to these capabilities.

3. The level of prescription – Governments have the power to increase the focus on these capabilities simply by prescribing a particular approach or outcome and holding schools accountable to it. However, that may not be the most effective way of ensuring that young people are better prepared for work or study post-school. The research encountered mixed views about the usefulness of a national approach on this issue, although some acknowledged that there was potential for national principles. This report provides a

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[15] https://cica.org.au/quality-benchmarking/

[16] http://www.mindmatters.edu.au/

starting point for further conversation about what might be possible, what might be the most effective way of approaching this and what might be the most useful levers for bringing about change.

ATTACHMENT A:
CONSULTATION LIST

Initial consultations

Australian Industry and Skills Committee (AISC)	Patricia Neden
Australian Council of State School Organisations (ACSSO)	Phillip Spratt, President Di Giblin, CEO
ACT Board of Senior Secondary Studies	John Stenhouse, Executive Officer
ACT Education Directorate	Leanne Wright, Director of Learning and Teaching
TAFE Directors Australia	Rhonda Fuzzard, Senior Manager, CIT Student Support
Business Council of Australia	Megan Kirchner, Executive Director Policy
Queensland Catholic Education	Bob Knight
NT Education Department	Andrew Oliver, Director, Industry Engagement and Employment Pathway
NT Education Department	John Harris, Assistant Director, Senior Schools Curriculum
Tennant Creek High School	Maisie Floyd, Principal
Foundations for Young Australians	Jan Owens, CEO
Australian Chamber of Commerce and Industry	Jenny Lambert, Director, Employment and Training
Australian Industry Group	Megan Lilly, Head of Workforce Development
Victorian Department of Education and Training	Leela Darvall, Manager, Careers and Pathways Unit Daryl Sutton, Manager, VET Unit, Victorian Curriculum and Assessment Authority

Victorian Curriculum and Assessment Authority	John Firth, CEO
NSW BOSTES	Paul Hewitt, Executive Director, Curriculum, Teaching and Assessment / Registrar of Teachers Howard Kennedy Anthony Drew
School Curriculum and Standards Authority Western Australia	Allan Blagaich, CEO Nicole Gazey, Principal Consultant – VET
Queensland Education and Training, Strategic Policy and Intergovernmental Relations	Christopher Roney, A/Executive Director, Tertiary Education and Training
Queensland Education and Training, Teaching and Learning Branch	Anne Schafer
Queensland Curriculum and Assessment Authority (QCAA)	Jacqueline Wilton, Director, Curriculum Branch
NSW Department of Education and Training	Mike Tom, Leader, Rural & Distance Ed, A/g Director, Secondary Education Rosemary Brook, A/Leader, Senior Pathways Secondary Education Robert Lawson, Student Pathways Brendan Gembitsky, Co-ordinator, Work Placement
SA Department of Education and Child Development	Helen Edwards, Leadership Development
SACE Board	Neil McGoran, Chief Executive
Australian Parents Association	Caz Bosch, President
Group Training Australia	Leonie Stanfield, Acting CEO
Australian Curriculum, Assessment and Reporting Authority	Deborah Palmer, Manager, Curriculum

Group consultation participants

St Mary's College	Suzanne Megaw
St Ignatius College	Linda DePoi
St Michael's College	Kevin Woolford
Our Lady of the Sacred Heart College	Julie Stephenson
St Patrick's Technical College	Roanne Berekmeri
Peterborough High School	Jenny Coe
Sacred Heart College Senior	Tony Finamore
Ocean View College	Tracey Wallace
Whyalla High School	Don Gapp, Senior Leader
Mount Carmel College	Robyn Sellars
Northern Adelaide State Secondary Schools' Alliance (NASSSA) Dept for Education & Child Development	Heather Bitter, Senior Leader, Student Pathways
Marcellin Technical College	Peter Chambers
Policy Planning and Research, Department of Training and Workforce Development	Karen Purdy, Manager, VET System Policy
WA Chamber of Commerce and Industry	Linda Winter, Education & Training Officer
Teaching and Learning Services, Department of Education	Shirley Parer, Principal Consultant

Department of Training and Workforce Development	Anna Wildy, Manager, Apprenticeship and Traineeship Policy
Department of Education	Janet Connor, Education Officer, Teaching and Learning, Pathways and Transitions, Teaching and Learning Services
Association of Independent Schools of Western Australia	Wade McLeod, VET Consultant
Catholic Education	Genevie Baker, Coordinator Curriculum K-12, VET, Arts, VET Funding, Catholic Performing Arts, Teaching & Learning Tea
Ursula Frayne Catholic College	Maureen Johnson, VET and Career Coordinator
School Curriculum and Standards Authority	Angela Kiely, Principal Consultant, Vocational Education and Training
School Curriculum and Standards Authority	Nicole Gazey, Principal Consultant, Vocational Education and Training

