

Beyond traditional apprenticeship training

An analysis of current workplace skills, practices and training arrangements for the WA Cabinet/Furniture Making Industry



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1.0 Executive Summary

The use and integration of technology in the furnishings industry is developing at a rapid rate and together with changes in consumer demand for more personalised and customised products, is driving businesses to get more out of their operations and tradespeople. The training system has a major role to play in supporting industry change by ensuring the skills it delivers to new and existing workers is meeting the needs of a growing and innovative manufacturing sector – now commonly referred to as ‘Advanced Manufacturing’.

The digital age has major implications for the workforce. Recent research reveals that 44% of current Australian jobs are at risk of being affected by automation and new technologies¹, and whilst it is becoming clear the occupations likely to disappear, it is unclear what new job roles will be created. Significant research suggests that one way to prepare for the digital age is to improve science, technology, engineering and mathematics (STEM) skills.

The purpose of this study is to consider how the introduction of automation and new technologies are impacting on workplace skills in the Furnishings Industry. To achieve this a steering committee was established, a literature review undertaken, and a detailed survey developed and administered to employers. General domains of questioning in the survey included: information about the business, recruitment experiences, changes to workplace skill requirements (including literacy, STEM, and soft skills), and any new and emerging job roles.

The survey gathered data from nineteen businesses with a total employment pool of 371 employees. Of the businesses surveyed, 42% employed less than five employees, 16% employed between five and 20, and 42% employed over 20 employees. More than 50% operate in both metropolitan and regional areas.

The research highlighted industry’s reliance on one qualification, the *Certificate III in Cabinet Making*, to meet its workforce skill needs for ten different job roles. These roles include: Assembly, Installation, CNC/Robotics operation, CAD/CAM operation, Store/Mobile Plant operation, Wood Machining, Designing, Polishing, Supervision, and Production Management.

Although the industry has high levels of qualified employees, almost 60% of survey respondents believed post-secondary qualifications were not necessary or not suitable. This finding shows a concerning disconnect between what is being delivered and what skills are required to meet current and future industry needs. It is even more troubling given the possibility that the *Certificate III in Cabinet Making* could become even more widely relied upon due to the recent outsourcing of Upholstery, Furniture Finishing, and Wood Machining trade qualifications to eastern states training providers.

The impact of automation on skills in the industry was clearly evident in the survey results with employers reporting a decrease in the use of traditional Cabinet Making skills and a corresponding increase in demand for multiskilled Cabinet Makers. In particular employers need a workforce that: can adapt to changing work environments; is able to work with new components, materials and hardware; has sound problem solving skills; and can operate CNC/CAD/CAM technologies.

¹ Pricewaterhouse Coopers (2015) *Future-proofing Australia’s workforce by growing skills in science, technology, engineering and maths (STEM)*, Australia

In particular, survey respondents identified increased demand for higher level skills and qualifications for Supervisors, CAD/CAM operators, CNC/robotics operators, Production Managers, and Designers with these roles all scoring highly across the three broad categories of skills: literacy, STEM, and enterprise. The more traditional Cabinet Making roles such as Assembly, Installation, Wood Machining, and Polishing, whilst highly valued by employers, were more likely to experience lower levels of increased skill development need across the categories.

Early identification of newly emerging job roles and tasks ensures that training prepares the workforce with the skills and knowledge needed to fulfil jobs in the future. A common view expressed consistently across the industry was that traditional trade skills were in decline and were being replaced with more sophisticated skill needs such as technology, engineering, innovation, problem solving and literacy. Additionally digital marketing skills and design were identified as increasing in importance for the industry. Employers identified new technologies, consumer demand, and new products and materials as the primary driver for changes in skill requirements.

The research confirms the workforce is transitioning from one job role to another. For example Wood Machinists transitioning to CNC operators, Cabinet Makers to CAD/CAM operators, and more generally the natural progression of Cabinet Makers to Supervisors, Production Managers, and Designers. Career progression was more evident in medium sized organisations in contrast to micro or small businesses where the common theme was multiskilling.

A highly skilled workforce is fundamental to the success of advanced furniture manufacturing. To this end, a preliminary report based on survey findings was prepared and presented to the Steering Committee for consideration. Members of the committee agreed that an analysis of the findings against current training delivery should be undertaken and recommendations to enhance skills development identified. A meeting with representatives from South Metropolitan TAFE (TAFE), the Cabinet Makers Association, and the Training Council was then held to discuss and document strategies that would address the skill development needs identified. In Section 10, page 35, specific recommendations arising from this consultation are presented.

The recommendations, in order of priority, include:

1. Urgent investment in advanced or industry specific technology software at TAFE campuses;
2. Professional development of TAFE trainers to deliver more advanced CNC/CAD/CAM skills;
3. Revision of the existing TAFE apprenticeship footprint to incorporate research findings;
4. Development of a new qualification that focuses on CNC/CAD/CAM skills; and
5. Development of skill sets to support career pathways.

2.0 Introduction

2.1 Background

The manufacturing industry is undergoing an enormous shift in focus and operation. Like so many other industries in Australia, manufacturing has been operating in an environment heavily affected by increased overseas competition due to reductions in tariffs, fluctuations in the value of the Australian dollar, and increasing competition from nations with much lower labour costs and generous government subsidies. However, with the recent decline in the Australian dollar and a shift in focus to developing a local economy, (away from mining) there is a much more optimistic outlook for Australian manufacturers.

At present consumer demand is driving a market for more personalised and customized products and services. Historically custom tailoring and high-performance products were the domain of the wealthy however digital technologies, especially the Internet, have made personalisation and customisation much more accessible to a wider range of consumers. This has raised consumer expectations of being able to get exactly what they want rather than settling for mass-produced items. The result of this shift is a more fragmented and diverse market which can open up opportunities for manufacturers to deliver desired goods through 'economies of scope rather than economies of scale'². Australia has a clear advantage in its ability to compete in these areas as they fundamentally cannot be serviced by mass production³.

The nature of products is also changing. Products are getting 'smarter' – more connected, intelligent, and responsive. As kitchen backsplashes become 'smart glass', cabinets become automatic, and lighting 'smart lighting' the challenge for manufacturing is being able to embrace and integrate technologically enabled elements into product designs.

Huge shifts in technology have further removed what was once restrictive barriers to resources, products and information. This has opened up access to new machinery and new business models helping to generate significant improvements in productivity and capability. Other emerging technologies that will influence future manufacturing include additive manufacturing, robotics, and high performance materials.

With new computer aided machinery and computer aided design systems becoming more readily available and accessible in the last five to ten years, the effect on the workforce is significant. Already we see reliance on manual labour decline. By 2025 it is predicted Australia will see up to 180,000 low-skilled jobs disappear. These jobs are being replaced by automated processes with workers taking greater responsibility for quality control and operational efficiencies⁴.

The introduction of automated systems in manufacturing coupled with a heightened focus on productivity and innovation across the Australian economy, will mean enterprises will become more efficient with the use of its human and material resources. More importantly the training system will need to ensure the skills it delivers to new and existing workers is meeting the needs of a growing and innovative manufacturing sector – now commonly referred to as 'Advanced Manufacturing'.

² Deloitte Centre for the Edge (2015) *The future of manufacturing: Making things in a changing world*, Deloitte University Press

³ Manufacturing Skills Australia (2014) *Environmental Scan: Manufacturing – It's in our national interest*, MSA, NSW

⁴ Manufacturing Skills Australia (2013) *Environmental Scan: A new era for manufacturing*, MSA, NSW

2.2 Employment projections

Automation and new technologies have major implications for the workforce. Many positions that exist now will either disappear or be significantly altered to reflect changing skill needs. Already in the past 25 years Australia has lost more than one million low-skilled jobs. The majority of these jobs have been in the manufacturing, administration and labouring industries⁵.

Analysis by Pricewaterhouse Coopers⁶ reveals that 44% of current Australian jobs are at risk of being affected by automation and new technologies, see Table 1. Most noteworthy for the Furnishings industry are the occupations of Wood Machinist, Factory Process Worker and Machine Operator.

Table 1: Australian jobs most at risk from computerisation and technology

Occupation	Probability of being automated	Number of workers affected
Accounting clerks/bookkeepers	97.5%	263,348
Checkout operators/cashiers	96.9%	128,745
General office administration workers	96.1%	284,171
Wood machinists	93.4%	31,081
Financial and insurance administration workers	93.1%	128,425
Farm, forestry and garden workers	92.5%	106,017
Personal assistants and secretaries	92.4%	137,917
Sales administration workers	91.1%	56,964
Keyboard operators	87.1%	59,852
Hospitality administration and support workers	85.5%	248,862
Sales assistants and salespersons	85.2%	698,780
Real estate sales agents	85.2%	70,673
Factory process workers	84.6%	52,631
Fabrication trades workers	84.3%	90,039
Receptionists	83.9%	169,371
Clerical and office Support workers	83.8%	114,710
Printing trades workers	82.9%	23,930
Mobile plant operators	82.8%	127,298
Food preparation assistants	82.5%	154,438
Food process workers	82.2%	63,072
Glaziers, plasterers and tilers	81.4%	60,977
Food trades workers	80.7%	173,639
Automobile, bus and rail drivers	80.5%	94,946
Machine operators	80.1%	83,757

Derived from Oxford University study, PwC analysis

Source: Pricewaterhouse Coopers (2015)

Whilst it is becoming clear the occupations that are likely to disappear, it is not as clear what new jobs will be created or what changes to skills in existing occupations are needed to meet advancements in technology. Significant research suggests that one way to prepare for the digital age is to improve science, technology, engineering and mathematics (STEM) skills. The Australian Workforce Productivity Agency's *Manufacturing Workforce Study* reported that businesses will generate demand for a wider range of skilled trade's workers, technicians and professionals with STEM skills to drive innovation, growth and competitiveness in a global environment⁷.

⁵ Foundation for Young Australians (2016) *The New Basics: Big data reveals the skills young people need for the New Work Order*, Melbourne VIC

⁶ Pricewaterhouse Coopers (2015) *Future-proofing Australia's workforce by growing skills in science, technology, engineering and maths (STEM)*, Australia

⁷ Australian Workforce and Productivity Agency (2014) *Manufacturing workforce study*, Commonwealth of Australia

2.3 STEM Skills

In March 2015 the Office of the Chief Scientist (Clth) released findings from a study undertaken by Deloitte Access Economics⁸, citing a shortage of STEM graduates. The survey of employer attitudes to STEM skills highlighted the following:

- STEM qualifications are valuable to the workplace, even when their major field of study is not a prerequisite for their role
- STEM employees were nominated as being among the most innovative
- Over 50% of employers expected their needs for STEM professionals to increase over the next five to ten years
- 49% of employers expect an increase in their needs for STEM qualified technicians and trades people
- Some employers experienced difficulty in filling technician and trades worker roles (40%) and STEM graduate roles (31%). 20% reported a shortage of graduates and approximately 33% reported a mismatch between the skills required and those of graduates. Of particular note was the Manufacturing industry, with only 22.4% of professional positions and 39.4% of technician and trades worker positions filled
- Lack of female applicants was a concern identified, many employers noted the clear benefits in employing a combination of male and female employees.

44% of employers continue to experience difficulties recruiting STEM qualified technicians and trade workers

These findings were supported by research undertaken by AiGroup⁹ that found almost 44% of employers continue to experience difficulties recruiting STEM qualified technicians and trade workers. The main barriers are a lack of qualifications relevant to the business (36%) and a lack of employability skills and workplace experience (34%). The research further noted that the lack of relevant qualifications had doubled since 2012. The finding that there is a lack of relevant qualifications is of significant concern to the furnishings industry as this industry is reliant predominately on one vocational qualification to meet its entry level skill needs.

NCVER identified similar findings in its report *Readiness to meet demand for skills: a study of five growth industries*. The report noted that the gap between the knowledge generated in the education system and the skills demanded by employers and individuals is widening. Central to addressing this issue is the need for a significant cultural shift in thinking about the way skills are generated and deployed. This could include:

- Better development of generic and foundation skills during school and post-school education, including Asia literacy
- Priority focus on science, technology engineering and mathematics
- Businesses to better understand their skills needs at different phases of involvement in global value chains and to encourage workplace learning opportunities
- Funding policies for education and training that support continuing professional development including skill sets¹⁰.

⁸ Deloitte Access Economics (2014) *Australia's STEM workforce: a survey of employers*, Kingston ACT

⁹ Australian Industry Group (2015) *Progressing STEM Skills in Australia*, Australia

¹⁰ NCVER (2014) *Readiness to meet demand for skills: a study of five growth industries*, Adelaide SA

3.0 Objectives of the project

The purpose of this study is to consider how the introduction of automation and new technologies coupled with changes in consumer demand are impacting on the workplace skills required in the Furnishings Industry. The focus will be on identifying the specific science, technology, engineering and mathematics skills (STEM skills) required to meet current and future workplace needs and compare this to existing training programs to identify skills gaps.

Specific objectives include:

- Undertake a skills needs analysis of small and medium sized businesses within the cabinet making/furniture making industry to understand the skills requirements with regards to science, technology, engineering and mathematics (STEM)
- Identify the extent to which current training arrangements are meeting the skills and knowledge required to adapt to changing workplaces, consumer demands, and the use of emerging technologies in the furnishings industry
- Based on the findings make recommendations designed to enhance training delivery in the furnishings industry.

3.1 Research Methodology

To achieve the purpose and objectives of the project the following key phases were employed:

- Establishment of a steering committee to oversee the project. Members of the committee were drawn from key industry stakeholders including the Cabinet Makers Association, Australian Furniture Association, WA Furniture Manufacturers Association, the Australian Workers' Union and South Metropolitan TAFE, a full list of members is provided in Appendix One.
- A literature review was undertaken to identify similar research projects, in particular demand for STEM skills in the Australian workforce and the impact of new technologies on the manufacturing industry
- A detailed survey instrument was developed with input from steering committee members
- In consultation with the steering committee, a representative group of small and medium size businesses from the cabinet/furniture making industry were identified and surveyed
- A preliminary analysis of the survey data was presented to the steering committee for discussion
- An analysis of survey results and current delivery strategies was undertaken to identify any gaps in training delivery
- Consultation with South Metropolitan TAFE and the Cabinet Makers Association to identify strategies that would address the skill development needs identified
- Recommendations were made to improve future training opportunities in the furnishings industry.

4.0 Defining skills for Furnishings Industry

STEM skills are gaining increasing importance in today's workplaces. However, gaining a clear definition of 'STEM skills' can be problematic as the relationship between education skills and the use of skills in the workplace is not well understood. To assist define and identify the skills valued by employers in the industry and for the purposes of this study, the survey questions concentrated on three broad categories of skills – technical skills or 'hard skills', enterprise skills or 'soft skills', and literacy. Together these three categories represent the major skills in demand, particularly in the jobs of the future.

4.1 Technical skills (hard skills)

Technical skills are often defined as skills specific to a particular task often acquired on-the-job. For example timber joining techniques and machine operation skills if you are a cabinet/furniture maker. Technical skills also include qualifications such as certificates, trade papers, and degrees. For the purposes of this study technical skills and STEM skills are used interchangeably.

In Deloitte's recent survey commissioned by the Office of the Chief Scientist, STEM qualifications were outlined as:

- Vocational Education and Training (VET) (awarded Certificate III, Certificate IV, Diploma or Advanced Diploma, including via traineeship or apprenticeship)
- Undergraduate (awarded Bachelor or Honours Degree)
- Postgraduate (awarded Graduate Certificate, Graduate Diploma, Masters or PhD Doctorate)¹¹.

Disciplines of study were defined as follows:

- Science – includes Physics and Astronomy, Chemical Sciences, Earth Sciences, Biological Sciences, Agriculture, Horticulture and Viticulture, Forestry Studies, Fisheries Studies, Environmental Studies and related studies
- Technology – includes Computer Science, Information Systems and related studies
- Engineering – includes Manufacturing Engineering, Process and Resources Engineering, Automotive Engineering, Mechanical and Industrial Engineering, Civil Engineering, Geomatic Engineering, Electrical and Electrical Engineering, Aerospace and Maritime Engineering and related studies. This includes Mechanics, Processing and Technology, Fitting and Turning etc
- Mathematics – includes Mathematics, Statistics and related studies¹².

In applying these broad definitions of study to furnishings workplaces, the survey defined key elements of STEM skills as follows:

- Science – sustainability, clean/green production, carbon neutrality
- Technology – defined by level of skill, straightforward (data entry, sending and receiving emails or printing), moderate (word processing, mobile apps and platforms, mobile invoicing), complex (analysing information or design including CAD, using statistical analysis packages, addressing error codes), advanced (software programming, managing computer networks, commissioning of software)
- Engineering – job tasks could include mechanisation, maintenance, tooling, fault finding, work flow, lean manufacturing

¹¹ Deloitte Access Economics (2014) *Australia's STEM workforce: a survey of employers*, Kingston ACT

¹² *ibid*

- Mathematics – job tasks could include preparing cutting lists, measuring cabinets, machine and materials optimisation, designing floor plans.

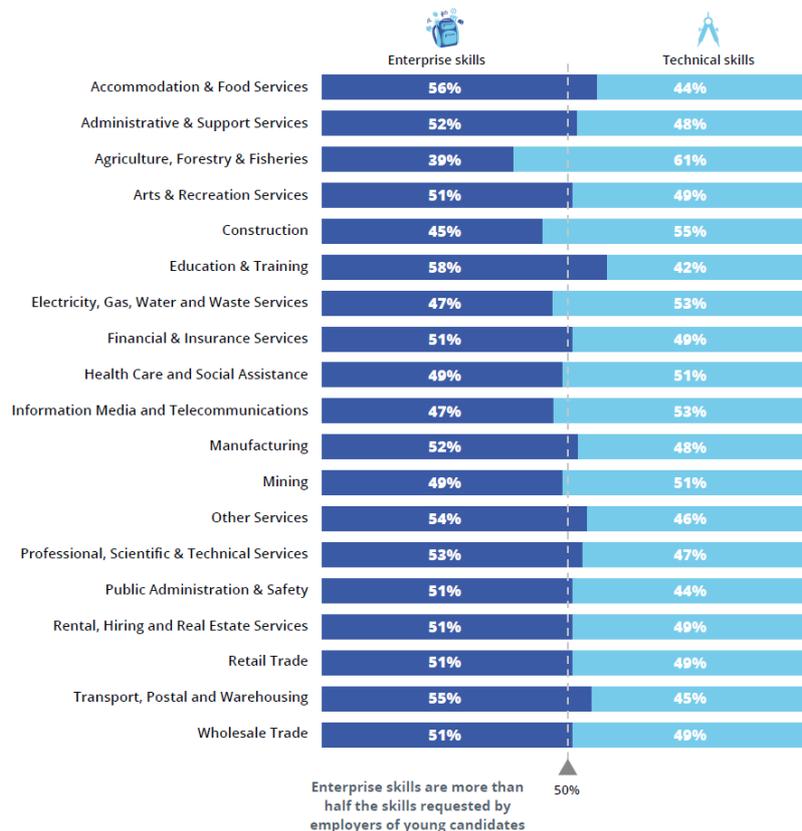
4.2 Enterprise skills (soft skills)

Generally employers want workers who are able to problem solve, think analytically, be able to communicate, and have the ability to work independently – these skills are applicable across many occupations and all can be related to broad categories of science, technology, engineering, and math. Unlike technical skills however, enterprise skills are transferable across many industries and enable workers to engage with complex environments and navigate the future of work¹³.

The importance of enterprise skills was highlighted by the Foundation for Young Australians report that found the demand for problem solving, financial literacy, digital literacy, teamwork, and communication is on the rise, with 70% more jobs requiring these skills¹⁴. Table 2 shows the proportion of skills requested by individual industries. As indicated in the table, the Manufacturing industry is reported as valuing enterprise skills slightly more than technical skills.

Table 2: Demand for enterprise skills and technical skills by industry

Proportion of total skills requested in early-career jobs by industry, %



Source: Foundation for Young Australians (2016)

¹³ Foundation for Young Australians (n.d.) *The New Basics: Big data reveals the skills young people need for the New Work Order*, fya.org.au

¹⁴ Foundation for Young Australians (n.d.) *The New Basics: Big data reveals the skills young people need for the New Work Order*, fya.org.au

To identify the need for ‘enterprise skills’ in the Furnishings Industry, the survey asked specific questions of respondents in a manner that was relevant to the workplace.

Enterprise skills were categorised and key elements defined as follows:

- Innovation – having the ability to develop new products, services, processes, designs
- Problem solving – defined to be a problem which takes employees at least 30 minutes of thinking time to find a good solution. This could relate to thought processes around engineering, mathematical, technological or scientific problems in the workplace.
- Researching and analysing – keeping up to date with new technologies, consumer trends, new materials

4.3 Literacy

The Australian Industry Group reports literacy as a major problem in the general population and workforce. In the most recent international survey on literacy and numeracy, the Programme for the International Assessment of Adult Competencies (PIAAC), 44 per cent of Australians had literacy proficiency skills below level 3, considered to be the minimum requirement to operate effectively in workplaces and society¹⁵.

To capture information about the importance of literacy in the Furnishings Industry, the survey included questions about reading and comprehending instructions, guidelines, manuals or reports, and about writing instructions, guidelines, manuals or reports.

44% of Australians had literacy proficiency skills below level 3 considered the minimum requirement to operate effectively ...

¹⁵ Australian Industry Group (2016) *Tackling Foundation Skills in the Workforce*, Australia

5.0 Survey

A face to face survey was conducted with employers in May 2016. The survey targeted businesses who employed at least one employee and operated within the Furnishings Industry. Surveys were conducted face to face and took approximately 30 to 40 minutes to complete. Topics covered as part of the survey included:

- Background information about the business
- Recruitment of workers
- Changes to workplace skill requirements
- New and emerging tasks
- Final comments.

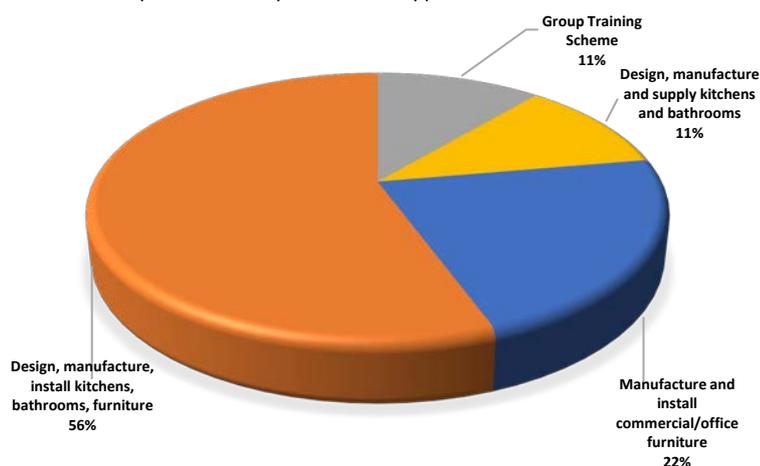
A copy of the survey instrument is provided in Appendix Four.

5.1 Survey respondents

A total of 20 surveys were administered. 18 were conducted face to face and two were undertaken on-line. One survey was discarded due to incomplete information.

Survey respondents were asked to define the nature of their business. As indicated in Chart 1 the majority of businesses identify as manufacturers in the kitchen and bathroom sector. Most respondents indicated having a design role whilst others relied on builders to supply designs, (observed as occurring predominately in the commercial/office furniture sector).