Final Workshop participants

NSW Department of Education	Lila Mularczyk, Director Secondary Education
Senior Pathways in Secondary Education (NSW)	Sue Maclean, R/Coordinator Vocational Learning
Senior Pathways in Secondary Education (NSW)	Robert Lawson, Student Pathways Advisor
Macquarie Park Operational Directorate	Hanna Kemp, Senior Pathways Officer
Macquarie Park Operational Directorate	Rhonda Anderson, Senior Pathways Officer
Futures Learning Unit, NSW DoE	Susan Tickle, Coordinator Teaching and Learning
Aurora College	Katherine (Katy) Klados, Deputy Principal

Northern Adelaide State Secondary Schools' Alliance (NASSSA) Department for Education and Child Development (DECD)	Heather Bitter, Senior Leader, Student Pathways
St Patricks Technical College	Roanne Berekmeri
Sacred Heart College Senior	Tony Finamore
Marcellin Technical College	Peter Chambers
Australian Science & Maths School	Glenys Thompson, Deputy Principal
KIOSC	Kate Kent Evans, Director
Northern Bay P-12 College Goldsworthy Campus	Ken Massari, Principal
Foundation for Young Australians	Rachel Mutch, Manager Research Projects + Operations Research, Policy and Public Affairs
Victorian Curriculum and Assessment Authority	John Firth, CEO

ATTACHMENT B:
SUMMARY OF EDUCATION INITIATIVES THAT WERE EXAMINED

The table below provides an overview of a range of programs delivered in various states/territories and schools, with the aim of developing non-technical capabilities and developing young people's 'readiness' for work or further study.

Type of approach	Systemic or local?	Name of initiative	Key features
Career Development	Statewide WA, but voluntary	Career Development Framework	A career development framework for Yrs 7-12 that incorporates: • Career learning • Individual pathway planning • Portfolios The framework is based upon selected elements of the ABCD, with particular elements of focus (and supporting resources) for each year level.
Career Development	Statewide VIC, but voluntary	Victorian Careers Curriculum Framework	A framework for Yrs 7-12 which is based on the eleven competencies from the ABCD Includes activities, templates and resources for teachers to implement career education activities Evaluations of the framework have found it to be user-friendly and easily adapted to the needs of particular cohorts.
Career Development	Statewide ACT, but voluntary	Pathways	Online career planning portal plus resources for teachers Modules relating to career development and work readiness skills and knowledge are covered through three different 'plans': • Yrs 5-6 Plan • Pathways Plan (nominally Yrs 7-10) • Yrs 11-12 Plan The pathways are mapped to the CSfW and the ABCD
Career Development Preparation for Structured Workplace Learning	National with specific partnerships in WA and VIC	The Beacon Foundation	The Beacon Foundation has a Three Pillar Approach and looks to address youth unemployment and the range of societal hardships that stem from it. Programs offered include: Core Community Model - is a holistic approach to addressing low school retention rates, engagement and transitions in disadvantaged schools. Beacon acts as a conduit to bring the school, community and local business together. Over a three year period, it coaches the key players through the process to work together on shared objectives, delivering a

Type of approach	Systemic or local?	Name of initiative	Key features
			range of activities that enable young people to be work ready. High Impact Programs (HIP) - Work Readiness Programs, targeted to specific age groups spanning Years 7 -12, to prepare and motivate students for a successful transition from education to meaningful employment. These involve employers, and build basic life skills ranging from personal awareness, through to dress codes, building a CV and the development of social skills in the workplace. Real Futures Generation (RFG) - students learn about job opportunities in interactive classroom sessions or in the workplace environment and those who develop an interest in the job opportunities are then given the support needed to secure it.
Career Development	National	National Indigenous Leadership Academy (NIYLA) Foundation for Young Australians	The academy includes a range of initiatives to develop leadership skills and explore personal values and future aspirations. National Gathering – An annual gathering where students identify issues that they want to see change and go about making that change. Local Forums and Workshops – community-based events that support Indigenous young people to develop their leadership skills and explore their personal values and future aspirations. Professional Network – a national community of Indigenous professionals that supports them to use their chosen career or educational journey to create positive social change.
Career Development	National	$20 boss Foundation for Young Australians	$20 Boss is an in-school challenge run by teachers, which provides your students $20 of start-up to create their own business. At the end of the program, students are encouraged to pay back the start-up money, with a $1 legacy payment. $20 Boss has been designed to align with the National Curriculum across English, economics, business and mathematics.
Career Development	Local VIC	Northern Secondary College (Geelong)	All students have a CAP (career action plan) There are a suite of programs and activities which build year on year from year 9 to 12 at the Goldsworthy campus and there are feed in activities at the junior campuses. The school partners with a number of organisations to assist in program delivery. The aim is to ensure all students are given the opportunity to better understand the nature of employment, careers and links between education and employment.

Type of approach	Systemic or local?	Name of initiative	Key features
Career Development	Local VIC	Templestowe College (Melbourne)	The Templestowe college model has been evolving over the past few years and is in the process of reviewing its transition and careers approach.
			Students include career plans and work experience in their individual learning plans.
			There is a strong focus on developing or facilitating a student's entrepreneurial capabilities and through the broader range of subjects and electives students develop skills such as problem solving, digital competency, team working and communication.
			The college encourages students to take up employment opportunities in the school ranging from school maintenance to managing and operating a café, office administration.
Career Development	International, in selected schools	International Baccalaureate (IB)	The IB Diploma Program (DP) and Career-related Program (CP) both incorporate elements focused on developing and assessing non-technical skills
			There are 62 IB accredited schools in Australia that currently offer the DP and one that offers the CP
			The DP incorporates three core elements that must be completed by all students along with their selected subject courses:
			· *Theory of knowledge*, in which students reflect on the nature of knowledge and on how we know what we claim to know.
			· An *extended essay*, which is an independent, self-directed piece of research, finishing with a 4,000-word paper.
			· *Creativity, activity, service*, in which students complete a project related to these three concepts.
			The CP incorporate four core elements along with subject courses and a career-related study:
			· Personal and professional skills
			· Service learning
			· Reflective project
			· Language development
			Elements of the DP are externally assessed by IB, while the CP assessment is conducted by the school
Portfolio learning	Statewide SA and NT	Personal Learning Plan	The personal learning plan must be completed by Yr 10 students to prepare them for Yrs 11 and 12 and help them with subject selection
			The seven general capabilities of the national curriculum underpin the planning process

Type of approach	Systemic or local?	Name of initiative	Key features
			There are three components that are assessed through a folio: · Evaluation of current skills and abilities · Identify goals and developing strategies to achieve them · Understanding and developing the capabilities relevant to learning Students must then present their learning to a group of fellow students, parents and staff, providing evidence to support their points The NT Government would like to see the folio completed online so that it can be used to show potential employers etc
Portfolio learning	Statewide SA	Research Project	The research project enables senior secondary students to explore an area of interest in depth, while developing and demonstrating skills such as selecting and critically evaluating sources of information, making decisions, evaluating their own progress, being innovative, planning, synthesising, researching and project managing. Assessment is based on the seven general capabilities of the national curriculum Students in Yrs 11 and 12 must complete the Research Project and depending on which stream they choose, it may be used to contribute to their ATAR score It is assessed by schools and moderated by the SACE Board There are some concerns amongst schools about the amount of work required by schools to successfully implement and support the Research Project in relation to the number of credit points it provides towards certification
Portfolio learning	NT	Young Indigenous Leadership Program (IMPACT) Foundation for Young Australians	IMPACT is a three year leadership program for people in Years 10 – 12 in the Northern Territory. IMPACT focuses on social action, skill development, and positive networks, empowering Aboriginal and Torres Strait Islander students to be active community members and role models while assisting them to complete Yr12.
Preparation for Structured Workplace Learning	Statewide NSW, in schools that have high numbers of refugee students	Ready Arrive Work	This program is specifically for refugee students in Yrs 10-12, to help them to develop employability skills and prepare them for work experience and work placements The program incorporates a range of learning activities, industry visits, and where possible, work experience

Type of approach	Systemic or local?	Name of initiative	Key features
Preparation for Structured Workplace Learning Teacher Professional development and support	Largely delivered online	World of Work Foundation for Young Australians	This is a program that has been in place for over six years with a focus on low SES but available nationally. It is a partnership with corporate organisations where early to mid secondary school students are exposed to workplaces and includes a range of online tools for students and staff. Staff are able to access materials on the latest careers education trends as well as 'on-the-ground' experience in delivering the program.
Preparation for Structured Workplace Learning	Across QLD in selected schools	Bluedog Training Skills for Employment Program	This is a pre-apprenticeship program for school students, in which they complete a Certificate I or II in Construction or Engineering. It incorporates specific modules and activities to develop work readiness The work readiness skills are very concrete and specific (e.g. asking questions, keeping your work area clean and tidy) and have been identified from surveys of the employers Bluedog Training works with in apprenticeship programs
School-wide initiative	Selected schools in VIC	Knox Innovation, Opportunity and Sustainability Centre (KIOSC)	This purpose-built, state-of-the-art facility offers Yrs 7-12 students from six Victorian schools the opportunity to develop a better understanding of career opportunities and enhance employability skills Informed by industry, it exposes students to the latest in technology, training and employment pathways, including a strong focus on developing an interest in STEM and on solving real-world problems. The ABCD and CSfW have been used as references in the development of programs Programs for Yrs7-10 are aligned with school curriculum, with a particular focus on Science, Design and Technology, Civics and Citizenship and Sustainability and programs for Yrs11-12 are focused on specific VCE, VCAL and VETiS courses. Whilst assessment is not conducted outside of specific course assessment requirements, staff report that there appears to be a lifting of student aspirations
Structured Workplace Learning	Statewide VIC	Structured Workplace Learning (SWL) Portal	The portal (which was only released in May 2016) was developed to improve access to SWL for students undertaking VET and VCE or VCAL programs in Victoria. It provides information and resources for students and parents, schools and teachers, and host employers and incorporates a search function that enable students to search for a suitable work placement Placements are supported and co-ordinated by the state's 31 Local Learning and Employment Networks