Chart 1: Respondents by business type



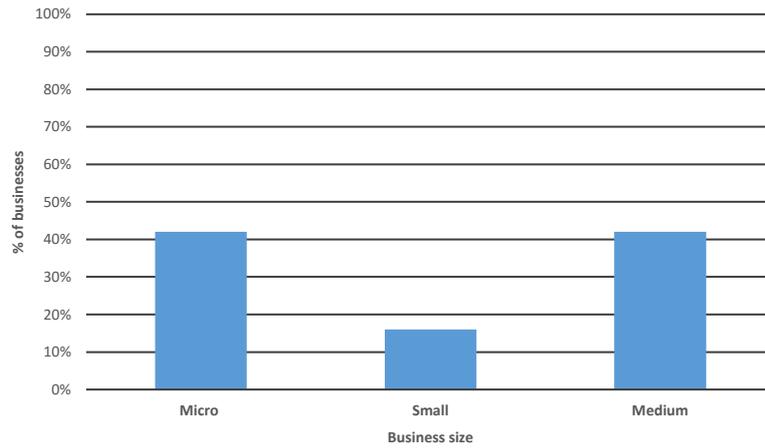
5.2 Business size

The distribution of respondents by business size is shown in Chart 2. The following definition was used to categorise business size:

- Micro: less than 5 employees
- Small: 5 to 19 employees
- Medium: 20 to 199 employees.

There were no large businesses surveyed. Together, the 19 businesses who participated in the survey employ approximately 371 employees.

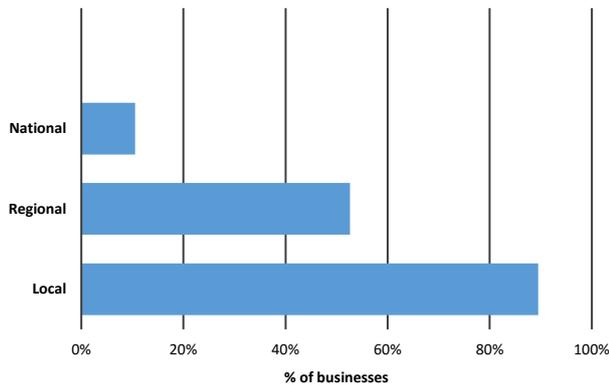
Chart 2: Responses by business size



5.3 Geographic market

Chart 3 shows the distribution of respondents by geographic market. Almost 90% of survey respondents operate in the local market. 53% of respondents also conduct business in the regions and 11% of two businesses sell to interstate customers. There were no respondents engaging in international markets.

Chart 3: Responses by geographic market

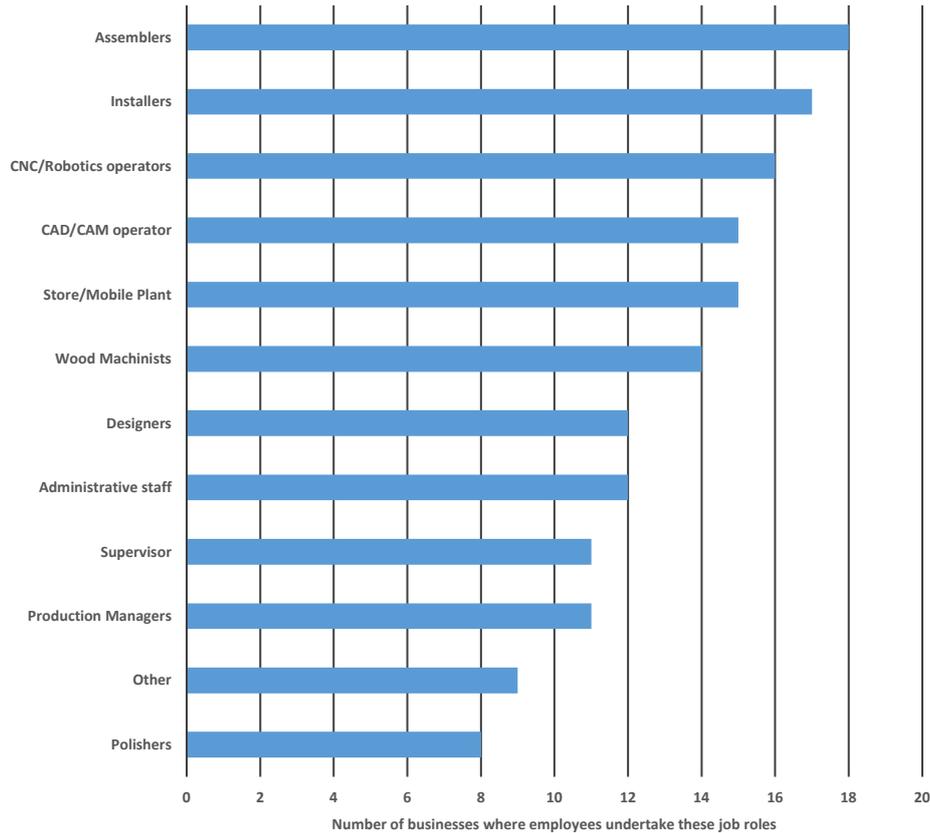


5.4 Job roles of employees

The survey questions focussed on job roles rather than occupations as the industry is well-known for its reliance on multiskilled staff. For example, in a micro or small business a Cabinet Maker may be required to install, polish, design, as well as operate a Computer Numerically Controlled (CNC) machine whereas in a medium to large business where there are higher volumes of work, staff will be more specialised. These businesses are also more likely to employ Designers, Supervisors, Production Managers and Administration staff.

As shown in Chart 4, a significant proportion of businesses within the Furnishings industry employ workers in the following job roles: Assemblers, Installers, Computer Numerically Controlled (CNC)/Robotics operators, Computer Aided Design (CAD)/Computer Aided Machinery (CAM) operators and Wood Machinists. These job roles make up the core pool of workers employed in the industry.

Chart 4: Job roles of employees



Note: Roles identified in the 'other' category include: information technology specialists, 'cutting list' role, sales, sewing machinist, frame maker, upholsterer.

The following lists the most frequently cited¹⁶ job roles in the industry:

- Assembly
- Installation
- Computer Numerically Controlled (CNC)/Robotics operation
- Computer Aided Design (CAD)/Computer Aided Machinery (CAM) operation
- Store/Mobile Plant operation
- Wood Machining
- Designing
- Administration
- Supervision
- Production Management.

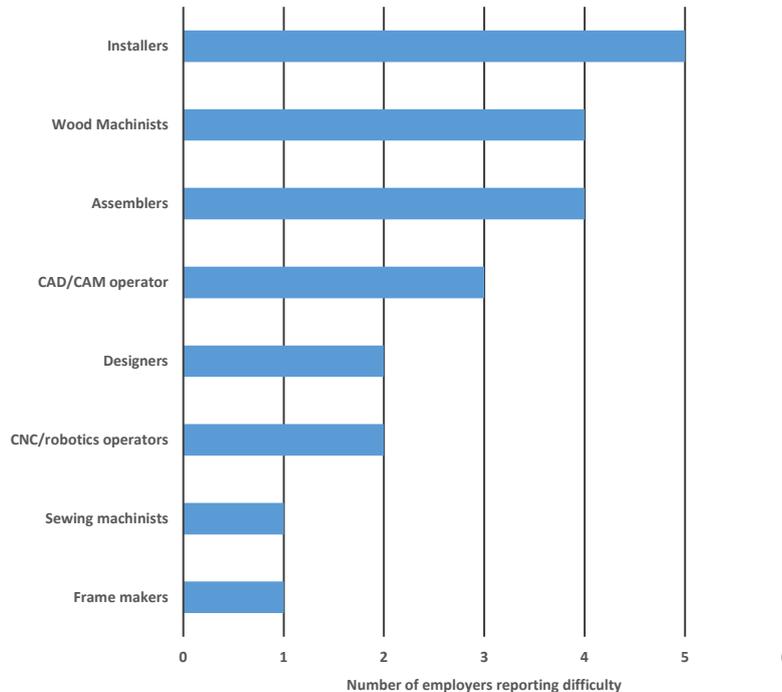
¹⁶ Reported by more than 50% of respondents

6.0 Recruitment Experiences

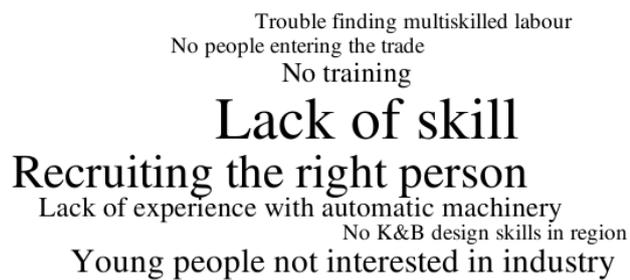
6.1 Employment vacancies

Survey respondents were asked if they had vacancies for any of the identified job roles that were proving difficult to fill. As indicated in Chart 5 there are a number of job roles frequently cited as difficult to fill. In order of frequency they include Installers, Wood Machinists, Assemblers, CAD/CAM operator, CNC/robotics operators.

Chart 5: Job roles proving difficult to fill



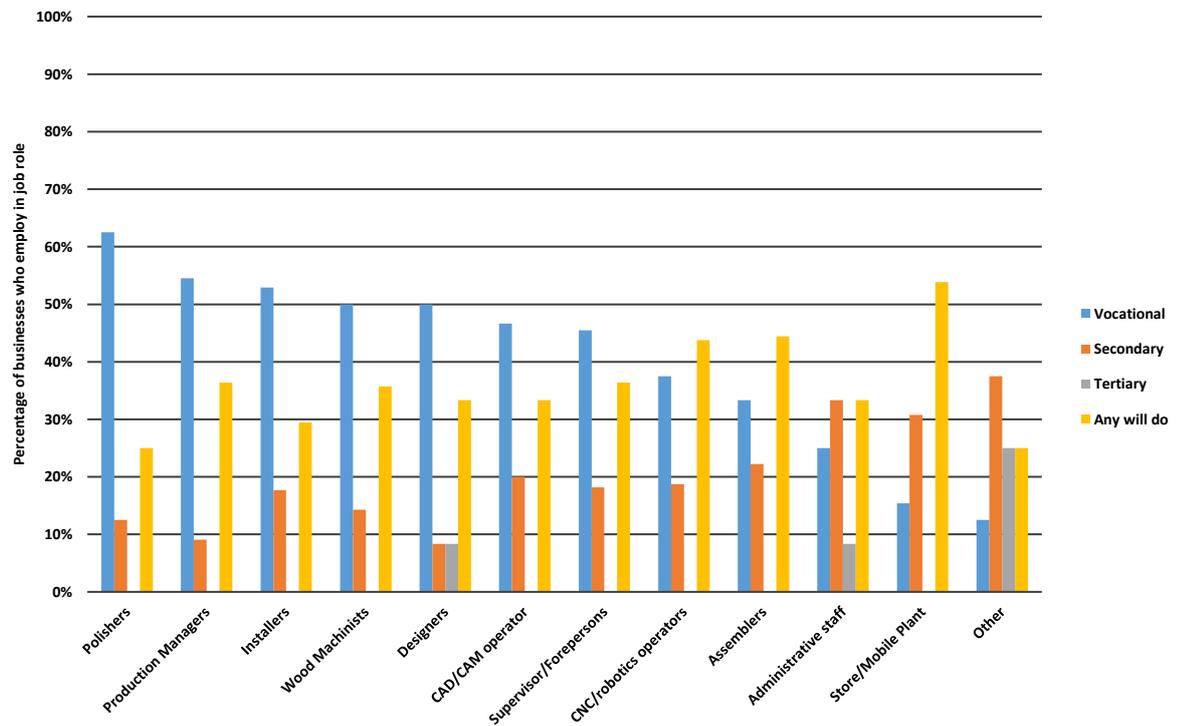
Respondents provided a number of reasons why job roles are hard to fill. These are displayed in the 'word cloud' below. Employers also commented that the industry was low paid and this made it difficult to attract and retain good tradespeople.