Type of approach	Systemic or local?	Name of initiative	Key features
Structured Workplace Learning	Statewide NSW, for specific VET courses	Structured Work Placements	Work placement is a mandatory HSC requirement for certain VET courses in NSW schools. Students must undertake preparatory activities prior to their placement, including OHS, communication in the workplace, dealing with others and other topics relevant to their course of study

The Department has also developed an online resource (go2workplacement.com) that includes a range of resources and self-assessment tools for students (based on the old 2002 employability skills framework) to help raise students' awareness of these skills.

Work placement opportunities are co-ordinated by a network of Work Placement Service Providers across the state. |
| Structured Workplace Learning | Local school, ACT | Trade Skills Centre | Delivery of Certificate III in Early Childhood Education and Care at Trinity Christian School

The school has a purpose built training facility as well as an Early Childhood Centre on campus, where students can do paid casual work (under supervision)

Training is delivered by an RTO, meaning that students are trained by trainers with industry experience, in an authentic environment in an industry that will have jobs growth |
| Structured Workplace Learning | Across QLD in certain industries and certain schools | School to Work Transition Program | The program 'recruits' Year 12 students and trains them so that they are work ready for a particular industry. There are currently 5 different industry programs, each of which includes:
· Development of industry awareness
· A nationally recognised VET qualification
· Structured workplace learning
· Employment opportunities

All programs are industry and/or employer endorsed and 60-70% gain employment at the end of the program

Students have to maintain a self-assessment 'log' during their workplace learning, where they document their skill development and achievements. This is validated by their supervisor. |
| Teacher Professional development and support | Statewide, QLD for selected industry areas | Gateway to Schools | The Gateway, located at the University of Southern Queensland (Stanthorpe campus) was established to engage with schools and support them and teachers to deliver VET programs in the Food, Wine and Tourism industries

They provide resources and advice to teachers, including in relation to the work readiness skills needed for those industries and in relation to engaging with local employers |

ATTACHMENT C: EXPLORATION OF FIVE POST-SCHOOL PATHWAYS

1. BUILDING AND CONSTRUCTION

Background

As recently as June 2016, the Master Builders' Association highlighted that the construction industry is the largest full-time employer of Australians under 24 years of age. It also trains the largest number of apprentices with 48,200 Australians enrolled in construction training across Australia. Master Builders Australia has set a target of 100,000 building trade apprentices in training by 2020 and a reduction in the 50% drop out rate.

Employees typically enter the industry in one of three ways:

- as an apprentice with on-the-job training and formal learning,
- after completing trade relevant but non apprenticeship learning post secondary education, or
- via an entry-level construction role with on-the-job training.

What non-technical capabilities are needed to be successful in this industry/course of study?

Employers in the industry talk about the need for:

- Basic numeracy and literacy - descriptions vary as to exact level required by employers, with few references to the Foundation Skills Framework
- Drivers license and access to a vehicle,
- Exposure to the industry,
- Experience of vocational training,
- Working safely,
- Self-motivation,
- A positive attitude to learning,
- A healthy lifestyle (including regular sleep patterns)
- Resilience to short-term challenges.

The industry recognises that it is a challenging environment, including early starts, tight deadlines, high physical demands and sometimes challenging interpersonal demands, therefore a high level of workplace resilience is needed.

What evidence do employers or tertiary providers use to determine whether young people do have these capabilities?

Pathways for school leavers to employment in the construction industry are variable and depend on a number of factors - availability of apprenticeships locally, employment conditions in the local areas, existing relationships and networks between schools and employers, and opportunities for work experience. As such there is a tendency towards creating local solutions and networks, which

provide employers with an opportunity to get to know which students have the capabilities they are looking for.

How can stakeholders best work together to ensure young people make a successful transition from school into this industry?

The pathway from secondary school to the construction industry via an apprenticeship and/or VET courses undertaken at school is one that is paved with a variety of programs, has been reviewed at various stages and is structured to support employers and employees alike.

Some examples of the ways in which the stakeholders are working together to prepare young people for entry into this industry are:

- u The Master Builders Association recognises the role of families in young people's career decisions and has developed factsheets such as "The construction apprenticeships: what parents need to know".

- u The NSW state government has introduced an initiative to help young people make informed decisions about which apprenticeship is right for them. A five day 'Trade Readiness' program developed by TAFE NSW targets NSW senior school students and people who have left school and are looking to undertake an apprenticeship. This program promises improvements in retention and completion for new enrolments into trade pathways.

Although large numbers of secondary school learners are currently undertaking VET courses at school, only a minority actually complete nationally recognised qualifications and only a small proportion articulate into full-time construction trade apprenticeships.

Recommendations made by the Construction and Property Services Industry Skills Council (ISC) Board in August 2014, included the need to:

- u encourage schools to seek partnerships with employers, industry associations, private RTOs and TAFE Institutes to deliver VET courses in schools

- u advocate to government for incentives to be provided to drive these partnerships in conjunction with existing trade training centres in schools where facilities already exist or through ISCs along with industry associations rather than invest in infrastructure which duplicates currently available facilities.

Initiatives and programs that have shown to be successful have consistently been driven by the strength of relationships of the stakeholders: employers, industry associations, RTOs and schools. It is apparent from our work, that the stronger the relationships and the clearer the communication, the more successful the initiative and the eventual employee.

2. RETAIL AND HOSPITALITY

Background

Technological changes, behavioural changes and competitor changes have reshaped retail as we know it. Consumers now want convenience, originality and a uniquely personal retail experience.

Retail Trade is the second largest employing industry in Australia, employing 1,240,600 people (or 10.7 per cent of the total workforce) as at August 2014.[17] Retail Trade is also the largest employing industry of workers aged 15-24 years. This means on average, retail workers are much younger than the workforce as a whole, with 33.4 per cent of Retail Trade workers aged between 15-24 years, compared with 15.4 per cent across all industries.[18] The retail industry has a high rate of job turnover due to workers moving into other occupations or leaving the labour force to complete study or to travel, in particular due to its young, part time employment profile.

Technology is also changing the face of the tourism, travel and hospitality industry. Unlocking the industry's potential to be a super growth area for the Australian economy is dependent on delivering outstanding customer experiences every time. Social media is becoming a deciding factor in consumers' decision making with more and more customers using digital technologies to research and book restaurants, flights, hotels, event tickets, tours, etc. They expect the service online to be of the same high quality as it would be in person.

A large proportion of workers employed in the hospitality industry are aged between 15 and 24 (43.0 per cent compared with 15.4 per cent for all Australian employment as a whole)[19]. The results of the Department of Employment's *Surveys of Employers' Recruitment Experiences*, conducted in the 12 months to June 2014 found the hospitality recruitment rate (28 vacancies per 100 staff) was almost double the average across all industries.[20]

What non-technical capabilities are needed to be successful in this industry/course of study?

As retail environments introduce greater levels of technology, there is an expectation that sales staff will have a deeper level of product knowledge, as well as advanced problem-solving skills and digital literacy. There is also a growing need for staff to have data analysis skills to understand and respond to the preferences of individual customers, and to have the specialist skills required to access and implement new technology solutions.

Sales staff need more sophisticated interpersonal skills to engage customers and the capacity to provide a unique and compelling experience for them. Many retail sub-sectors (e.g. fashion and technology) look for employees who portray their brand, seeking a "fit" between the aptitude and attitude of the young person, with the product image the organisation is trying to sell.

Hospitality employers believe good candidates for the industry have the right attitude and feel that a deficit in this area can be made worse if young employees don't feel their contribution is valued. It makes young people unenthusiastic about their jobs and more likely to leave the industry. Employers also consider customer service and 'soft skills' such as interpersonal and teamwork skills to be important.

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[17] Australia. Department of Employment. (2014). *Industry employment outlook reports. Retail Trade*. Labour Market Research & Analysis Branch, Canberra, A.C.T

[18] Ibid

[19] Australia. Department of Employment. (2014). *Industry employment outlook reports. Accommodation and Food Services*. Labour Market Research & Analysis Branch, Canberra, A.C.T

[20] Ibid

Key skills required by employers in the hospitality industry for entry positions include: decision making and problem solving, customer service, complaint handling and communication skills, as well as a strong foundation of basic literacy and numeracy skills. The industry requires this literacy and numeracy capability to be functional in the work context (for example the ability to read a form quickly, or to have sufficient mental arithmetic ability to identify potential mistakes, as distinct from the ability to complete mathematical tasks as part of the job or being able to write a letter).

What evidence do employers or tertiary providers use to determine whether young people do have these capabilities?