6.2 Recruitment qualifications

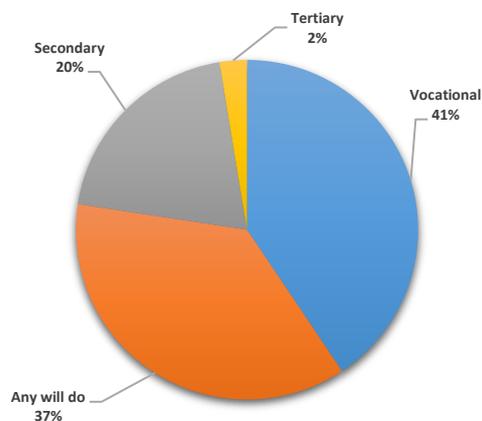
The purpose of this question was to understand the level of education required to fulfil each job role. Respondents were asked if when they recruit staff do they prefer the person's education to be tertiary, vocational, secondary, or any will do. Results indicate that there is low demand for Tertiary qualifications and varying demand for vocational qualifications across the job roles. For example just over 30% of all respondents who recruit Assemblers preferred them to hold vocational qualifications whilst over 60% of all respondents who recruit Polishers prefer them to hold vocational qualifications.

Chart 6: Job roles by qualification preference



Overall, 41% of respondents reported a preference for employees to hold vocational qualifications, 37% indicated any level of qualification will do, and 20% regarded secondary qualifications as adequate to fulfil certain roles.

Chart 7: Preference by skill level



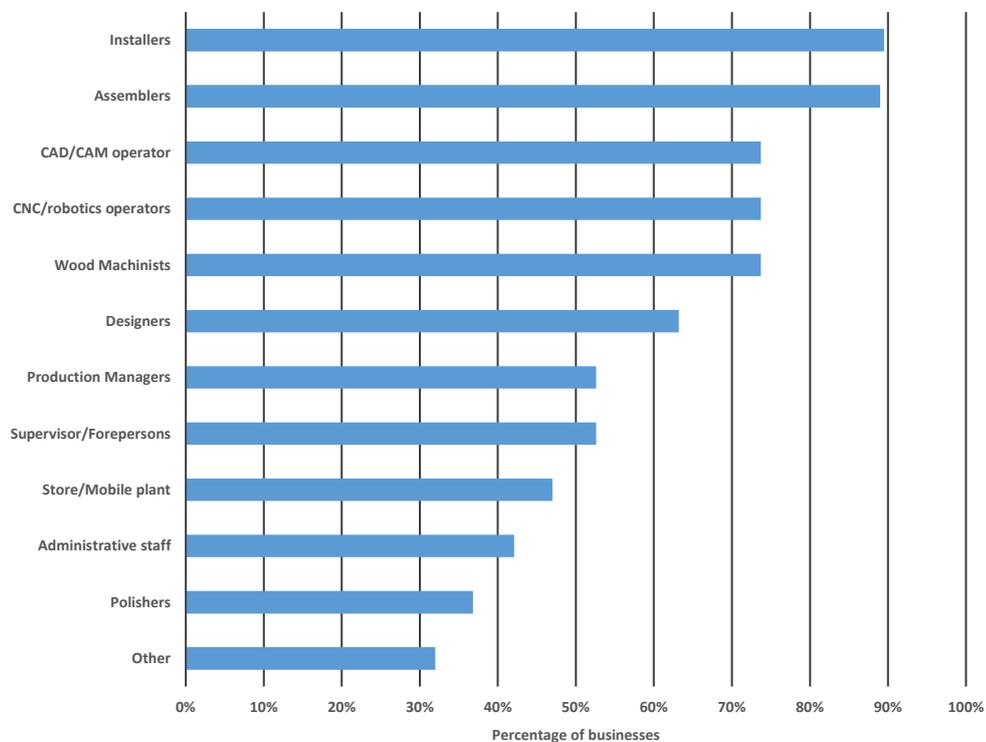
As a follow up question respondents were asked if there were any key skills they were looking for when recruiting. Answers are represented in the 'word cloud' below. Interestingly the most frequently cited skills are attributes which are the most difficult to train, for example enthusiasm, positive attitude, work ethics.



6.3 Actual qualifications held

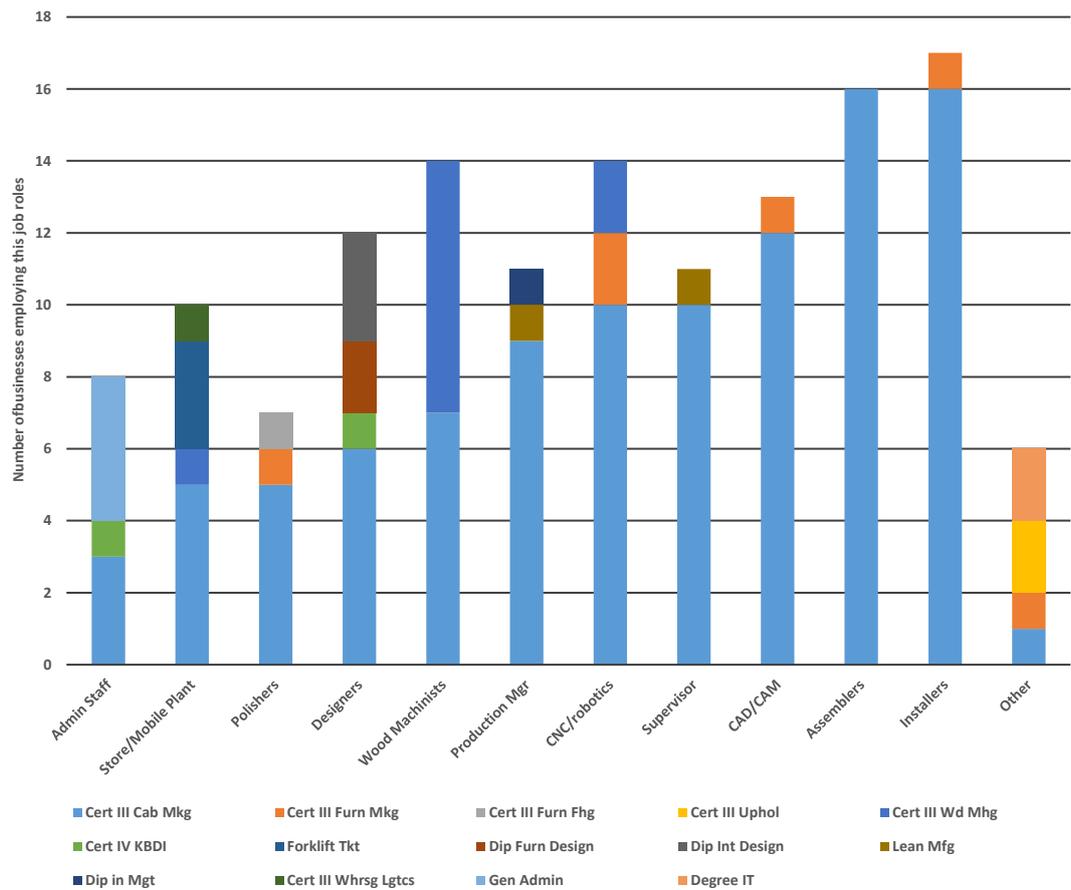
To understand the level and use of existing qualifications in the industry, respondents were asked what post-secondary qualifications were held by employees in each job role. Chart 8 shows the percentage of businesses whose employees hold post-secondary qualifications. By far the most qualified group are Assemblers and Installers, followed by Wood Machinists, CAD/CAM/CNC operators. Interestingly, Assembly is one of the job roles that almost 70% of employers reported as not requiring a vocational qualification, see Chart 6.

Chart 8: Percentage of businesses whose employees hold post-secondary qualifications



The actual post-secondary qualifications held by employees undertaking various job roles are displayed in the following chart.

Chart 9: Post-secondary qualifications by job role



The *Certificate III in Cabinet Making* is the principal qualification held by employees in the Furnishings Industry. As indicated in Chart 9 the qualification is held by employees who undertake a broad range of job roles – from designing kitchens to assembling cabinets.

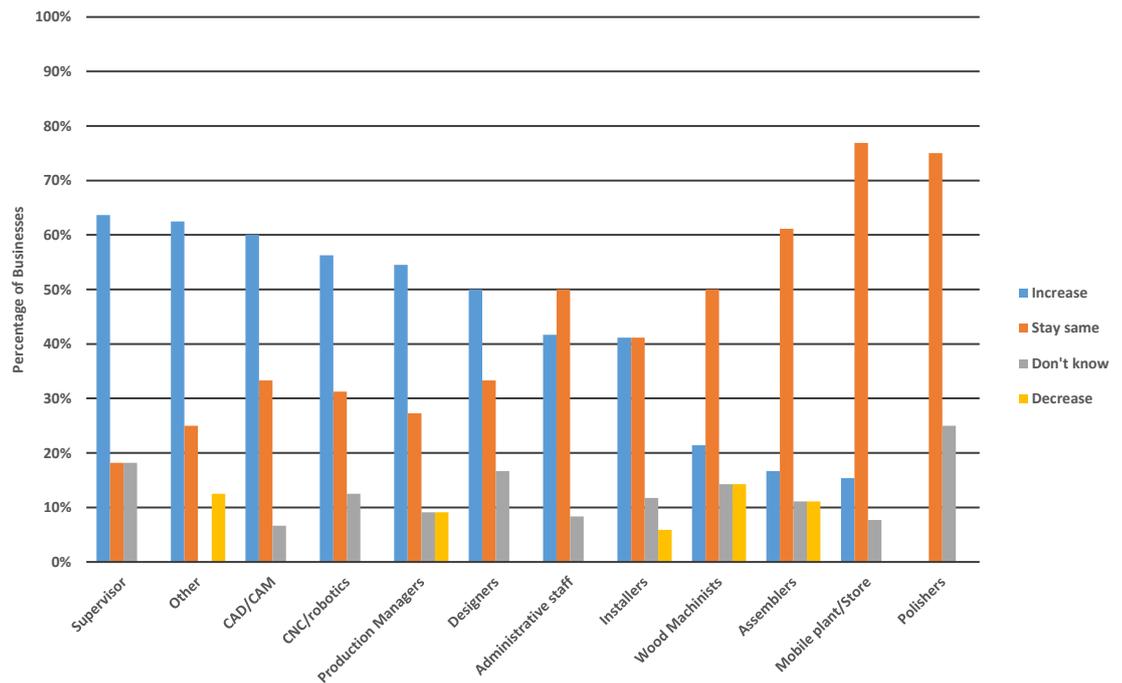
6.4 Demand for higher level skills/qualifications

Responses were mixed to the question of whether the demand for workers with higher level skills/qualifications will increase, decrease, or remain about the same over the next 5-10 years. One qualifying factor was the job role. As reported in the following chart, a large proportion of job roles surveyed will demand higher levels of skills/qualifications. The most frequently cited job roles include: Supervisors, Production Managers, CAD/CAM operator, CNC robotics operators, and Designers.

The ‘other’ category also recorded an increase in demand for higher level skills/qualifications for the following job roles Framemaker (1), Sewing Machinist (1), Upholsterer (1), and Information Technology (2).

Employers reported the following job roles as likely to remain the same in terms of skill level over the next 5-10 years: Store/mobile plant operators, Polishers, Assemblers, Wood Machinists.

Chart 10: Demand for higher level skills/qualifications by job role



6.5 Summary

The labour market at present appears relatively stable with small numbers of employers reporting skills shortages.

The industry has become highly automated over the past ten years and this was reflected in discussions with employers during the survey interviews. Anecdotally, employers reported a decrease in assembly and wood machining skills noting that new machinery had replaced many traditional Cabinet Making tasks. However, with the introduction of new technology there appears a corresponding demand for Cabinet Makers to become multi-skilled especially in relation to: adapting to changing work environments; working with new components, materials and hardware; problem solving skills particularly during installation; and development of sound CNC/CAD/CAM skills.

The industry relies heavily on one qualification, the *Certificate III in Cabinet Making*, to meet its need for skilled workers in ten of the twelve job categories surveyed. And whilst the industry reports high levels of qualified employees, survey data reveals that almost 60% of respondents believe post-secondary qualifications are not necessary or not suitable. At the same time employers believe there will be increased demand for workers with higher level skills and qualifications in the next 5-10 years, specifically in the roles of Supervisor, CAD/CAM operators CNC/robotics operator, Production Manager, and Designer. This finding shows a concerning disconnect between what is being delivered and what is required to meet current and future skills needs.

The next section investigates more closely the demand for specific workplace skills.

7.0 Workplace skills

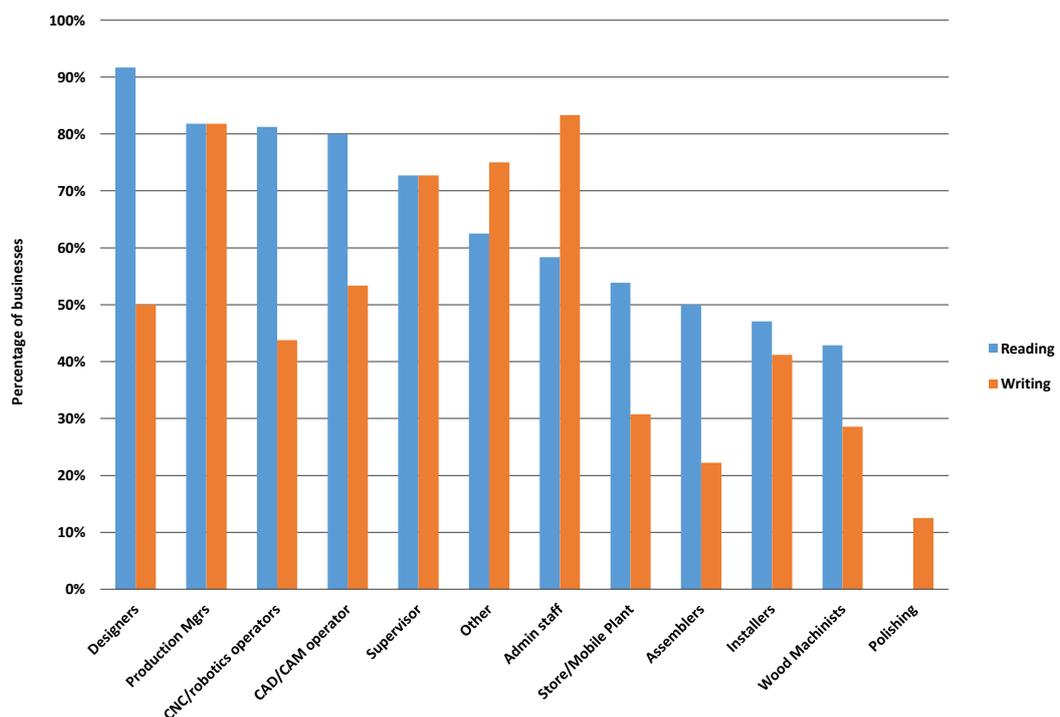
The purpose of the following set of questions was to collect data on the changes to skill requirements in the industry based on the job roles that exist in the respondent's business.

7.1 Literacy skills

Respondents were asked if the need or importance of reading, comprehending and writing instructions, guidelines, manuals or reports was staying about the same, increasing or decreasing for each job role. Survey results indicate that **reading and comprehending** is increasing in importance for CNC/robotics operators, CAD/CAM operators, Designers, Production Managers, Supervisors. Employers were divided on whether the skill requirement was increasing or staying the same for Assemblers and Installers.

Almost 50% of respondents considered the importance of **writing** instructions, guidelines, manuals or reports was increasing. The most frequently cited job roles were Administrative Staff, Production Managers, Supervisors, and CAD/CAM operators. A significant proportion of respondents reported writing requirements for many other trade areas including Wood Machinists, Assemblers, Polishers and Store/Mobile plant operators as staying about the same.

Chart 11: Increasing importance of reading, comprehending and writing instructions by job role



A number of employers reported there had been a notable increase in the amount of administration that impacted on reading and comprehension, for example job safety analysis (JSAs), architect plans, designer drawings.

7.2 Technical skills (STEM skills)

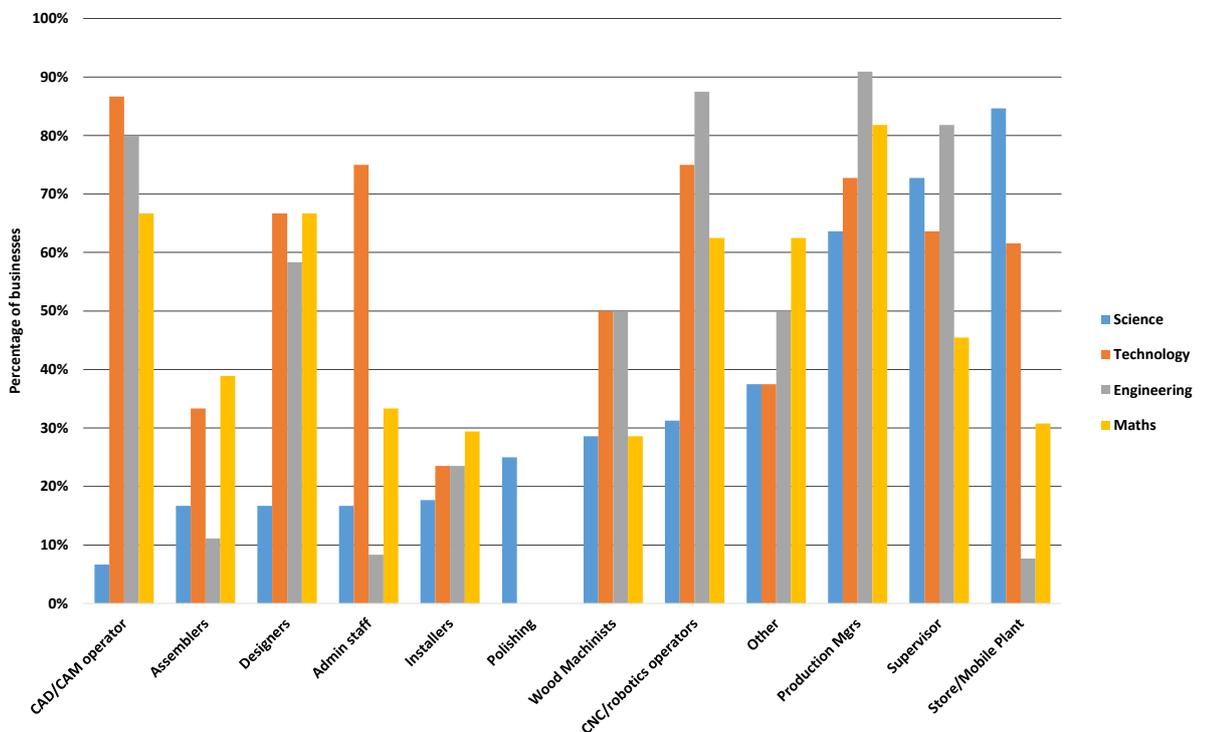
Respondents were asked if the importance of applying **science** knowledge, for example sustainability principles, clean/green production, carbon neutrality, was increasing, staying the same or decreasing for the nominated job roles. Chart 12 shows Production Managers, Designers and Supervisors as having an increasing need for science knowledge. For the remaining job roles surveyed the current level of science knowledge was likely to stay the same.

Respondents were asked what level of information **technology** skill is needed for each job role. Information technology skills were defined as follows:

- Straightforward – data entry, sending and receiving emails or printing
- Moderate – word processing or spreadsheets, mobile apps and platforms
- Complex – analysing information or design including CAD, using statistical analysis packages, addressing error codes
- Advanced – software programing, managing computer networks, commissioning of software.

Respondents to the survey reported high levels of Information technology skills in the workplace – described as ‘complex’ and ‘advanced’ – for CAD/CAM operators, Designers, CNC/robotics operators, and Production Managers. In contrast, the majority of employers indicated that Assemblers, Installers, Wood Machinists, Polishers and Store/Mobile Plant operators had straightforward levels of Information technology skill requirements. Regardless of skill level, the need for information technology skills will increase for the majority of job roles, particularly for CAD/CAM and CNC/robotics operators.

Chart 12: Increasing importance of STEM skills by job role



Respondents were asked if the importance of **engineering** skills and knowledge was staying about the same, increasing or decreasing for each of the job roles in their organisation. Examples of engineering tasks were provided and included: mechanisation, maintenance, tooling, fault finding, work flow, lean manufacturing. The main job roles where engineering skills and knowledge were reported to be increasing in importance were CNC/robotics operators, CAD/CAM operators, Production Managers, Supervisors, Wood Machinists and Designers.

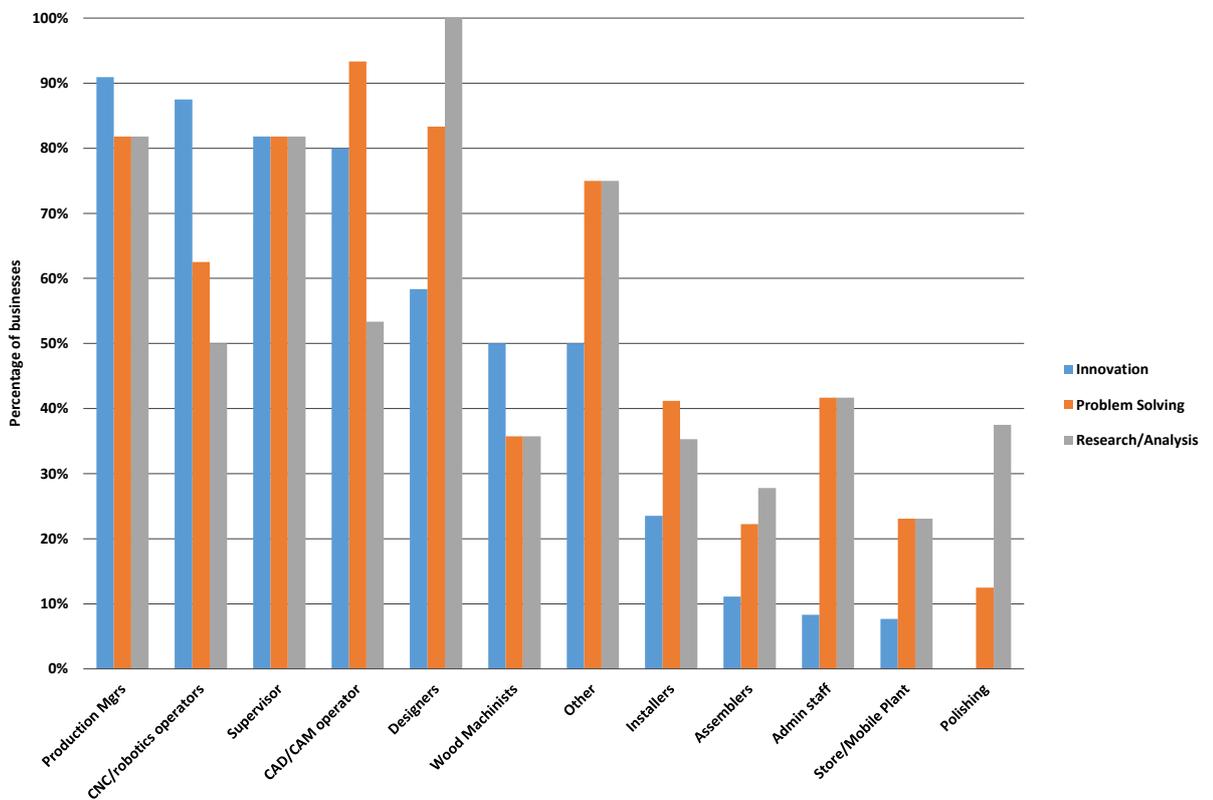
Respondents considered **mathematics** a key skill needed in the furnishing workforce for tasks such as preparing cutting lists, measuring cabinets, material optimisation, designing floor plans, and for machine operation. The increasing importance of numeracy was highlighted for Production Managers, CAD/CAM operators, Designers, and CNC/robotics operators.

7.3 Enterprise skills

Respondents were asked if the importance of having the ability to innovate was staying about the same, increasing or decreasing for each of the job roles. **Innovation** was described as activities such as developing new products, services, processes or designs. The data suggests that CAD/CAM operators, CNC/robotics operators, Production Managers and Designers were more likely to see an increase in the importance of innovation, see Chart 13.