Employers use a range of pre-employment selection techniques to make recruitment decisions about young people. Examples include:

- KFC uses a 30-40 minute problem-solving quiz as a component of their pre-employment process in conjunction with other selection tools (the application form and/or interview). They look for "people who are fun and friendly, have a positive attitude, enjoy working in a team and take pride in their appearance".[21]

- McDonald's Crew Audition involves a 15 minute face-to-face interview, followed by 15 minute activity in a customer facing area of the restaurant. McDonalds provide a list of ten skills they want prospective employees to bring to the table, nine of which could be categorised as 'soft skills' (e.g. handing out orders to customers or meeting and greeting customers).[22]

- IKEAs Cultural Fit Quiz gives candidates an idea of how comfortable they might be within the culture of IKEA. It covers elements such as customer engagement, service and work ethic, sustainability beliefs, and team work – the result of which is progressively presented as furnishing a lounge room. The more furniture = the more suitable the candidate is.[23]

How can stakeholders best work together to ensure young people make a successful transition from school into this industry?

Attracting and keeping staff who can offer service at the right level calls for good recruitment and induction processes. According to industry, newcomers often don't know what will be expected of them in their jobs and therefore mentoring is crucial for new employees to develop their skills. Employers report greater success with induction and ongoing training programs that systematically and explicitly instruct young workers about the skills, behaviours and attitudes the employer needs. This ensures that the employee is clear about the expectation and the standard of performance that the employer requires them to meet.

There is industry support for pre-vocational courses for the retail and hospitality sectors, which could be delivered at school. The focus of these courses should be on 'people skills', rather than 'technical skills' and courses should not be aligned to job outcomes. Such courses would provide students with a broad foundation in areas such as:

- working in a team

- clear communication

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[21] http://www.kfcjobs.com.au/team/faq.aspx

[22] https://apply.mcdonalds.com.au/public/index.cfm?action=showPublicContent&assetCategoryId=2462

[23] http://www.ikea.com/ms/en_AU/rooms_ideas/fitquiz09/index.html

- cooperativeness
- dealing with difficult people
- basic industry contextualised numeracy and literacy skills
- developing a work ethic
- personal presentation
- interpersonal skills including negotiation skills.

Some success is reported in VET that is delivered and assessed through a partnership between the school and the industry, in particular where the RTO trainers and assessors are still regularly working in the industry. The authenticity of this direct connection with industry appears to be a key factor in student motivation to develop industry-valued skills, as well as increasing the likelihood of students gaining employment following the completion of their program through the networks and referrals of their RTO trainer/assessor.

The suggestion of changing the traditional approaches to providing careers information to students about the opportunities in retail and hospitality was also mentioned (web sites, pamphlets, large career expos and students attending by the busload). Recent initiatives involving younger industry workers presenting their stories at boutique careers events targeted at the service industries have proven a more successful model of generating student interest in considering career options in hospitality and retail.

3. SCIENCE

Background

Technological disruption is already leading to massive changes in occupations. Some will change their nature, due to increases in computing processing power and innovation. Others, in many areas of advanced manufacturing, will grow by satisfying demand for high-end products – particularly to the emerging middle-classes in developing countries. Yet others will disappear altogether due to even more outsourcing to other countries, artificial intelligence, penetration of robot technology across many industries, or to technologically-driven obsolescence of 'intermediary' occupations.

As a result, the current trend to a 'bifurcation' of jobs will occur. The 'middle segment' comprised of low-to-medium skilled jobs will continue to shrink – what is called the "from onion to hourglass effect" – and many jobs that were previously 'low-skill' will require more advanced skills. There will still be a need for people with high levels of skill, and for people to perform many manual functions. However, even some jobs that require a physical presence and/or manual dexterity are at risk, although those jobs that are hard to program (e.g. those involving creativity) are safer.

Employers seem to understand this: recent research by the Chief Scientist has indicated that employers are looking for staff who are good at critical thinking, solving complex problems, and creative problem-solving.[24] These skills, in theory anyway, should be developed by students in STEM courses – courses in science, technology, mathematics and engineering.[25] Enrolments in these courses have, in fact, been increasing over the last few years.[26]

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[24]   Prinsley, R., & Baranyai, K. (2015). STEM skills in the workforce: what do employers want. Office of the Chief Scientist, Canberra.

[25]   STEM has been defined as "numeracy and the ability to generate, understand and analyse empirical data including critical analysis; an understanding of scientific and mathematical principles; the ability to apply a systematic and critical assessment of complex problems with an emphasis on solving them and applying the theoretical knowledge of the subject to

There is, however, some confusion around what people mean when they call for an increased awareness of the importance of 'STEM' subjects. The term is often interpreted as meaning that more students should be majoring in these subjects, as they are subjects that are needed as a foundation for skills to cope with technological advances. However, while this is well and good to the extent that the labour market can absorb such graduates, this is not really the most important focus, as will be explained below.

What non-technical capabilities are needed to be successful in science-related studies and higher education more broadly?

The discussions around 'STEM' have led to the realisation that all students (regardless of their speciality) need to acquire skills and abilities such as understanding how to identify and understand non-routine problems, how to develop approaches to solving such problems. This is a major shift from the traditional focus of STEM courses – it's a change from merely showing students how to obtain the answer to problems, to guiding them to develop an understanding of the way problems are constructed.