The survey gathered data about **solving complex problems** in the workplace, defined to be a problem which takes employees at least 30 minutes of thinking time to find a good solution. This could relate to thought processes around engineering, mathematical, technological, or scientific problems.

Chart 13: Increasing importance of enterprise skills by job role



Respondents were asked whether the importance of problem solving was staying about the same, increasing or decreasing for each of the job roles. The most frequently identified job role experiencing an increase in solving complex problems is CAD/CAM operators, followed by Designers, CNC operators, Production Managers and Supervisors, see Chart 13.

Respondents were asked whether the importance of **researching and analysing** was staying the same, increasing or decreasing. Tasks could include keeping up to date with new technologies, consumer trends or new materials. Chart 13 identifies Designers, Production Managers, Supervisors, CAD/CAM operators and CNC/robotics operators as job roles with increasing importance placed on research and analysis skills.

The following 'word cloud' displays the types of research and analysis that is currently driving innovation in the Furnishings Industry.



7.4 Other skills

Respondents were asked if there were any other skills they considered important in their organisation. Interestingly, problem solving was the most frequently cited skill considered important to employers. Two common scenarios reported by employers demonstrate the critical importance of problem solving to ensure safety, and efficiency in the business:

1. *Investigating and acting on irregular noises arising from machinery to prevent damage and loss of production; and*
2. *Seeking solutions to installation problems at worksites such as adjusting cabinets to fit 'out of plumb' walls.*

Other skills frequently reported and valued by employers include:

- Common sense
- Multiskilled
- Communication
- Positive attitude
- Interpersonal skills
- Client liaison.

The findings above support current research that highlights the importance of soft skills in the workplace.

7.5 Summary

The survey data reveals that employers value literacy, technical, and enterprise skills across most of the job roles found in the industry.

Reading, writing and comprehending instructions, guidelines, manuals or reports is obviously a critical skill need across all job roles. However the majority of employers believed it was increasingly important for Production Managers, Designers, CNC/CAD/CAM operators and Administration staff to continue to develop these skills to a higher level. Similarly skills and knowledge in Science areas, such as sustainability and carbon neutrality was considered as increasing in importance for Production Managers, Supervisors, Designers and Store persons.

Results further highlighted the need for increases in Information Technology skills across the majority of job roles surveyed. In particular the survey identified advanced and complex IT skills are required for CAD/CAM/CNC operators, Designers and Production Managers.

Employers reported that engineering skills and knowledge was of increasing importance for CNC/CAD/CAM operators, Production Managers, Supervisors, Wood Machinists and Designers. Equally mathematics is increasing in importance for Production Managers, CAD/CAM/CNC operators and Designers.

Whilst all roles require enterprise skills, ie innovation, problem solving, researching and analysing, these skills were considered to be increasing in importance for CAD/CAM/CNC operators, Production Managers, Supervisors, and Designers.

Overall design, production management, CNC/Robotics, CAD/CAM, and supervisory roles all scored highly across the three broad categories of skills: literacy, technical and enterprise, indicating a need for higher level skills development programs for these roles. The more traditional cabinet making roles such as assembly, installation, wood machining, and polishing, whilst important, were more likely to experience lower levels of increased skill development need across the skill categories.

8.0 Emerging tasks and roles

This section of the survey was designed to collect information on newly emerging tasks and roles and identify how prepared the workforce is to meet new skill requirements.

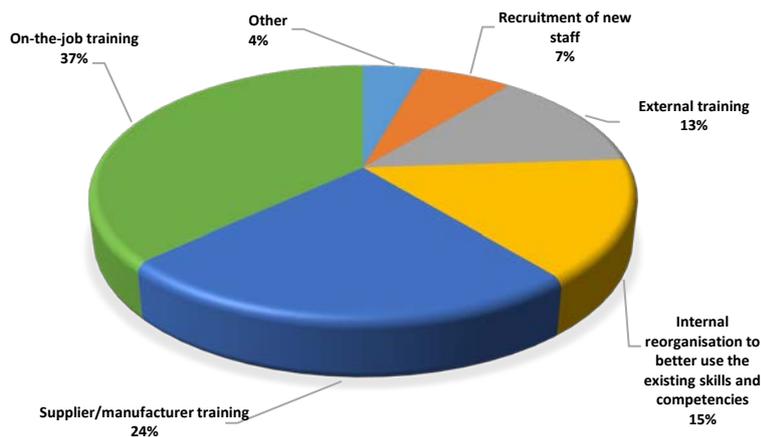
8.1 Emerging tasks

Businesses were asked to identify any newly emerging tasks that have resulted from changes in consumer demand, new technologies, environmental awareness, legislation, standards, and regulations.

Employers cited a range of factors such as the use of IT platforms, new products and materials, and technologies as impacting on workplace skills. The need for design and CAD/CAM efficiencies outside of traditional cabinet making was a common theme.

When asked how prepared the workforce was to perform newly emerging tasks, the majority of respondents reported they were 'getting by' or 'stumbling through it' by applying a number of different measures. The most notable method of upskilling staff was 'on and off the job training' which is being undertaken by approximately 74% of survey respondents, see Chart 20.

Chart 20: Measures to address new tasks



Whilst many respondents had little difficulty finding courses or trainers for newly emerging tasks, a significant proportion (30%) were experiencing difficulty recruiting staff to carry out newly emerging tasks, such as advanced machine operation and maintenance.

“More complex designs and materials require highly skilled trades, particularly when using expensive materials.”

8.2 Emerging roles

Early identification of new and emerging job roles is important to ensure training is preparing the workforce with the knowledge and skills needed to fulfil jobs in the future. Across Australia, six areas have been identified as presenting new skill development opportunities, three of these align with survey results from the Furnishings Industry:

- Digital marketing: The use of the internet and social media to market products and services requires a specific set of skills. This is an area where many businesses have expressed a desire to expand however limited resources restricts development.
- Manufacturing: Industrial processes are more technology focused, and factory workers will need new skills to operate lasers, sophisticated control tools and robotics equipment.
- Information technology: Evolving consumer and business needs require effective strategies for mobile and digital platforms¹⁷.

Traditional trade skills declining due to increased manufacturing and introduction of new technologies... driver has been increased consumer demand for quick turn around times...

Results from the survey broadly support the areas identified above, in addition employers in the Furnishings industry reported a number of roles transitioning from one to another. The most notable are the roles of Wood Machinist to CNC operator, Cabinet Maker to CAD/CAM operator, Cabinet Makers to Project Co-ordinators, Contract Administrators, and Schedulers. The implications are the development of a range of skills development programs to address skills gaps and support workers transitioning to new roles.

8.3 Other comments from industry

Employers were provided with the opportunity to make general comments about training and workforce development within the Furnishings Industry. There was a general consensus that employers need to continually teach skills in the business to support the training conducted by TAFE. However, there was also a common view amongst employers that traditional trade skills were in decline and were being replaced with more sophisticated skill needs such as CNC/CAD/CAM and that the training had not adequately changed to reflect changes in the industry.

“Traditional trades skills at TAFE way too advanced for what is needed...apprentices need cutting out skills, CNC/CAD/CAM operation servicing and programming, assembly, installation, and sound problem solving skills.”

The majority of smaller employers within the industry commented that multiskilled employees were essential to their business, whilst many larger employers would like to see more production management and supervisory skills offered to Cabinet Makers.

¹⁷ Education Services Australia Ltd (2015) accessed 11 July 2016, <https://myfuture.edu.au/career-insight/6-sectors-presenting-emerging-occupations>

8.4 Summary

Early identification of newly emerging job roles and tasks is important to ensure training is preparing the workforce with the skills and knowledge it requires. Employers cited new technologies, and new products and materials as the primary driver for changes in skills requirements. There was a common view across the industry that traditional trade skills were in decline and were being replaced with more sophisticated skills needs such as CNC/CAD/CAM.

The survey highlighted the current state of the workforce as transitioning from one existing job role to another. For example Wood Machinist to CNC operator and more generally the natural progression of Cabinet Makers to Supervisors, Production Managers, and Designers. This was more evident in medium sized organisations in contrast to micro or small businesses where the common theme was a need for a more multiskilled workforce.

8.0 Current training arrangements

8.1 Apprenticeships

The *Certificate III in Cabinet Making* is the primary qualification delivered by TAFE in WA to meet the workforce development needs of the Furnishings industry. The program is offered as an apprenticeship and is delivered over a 42 month period. Two Registered Training Organisations are scoped to deliver the apprenticeship, South Metropolitan TAFE and South Regional TAFE. A copy of the current training plan is provided in Appendix Two.

The *Certificate III in Upholstery*, *Certificate III in Furniture Finishing*, and the *Certificate III in Timber and Composites Machining* (previously known as Wood Machining) are also available as apprenticeship programs to WA industry, however the qualifications are delivered by interstate training providers and enrolments are minimal.

8.2 Design of Kitchen, Bathroom and Interior Spaces

The *Certificate IV in Design of Kitchen, Bathroom and Interior Spaces* is available in a flexible delivery format by an interstate Registered Training Organisation. There has been variable interest in the qualification over the past few years and current training arrangements appear to be meeting demand.

8.3 Competitive Systems and Practices

Competitive Systems and Practices is a suite of qualifications that capture the skills and knowledge required to embed Lean principles within an organisation. The systems and practices support immediate and ongoing improvements to a business typically targeting improvements in efficiency, customer service, employee morale, reducing waste and costs¹⁸.

The *Certificate II, III and IV in Competitive Systems and Practices* are delivered by a number of Registered Training Organisations in Western Australia. The Furnishings industry has had some exposure to these courses with positive results.

8.4 Skill sets

There is currently one skill set suitable for delivery in WA which delivers post trade supervisory skills. Several other skills sets are in the development stage and include: Fitted Furniture Installer Skill Set, Furniture Estimator Skill Set, and Furniture Products Compliance Skill Set. At present WA is not delivering skill sets to the industry.

¹⁸ MSA (n.d.) accessed 11 July 2016

<http://www.mskills.com.au/DownloadManager/downloads/Guide%20to%20Competitive%20Systems%20and%20Practices.pdf>

9.0 Analysis of findings against current delivery

A meeting was held with representatives from South Metropolitan TAFE (TAFE), the Cabinet Makers Association, and the Training Council to discuss the findings of the survey and make recommendations to address the skills development needs identified. A matrix was prepared to help guide discussions between stakeholders, see Appendix Three.

9.1 Cabinet Making qualification

The Cabinet Making training program delivered by TAFE (the 'footprint') is designed to prepare apprentices for work as a Cabinet Maker in the broadest sense given the diverse skill needs of industry, see Appendix Two. For the purposes of this section the job roles covered by the footprint include:

- CAD/CAM
- CNC/Robotics
- Wood Machinists
- Installers
- Assemblers.

Although Cabinet Makers may undertake roles such as polishing, stores, mobile plant operation, and administration the qualification is not designed to train for these areas. Similarly, qualified Cabinet Makers may progress to Production Manager, Supervisor or Designer, again the qualification is not designed to deliver skills in these areas. It was agreed that the development of skill sets or accessing other qualifications would best address skill development needs for these roles.

In a modern Furnishings workplace the specific role of Wood Machinist is almost entirely related to CNC operations. The *Certificate III in Timber and Composite Machining* addresses the skill needs of apprentices assigned specifically for this role. The qualification is delivered to WA industry through Skills Tech Queensland.

First impressions of the Cabinet Making training program delivered by TAFE (the 'footprint') tends to reveal a focus on the development of traditional Cabinet Making skills compared to today's need for advanced manufacturing skills such as CAD/CAM/CNC/Robotics. This is reflected in the training footprint and in text provided on TAFE's website that reads:

Do you want a trade's career making cherished chairs and loved lounges, solid shelves and custom cabinets?

*When you complete the Certificate III in Cabinet Making you'll be ready for a career as a **furniture maker** or **cabinet maker**. You will gain the knowledge and skills to work effectively in the furnishing industry, using hand and power tools, operating industrial machinery, CNC processing centres, producing angled and curved furniture, applying decorative surfaces, selecting timber, preparing surfaces, interpreting plans, measuring, calculating the right amount of materials for the job, and workplace health and safety.¹⁹*

A similar, but more concerning definition of a Cabinet Maker is provided on the WA Career Centre website:

¹⁹ South Metropolitan TAFE (n.d.) accessed 25 July 2016 <http://www.polytechnic.wa.edu.au/content/certificate-iii-cabinet-making>

Cabinetmakers produce and repair wooden fixtures and furniture. They work from designs and specifications to measure, cut, join and carve wood and other timber materials. This is done using a wide variety of tools and equipment. Cabinetmakers may use imported timbers or native Western Australian timbers, such as Jarrah and Marri. Cabinetmakers may produce mass market furniture and fixtures, create commissioned one-off pieces, or restore antiques.²⁰

Whilst there are Cabinet Makers working in furniture making, they are in the minority. The main focus of Cabinet Makers in the industry is in kitchen and bathroom design and manufacture. In recognising this dichotomy, the Certificate III in Cabinet Making qualification offers industry a choice between two streams or specialisations: Furniture, and Kitchens and Bathrooms.

Due to limited resources and low enrolments TAFE delivers a combined Furniture, and Kitchens and Bathrooms qualification.

9.2 Integrating findings

The current footprint delivers training to support skill development in the job roles of CAD/CAM, CNC/Robotics, Wood Machining, Installation, and Assembly. The job roles of installing and assembly were recognised by industry as having adequate skill levels to meet future needs. The question for the project hence became – What is the best way to address Industry’s identified need to increase the skill levels of CAD/CAM, CNC/Robotics and Wood Machinists in the categories of literacy, STEM and enterprise skills? An analysis is provided below.

9.2.1 Literacy Skills

The footprint delivers units of competency that provides ongoing development of reading and writing skills. For example in the units: *Work Safety, Work in a team, Communicate in the workplace, Prepare cutting lists, and Read and interpret work documents*. The introduction of units focussing specifically on technology and maintenance, as discussed on page 42, will introduce higher level concepts and applications effectively increasing literacy skill levels.

A number of support mechanisms²¹ are also available to apprentices at TAFE if they are experiencing difficulty with language, literacy and numeracy. The addition of a new core unit *Address adult language, literacy and numeracy skills*, in the *Certificate IV in Training and Assessment* will further strengthen Vocational, Education and Training (VET) trainer’s skills in supporting students with language, literacy and numeracy.

²⁰ Careercentre (n.d) accessed 25 July 2016 <http://www.careercentre.dtwd.wa.gov.au/Occupations/Pages/cabinetmaker.aspx>

²¹ See CAVSS http://www.dtwd.wa.gov.au/trainingproviders/vet/literacy-numeracy/course-accreditation/Documents/CAVSS-getting_started_05.pdf and Adult Literacy Team page <http://www.dtwd.wa.gov.au/trainingproviders/vet/literacy-numeracy/Pages/default.aspx>

9.2.2 STEM Skills

Science – The footprint delivers the unit *Participate in environmentally sustainable work practices*. The majority of employers reported that the existing level of science competency is adequate and not increasing in importance.

Technology – Technology was reported by employers as increasing in importance for all job roles. A review of the footprint identified opportunities for improvement. Currently there are two units that focus on CNC and CAD. They are: *Set up, operate and maintain computer numerically controlled (CNC) machining and processing centres*, and *Produce manual and computer-aided production drawings*. The addition of the unit *Set up, operate and maintain computer numerically controlled (CNC) sizing machines* could strengthen delivery in this area along with investment in CNC/CAD/CAM software. It is understood that trainers are currently using Auto CAD which is limiting the scope and depth of training able to be delivered to apprentices. Once investment in technology is forthcoming, TAFE could also consider other technology units such *Operate computer-aided design (CAD) system to produce basic drawing elements*.

Engineering – Engineering is a highly valued skill reported by employers as increasing in importance. The current footprint provides several ad hoc avenues for skill development in machine maintenance, tooling, optimisation, and fault finding. Consideration should be given to including the unit *Use basic preventative maintenance techniques and tools* or *Contribute to the application of a proactive maintenance strategy*. The inclusion of specific units will provide focus on the importance of engineering in an advanced manufacturing environment. There is minimal lean manufacturing skills development in the apprenticeship although *Measure and draw site layout for manufactured furniture products* may develop skills in work flow methods and systems. Where possible incorporating elements of lean, such as '5S' is recommended.

Mathematics – Employers rated mathematics as a significant and important skill required by Cabinet Makers. Mathematics is delivered and assessed in a range of units including *Make measurements and calculations*, and *Prepare a cutting list from plans and specifications*. Delivery of these units is considered adequate coupled with the advice aimed at *Literacy skills*.

9.2.3 Enterprise Skills

Innovation – Employers rated innovation highly against CNC/CAD/CAM/Robotics and Wood Machinist job roles. Incorporating a variety of teaching styles can enhance innovation and creative thinking. For example project based learning, teaching concepts not facts, forming teams and promoting collaboration, trainers themselves being innovative by being brave with ideas yet also showing a willingness to fail.

Problem Solving – The research identified problem solving as increasing in importance for CNC/CAD/CAM/Robotics and Installers. Whilst a number of units of competency in the current training program deliver problem solving activities, it is recommended that skills development be strengthened through a dedicated unit such as *Undertake root cause analysis*.

Researching and Analysing – Work Task 5 of the Cabinet Making apprenticeship requires apprentices to design and create a 'one-off' furniture piece. This involves extensive innovation, research and analysis. Whilst the skills developed in undertaking this project would be valuable, there is concern the focus is on furniture design rather than kitchen and bathroom design, particularly where the bulk of enrolled apprentices will be working in an advanced manufacturing environment.

9.3 Development of an advanced skills training program

The research has highlighted how the digital age has had a significant impact on the skills of the Furnishings Industry workforce. The introduction of new technologies, materials and work processes has increased demand for a workforce with higher levels of literacy, STEM and enterprise skills.

Local training providers have responded to changing skills needs through minor alterations to the Cabinet Making training program delivered to apprentices. For example, ceasing to deliver *Hand make timber joints*, and *Apply sheet laminates by hand*. There has also been a rationalisation of the qualifications delivered in the Furnishings Industry due to low enrolment numbers and major funding cuts to vocational education and training. Apprenticeship programs for Wood Machinists, Furniture Finishers and Upholsterers are now delivered by interstate training providers.

The research found that a large proportion of job roles will demand higher levels of skills/qualifications. The most frequently cited job roles included: Supervisors, Production Managers, CAD/CAM operators, CNC robotics operators, and Designers. Whilst the Certificate III in Cabinet Making provides training in entry level skills, the research has identified a need for post trade training, for example a Certificate IV in Advanced Manufacturing - Furniture. The focus of the qualification would be on advanced skills development in roles such as CNC/CAD/CAM/Robotics operations, project co-ordination, production supervision, scheduling, and design. The development of technical skills would be supported equally by the development of advanced literacy and enterprise skills such as problem solving, innovation and research.

10.0 Recommendations

The project Steering Committee makes the following specific recommendations that are based on the findings arising from desktop research, stakeholder consultation and employer survey analysis. The recommendations are offered to enhance training delivery in the Furnishings Industry and are in order of priority.

10.1 Technology software

It is recommended that the *WA Department of Training and Workforce Development* and *TAFE* urgently invest in advanced or industry specific technology software at TAFE campuses to support existing 'hi-tech' machinery so that machine capacity can be fully utilised and apprentices are trained to meet the information technology skills required in the Furnishings Industry. For example CAD/CAM 3D software for Furniture and Interior design such as Homag Wood CAD/CAM, Cabinet Vision, Microvellum.

10.2 Professional development

It is recommended that the *WA Department of Training and Workforce Development* and *TAFE* invest in professional development training of VET Trainers to support delivery of advanced CNC/CAD/CAM and Robotics skills.

10.3 Revise existing Cabinet Making footprint

It is recommended that all *TAFEs* delivering the Cabinet Making apprenticeship in WA review its training footprint in light of the findings from this report. In particular those matters defined in Section 9.2 including a stronger focus on technology, engineering, and exposure to new materials and technologies.

10.4 Advanced skills training program

It is recommended that the *Food, Fibre, and Timber Industries Training Council* in collaboration with Industry Associations facilitate a National discussion on the development of a Certificate IV in Advanced Manufacturing – Furniture that provides post-trade training in advanced CNC/CAD/CAM and Robotics, supervisory, project co-ordination, scheduling, and design skills.

10.5 Skill sets

It is recommended that the *Food, Fibre, and Timber Industries Training Council* investigate the development of post-trade skill sets to assist Cabinet Makers transition to higher level roles such as Advanced CNC/CAD/CAM/Robotic operators, Supervisor, Project Co-ordinator, Production Supervisor, Designer, and Scheduler.

10.6 Career Centre website

It is recommended that the *Food, Fibre, and Timber Industries Training Council* negotiate with the *Career Centre* to update its website text that describes the work of a Cabinet Maker.

11.0 Appendix One – List of Steering Committee Members

Alex Rupe	Committee Representative – Cabinet Makers Association
Garry Michaels	Senior Lecturer – South Metropolitan TAFE
Mahmut Melkic	Organiser – Australian Workers Union
Colin Nagle	Membership Officer – Australian Furniture Association
Bernard Dodman	President – WA Furniture Manufacturers Association
Diane Smith	Project Manager – Food, Fibre & Timber Industries Training Council

12.0 Appendix Two – Certificate III in Cabinet Making Footprint

Colour Key:

Core (6)	Group A (1)	FC (5)	KB (2)	FC & KB (6)	Group E (8)
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MSF31113 Certificate III in Cabinet Making (J739) Footprint

Trade Specific Induction

STATE CODES	NAT. NUMBER	UNIT NAME	HOURS	GROUP/ PATHWAY
WI410	MSFFM2001	Use furniture making sector hand and power tools	38	Core
AWC15	MSMWHS200	Work safely	26	Group A
AWC13	MSMENV272	Participate in environmentally sustainable work practices	20	Core
WI316	MSFFF2004	Prepare surfaces for finishing	16	FC
WI414	MSFFM2005	Join solid timber	8	FC
AWC31	MSMSUP106	Work in a team	26	Core
AWC20	MSMSUP102	Communicate in the workplace	26	Core
			= 160 Hrs	

Work Task 1 Machine Timber

WI419	MSFFM2010	Set up and operate basic static machines	56	FC & KB
WI433	MSFFM3012	Set up, operate and maintain sawing machines	20	Group E
WI411	MSFFM2002	Assemble furnishing components	24	FC
WI514	MSFGN3001	Read and interpret work documents	24	Core
WI512	MSFGN2001	Make measurements and calculations	20	Core
WI431	MSFFM3010	Prepare a cutting list from plans and specifications	16	FC & KB
WI420	MSFFM2011	Apply manufactured board conversion techniques	16	FC & KB
			= 176 Hrs	

Work Task 2 Apply Edge Treatments

WI440	MSFFM3019	Set up, operate and maintain automated edge banding machines	58	Group E
Work Task 3 Installation				
WI412	MSFFM2003	Select and apply hardware	16	FC & KB
WI427	MSFFM3006	Install furnishing products	20	FC
WI560	MSFKB3005	Fabricate cabinets for the built-in environment	70	KB
WI554	MSFKB2001	Prepare for cabinet installation	10	KB
			= 174 Hrs	

Work Task 4 Construct Angled and Curved Cabinets

WI430	MSFFM3009	Produce manual and computer-aided production drawings	52	Group E
WI424	MSFFM3003	Produce angled and curved furniture using manufactured board	64	Group E
WI443	MSFFM3022	Set up, operate and maintain computer numerically controlled (CNC) machining and processing centres	56	FC & KB
			= 172 Hrs	

Work Task 5 Custom Made Furniture

WI515	MSFGN3002	Estimate and cost job	16	FC & KB
WI426	MSFFM3005	Fabricate custom furniture	52	FC
WI445	MSFFM3024	Construct jigs and fixtures	34	Group E
WI432	MSFFM3011	Measure and draw site layout for manufactured furniture products	16	Group E
WI429	MSFFM3008	Select timbers for furniture production	10	Group E
WI428	MSFFM3007	Prepare and apply decorative surfaces for furniture	20	Group E
			= 148 Hrs	

830 hours total

13.0 Appendix Three – Matrix – Job roles by skill areas

Table 1: Job roles by skill areas identified as increasing in importance by >50% survey respondents

Skill →	Reading	Writing	Science	Technology	Engineering	Mathematics	Innovation	Problem Solving	Researching and Analysing
Job Role ↓									
Production Mgr	✓	✓	✓	✓	✓	✓	✓	✓	✓
Supervisor	✓	✓	✓	✓	✓		✓	✓	✓
Designers	✓	✓		✓	✓	✓	✓	✓	✓
CAD/CAM	✓	✓		✓	✓	✓	✓	✓	✓
CNC/Robotics	✓			✓	✓	✓	✓	✓	✓
Wood Machinists				✓	✓		✓		
Store/Mobile Plant	✓		✓	✓					
Admin Staff	✓	✓		✓					
Installers								✓✓	
Assemblers									
Polishers									

✓✓ Qualitative data ie identified through discussions with employers

14.0 Appendix Four – Survey Instrument

Skill Needs Analysis - Cabinet Making/Furniture Making Industry

1. Welcome

The purpose of this survey is to: understand the demand for science, technology, engineering and mathematics (STEM) skills in the Cabinet Making/Furniture Making workforce, identify any newly emerging tasks, and determine how prepared the workforce is to meet new skills requirements.