This is the key to the 'STEM' issue: it's around how best to help all students – not just those students who might be proceeding to enrol in STEM subjects at university – to develop these abilities. And OECD studies have shown that whilst Australian students perform relatively well in knowledge, they perform more poorly in problem-identification, problem-solving, and knowledge transfer: precisely the skills that will be increasingly needed.

This is consistent with recent research on the way that science is perceived by society more broadly.

What evidence do higher education providers use to determine whether young people do have these capabilities?

Our research on this question has uncovered considerable work on desired learning outcomes from science courses and what science graduates do with their degree (the 'outcome' end of higher education) as well as research on work-integrated learning (part of the 'process' in higher education); but little on the 'input' end. Available information is focused very much on subject pre-requisites for university science courses, and even the published information on science degree bridging courses (which might have been useful proxies) do not yield useful additional insight.

No evidence can be found to suggest that universities attempt to measure the skills listed in the section above, or to attempt to discover whether applicants have, for example, an inquiring mind – although the latter is mentioned briefly in a Graduate Careers Council of Australia advice document for students.

How can stakeholders best work together to ensure young people make a successful transition from school to science-related higher education?

A move in this direction will require a massive shift in the focus of school curricula, although at least one state has made a promising start in this area. South Australia has established a 'Numeracy and Literacy (Birth to 18) strategy', which is designed to ensure that students at school develop the following advanced skills:

ᴜ   actively participate in their learning

practical problems; the ability to communicate scientific issues to stakeholders and others; ingenuity, logical reasoning and practical intelligence"
Taken from: UK Parliament (2012), Science and Technology Committee – Second Report: Higher education in Science, Technology, Engineering and Mathematics (STEM) subjects

26   Data from 2014 – most recent available.

- u   make decisions based on sound evidence
- u   skilfully solve problems
- u   deal proactively with new situations
- u   communicate effectively in a variety of forms
- u   collaborate with others.[27]

4. MANUFACTURING

Background

Manufacturing is the fifth largest employing sector in the Australian economy and employs over 900,000 people and accounts for 7% of Australia's total output.

The manufacturing sector has undergone major change in the last twenty years. Factors such as the advent of global competition, major technological change and productivity improvements have contributed to significant restructuring and changing skill demands.

Opportunities for lower skilled workers are in decline with the percentage of labourers and machinery operators and drivers declining from 40% to 31% in the last twenty years. Over the same time period managers and professionals have grown from 16% to 25% of occupations in the manufacturing sector. 27.5% of the workforce have Certificate III or IV qualifications and 17.1% have a Bachelor degree or higher.

In 2014 manufacturing employed 105,900 young people aged between 15 – 24 years. This is 5.9% of all employed young people meaning manufacturing is the fifth largest sector providing employment for young people.

Young people entering the manufacturing sector have a choice of pathways including through apprenticeships, traineeships, certificates and diplomas as well as degree programs. Many are introduced to the employment potential and skills required through school based programs commencing in the later years of secondary school including prevocational courses and VET tasters.

What non-technical capabilities are needed to be successful in this industry/course of study?

Historically the emphasis has been on technical skill development, however, with the rapidly changing nature of work and work organisation, the increasing digitisation of tasks and a shift into advanced manufacturing there has been a growing emphasis on the importance of non-technical skills, attitudes and behaviours as well.

The 2015 Manufacturing Skills Australia (MSA) Environmental Scan highlighted the importance of a highly skilled and flexible workforce to the success of Australian manufacturing. It noted that the skill needs of the sector are changing and that 'people who can adapt, problem solve, think creatively and work across traditional skill boundaries are needed'. Australian Jobs 2015[28] also reinforces the importance of these non technical skills. The report notes employers are looking for "people who can communicate effectively; have teamwork and problem-solving skills; show initiative and enterprise; can plan and organise work; and have good capabilities in working with technology".

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[27] https://www.decd.sa.gov.au/teaching/curriculum-and-teaching/numeracy-and-literacy/challenge-3-powerful-learners

[28] https://docs.employment.gov.au/documents/australian-jobs-2015-publication

The report also noted the importance to employers of a range of personal attributes including: "loyalty, commitment, honesty and integrity, enthusiasm, reliability, good personal presentation, common sense, positive self-esteem, an ability to deal with pressure, motivation and adaptability."

Research by organisations such as the Australian Industry Group and the Business Council of Australia confirm that employers are looking for more than a set of technical skills when they recruit young people. Behaviours such as being collaborative, flexible, resilient and self aware were all identified as important.

According to the Australian Industry Groups, low levels of literacy and numeracy remain a concern in the manufacturing sector. The absence of these foundation skills inhibits a young person's progress in the workplace and acts as a break on their broader participation in society.

The Department of Employment skill shortage research found that having the relevant qualification of itself was not sufficient for employment if the applicant could not demonstrate they had some or all of these non-technical skills.

Discussions with industry association representatives and employers suggest a student is likely to make an easier transition and be successful where they have:

- a genuine interest in the manufacturing and the range of jobs available;
- a level of self awareness and resilience
- sound foundation skills with numeracy and digital literacy becoming more important
- appreciation of the basic values and behaviours expected in the work place
- technical skills at the level expected for the level of education and training
- Non technical skills e.g. ability to collaborate, problem solve, communicate.

What evidence do employers or tertiary providers use to determine whether young people do have these capabilities?

Employers in the manufacturing sector are using a range of tools to help them better understand the range of capabilities, attitudes and behaviours of the young person entering the workplace. These include:

- Employer links to local schools such that they are aware of students in the school
- Observation when the young person is on work placement or doing a traineeship or apprenticeship
- Consideration of any prior work experience the young person has, especially if it is in a customer service role
- Referrals of young people who are known within the employers networks
- References
- School assessments
- Consideration of the non school based activities of the young person
- Interview performance.

How can stakeholders best work together to ensure young people make a successful transition from school into this industry?

Parents, family and teachers, as well as employers, all have a role in developing young people's knowledge of the world of work and the specific characteristics of employment in different industry sectors.

As young people make education and training decisions as early as year 9 at school which will impact on their ability to have a successful work life and participate in society more broadly, it is important that schools take a proactive role in improving young people's work and industry knowledge.

Through this study we have become aware of a range of different approaches and initiatives to support young people's learning about work and different industries and career options. These include careers fairs and forums at schools, work placements, employer sponsored workplace problem solving opportunities for students in later years of school, and formal partnerships with organisations such as The Smith Family, Brotherhood of St Lawrence and Foundation for Young Australians to provide structured opportunities to be in workplaces and learning about the industry

As well what has become apparent is access to such initiatives is not available to all students and levels of support vary significantly.

While some suggest young people should be able to "do the job" when they are recruited most employers understand that an employee will need support and opportunities to learn on the job.

The 2015 MSA environmental scan noted employers are "grappling with how to bring out the best in young employees. Those who have experienced success claim that mentoring is key to helping young people settle into the workforce."

While it is a major resourcing challenge both in schools and in the manufacturing sector (given many employers in the manufacturing sector are sole traders or small businesses employing less than 20 people) expanding access to a programs and initiatives that build young people's knowledge of the world of work and nature of the manufacturing sector is important in supporting young people making a successful transition.

5. EARLY CHILDHOOD

Background

Early childhood education in Australia is not compulsory and is delivered to children through a range of settings, including childcare centres, family day-care and pre-schools (also referred to as kindergartens in some parts of Australia) in the year before full-time schooling.

Australian Children's Education and Care Quality Authority guides the implementation of the National Quality Framework. The National Quality Framework (NQF) sets out minimum qualification requirements for educators working in children's education and care services.

Early childhood teachers play a vital role in the early childhood sector to support the learning, development, health and wellbeing of young children, including babies and toddlers.

Early childhood educators were previously known as kindergarten assistants, child care workers or child care assistants. The new title reflects the importance of play-based learning in fostering children's growth and development in their early years.

Nationally, all educators must have, or be actively working towards, at least an approved certificate III qualification.

What non-technical capabilities are needed to be successful in this industry/course of study?

The sector looks for the attributes and or/ skills necessary to develop and maintain open and collaborative relationships with all families, staff members and the wider community. In genuine partnerships, families and early childhood educators:

- value each other's knowledge of each child
- value each other's contributions to and roles in each child's life
- trust each other
- communicate freely and respectfully with each other
- share insights and perspectives about each child
- engage in shared decision-making.

As the requirement to be 'at least working towards an approved Certificate III qualification' provides a pathway for school leavers who may not yet have completed a relevant qualification, employers may also be looking for demonstrated ability to learn and to develop skills on the job.

What evidence do employers use to determine whether young people do have these capabilities?

Employers will gather much of their information on prospective employees from the application and interview process, including:

- evidence that the young person meets entry requirements for the minimum qualification e.g. numeracy and literacy required to commence the Certificate III
- references provided and observations and/or reviews of work placement
- interview performance specific to interpersonal connection and communication
- consideration of any prior work experience.

Young people will therefore need to be able to adequately articulate their experience and capabilities during the application and interview process.

How can stakeholders best work together to ensure young people make a successful transition from school into this industry?

Schools, RTOs, universities and employers need to work together to provide:

- access to information of what a typical day looks like
- access to traineeship roles
- real industry professionals to lead education and training delivery
- access to a variety of work environments for placements.

As school leavers are able to work towards an early childhood qualification once in employment, the above information and the forums where this information is disseminated (e.g. career days) will be important to helping schools, tertiary institutions and employers to create more reliable, tangible, consistent and meaningful pathways.

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