The survey will take approximately 20 minutes to complete.

All your answers will be kept confidential and your organisation's name will not be included in any reports. The information you provide will be combined with all data collected as part of the survey process. An analysis of the data will be presented in a final report.

If you have any questions about the survey please email diane.smith@ffittrainingcouncil.com.au or call Diane on 9361 2800.

Thank you for participating in our survey. Your feedback is important.

Skill Needs Analysis - Cabinet Making/Furniture Making Industry

2. Background information

The following questions collect background information about your organisation.

1. What is the nature of the business in which you work? (eg design, manufacture, and install kitchens and bathrooms; supplier to the Cabinet Making industry; Furniture Maker)

2. How many employees do you currently have on the payroll?

3. In which geographic markets does your organisation sell goods and/or services?

- Local
- Regional
- National
- Other countries

4. Please select which of the following job roles that exist in your business:

- Assemblers
- Installers
- Frame makers
- Sewing machinists
- Polishing/painting/finishing
- Upholsterers
- Wood Machinists
- CNC/robotics operators
- CAD/CAM operator
- Mobile plant operators
- Supervisor/Forepersons
- Production Managers
- Designers - Furniture/Industrial/Interior/Kitchen and Bathroom
- Storeman
- Administrative staff
- Other (please specify)

Skill Needs Analysis - Cabinet Making/Furniture Making Industry

3. Recruitment

The following section collects information on skill shortages identified through recruitment practices based on the job roles that exist in your organisation.

5. Do you currently have vacancies for any of the following job roles that are proving hard to fill?

	Yes	No	Don't know
Assemblers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Installers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Frame makers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sewing machinists	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Polishing/painting/finishing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Upholsterers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Wood Machinists	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
CNC/robotics operators	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
CAD/CAM operator	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mobile plant operators	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Supervisor/Forepersons	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Production Managers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Designers - Furniture/Industrial/Interior/Kitchen and Bathroom	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Storeman	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Administrative staff	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (please specify)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

6. If you answered yes to Q5, why are the job roles hard to fill?

Assemblers

Installers

Frame makers

Sewing machinists

Polishing/painting/finishing

Upholsterers

Wood Machinists

CNC/robotics operators

CAD/CAM operator

Mobile plant operators

Supervisor/Forepersons

Production Managers

Designers -
Furniture/Industrial/Interior/Kitchen and
Bathroom

Storeman

Administrative staff

[Insert text from Other]

7. When you recruit staff do you prefer the person's education to be tertiary, vocational, secondary, or will any do?

	Tertiary (University)	Vocational (TAFE)	Secondary (High School)	Any will do
Assemblers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Installers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Frame makers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sewing machinists	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Polishing/painting/finishing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Upholsterers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Wood Machinists	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
CNC/robotics operators	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
CAD/CAM operator	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mobile plant operators	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Supervisor/Forepersons	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Production Managers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Designers - Furniture/Industrial/Interior/Kitchen and Bathroom	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Storeman	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Administrative staff	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (please specify)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

8. Are there any key skills you look for when recruiting?

9. Generally, what qualifications are held by each of the following job roles in your organisation? eg Certificate III in Cabinet Making/Upholstery/Wood Machining, Degree in Design/Architecture/Management,

Assemblers

Installers

Frame makers

Sewing machinists

Polishing/painting/finishing

Upholsterers

Wood Machinists

CNC/robotics operators

CAD/CAM operator

Mobile plant operators

Supervisor/Forepersons

Production Managers

Designers -
Furniture/Industrial/Interior/Kitchen and
Bathroom

Storeman

Administrative staff

Other (please specify)

10. Do you expect the demand for workers with higher level skills/qualifications will increase, decrease, or remain about the same over the next 5-10 years?

	Stay about the same	Increase	Decrease	Does not apply	Don't know
Assemblers	<input type="radio"/>				
Installers	<input type="radio"/>				
Frame makers	<input type="radio"/>				
Sewing machinists	<input type="radio"/>				
Polishing/painting/finishing	<input type="radio"/>				
Upholsterers	<input type="radio"/>				
Wood Machinists	<input type="radio"/>				
CNC/robotics operators	<input type="radio"/>				
CAD/CAM operator	<input type="radio"/>				
Mobile plant operators	<input type="radio"/>				
Supervisor/Forepersons	<input type="radio"/>				
Production Managers	<input type="radio"/>				
Designers - Furniture/Industrial/Interior/Kitchen and Bathroom	<input type="radio"/>				
Storeman	<input type="radio"/>				
Administrative staff	<input type="radio"/>				
Other (please specify)	<input type="radio"/>				

Comments

Skill Needs Analysis - Cabinet Making/Furniture Making Industry

4. Workplace skills

The purpose of this section is to collect data on the changes to skill requirements in the Cabinet Making/Furniture Making industry based on the job roles that exist in your organisation.

11. Is the need or importance of reading and comprehending instructions, guidelines, manuals or reports staying about the same, increasing or decreasing for each of the job roles?

	Staying about the same	Increasing	Decreasing	Don't know
Assemblers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Installers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Frame makers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sewing machinists	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Polishing/painting/finishing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Upholsterers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Wood Machinists	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
CNC/robotics operators	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
CAD/CAM operator	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mobile plant operators	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Supervisor/Forepersons	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Production Managers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Designers - Furniture/Industrial/Interior/Kitchen and Bathroom	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Storeman	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Administrative staff	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (please specify)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

12. Is the importance of writing instructions, guidelines, manuals or reports staying about the same, increasing or decreasing for each of the job roles?

	Staying about the same	Increasing	Decreasing	Don't know
Assemblers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Installers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Frame makers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sewing machinists	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Polishing/painting/finishing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Upholsterers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Wood Machinists	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
CNC/robotics operators	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
CAD/CAM operator	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mobile plant operators	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Supervisor/Forepersons	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Production Managers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Designers - Furniture/Industrial/Interior/Kitchen and Bathroom	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Storeman	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Administrative staff	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (please specify)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

13. Is the importance of numeracy in undertaking job tasks staying about the same, increasing or decreasing for each of the job roles? (job tasks could include preparing cutting lists, measuring cabinets, machine and materials optimisation, designing floor plans)

	Staying about the same	Increasing	Decreasing	Don't know
Assemblers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Installers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Frame makers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sewing machinists	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Polishing/painting/finishing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Upholsterers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Wood Machinists	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
CNC/robotics operators	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
CAD/CAM operator	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mobile plant operators	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Supervisor/Forepersons	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Production Managers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Designers - Furniture/Industrial/Interior/Kitchen and Bathroom	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Storeman	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Administrative staff	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (please specify)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

14. Is the importance of engineering skills and knowledge staying about the same, increasing or decreasing for each of the following job roles? (job tasks could include mechanisation, maintenance, tooling, fault finding, work flow, lean manufacturing)

	Staying about the same	Increasing	Decreasing	Don't know
Assemblers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Installers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Frame makers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sewing machinists	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Polishing/painting/finishing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Upholsterers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Wood Machinists	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
CNC/robotics operators	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
CAD/CAM operator	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mobile plant operators	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Supervisor/Forepersons	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Production Managers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Designers - Furniture/Industrial/Interior/Kitchen and Bathroom	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Storeman	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Administrative staff	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (please specify)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

15. Is the importance of having the ability to innovate staying about the same, increasing or decreasing for each of the job roles? (eg developing new products, services, processes, designs)

	Staying about the same	Increasing	Decreasing	Don't know
Assemblers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Installers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Frame makers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sewing machinists	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Polishing/painting/finishing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Upholsterers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Wood Machinists	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
CNC/robotics operators	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
CAD/CAM operator	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mobile plant operators	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Supervisor/Forepersons	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Production Managers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Designers - Furniture/Industrial/Interior/Kitchen and Bathroom	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Storeman	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Administrative staff	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (please specify)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

16. Can you provide an example of innovation in the workplace?

18. Is the level of information technology use staying about the same, increasing or decreasing?

	Staying about the same	Increasing	Decreasing	Don't know
Assemblers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Installers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Frame makers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sewing machinists	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Polishing/painting/finishing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Upholsterers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Wood Machinists	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
CNC/robotics operators	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
CAD/CAM operator	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mobile plant operators	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Supervisor/Forepersons	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Production Managers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Designers - Furniture/Industrial/Interior/Kitchen and Bathroom	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Storeman	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Administrative staff	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (please specify)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

19. Is the importance of applying science knowledge staying about the same, increasing or decreasing? (eg sustainability, clean/green production, carbon neutrality)

	Staying about the same	Increasing	Decreasing	Don't know
Assemblers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Installers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Frame makers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sewing machinists	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Polishing/painting/finishing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Upholsterers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Wood Machinists	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
CNC/robotics operators and other computer assisted machinery	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mobile plant operators	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Supervisor/Forepersons	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Production Managers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Designers - Furniture/Industrial/Interior/Kitchen and Bathroom	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Storeman	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Administrative staff	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (please specify)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

20. The next question is about solving complex problems, defined to be a problem which takes employees at least 30 minutes of THINKING time to find a good solution. This could relate to thought processes around engineering, mathematical, technological, or scientific problems in the workplace.

Is the importance of problem solving staying about the same, increasing or decreasing for each of the job roles?

	Staying about the same	Increasing	Decreasing	Don't know
Assemblers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Installers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Frame makers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sewing machinists	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Polishing/painting/finishing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Upholsterers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Wood Machinists	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
CNC/robotics operators	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
CAD/CAM operator	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mobile plant operators	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Supervisor/Forepersons	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Production Managers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Designers - Furniture/Industrial/Interior/Kitchen and Bathroom	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Storeman	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Administrative staff	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (please specify)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

21. Is the importance of researching and analysing staying about the same, increasing or decreasing? (eg keeping up to date with new technologies, consumer trends, new materials)

	Staying about the same	Increasing	Decreasing	Don't know
Assemblers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Installers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Frame makers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sewing machinists	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Polishing/painting/finishing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Upholsterers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Wood Machinists	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
CNC/robotics operators	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
CAD/CAM operator	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mobile plant operators	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Supervisor/Forepersons	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Production Managers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Designers - Furniture/Industrial/Interior/Kitchen and Bathroom	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Storeman	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Administrative staff	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (please specify)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

22. What sort of research are your staff doing? Can you give an example?

23. Are there any other skills that are considered important in your organisation?

Skill Needs Analysis - Cabinet Making/Furniture Making Industry

5. New and emerging tasks

This section collects information on newly emerging tasks and how prepared the workforce is to meet new skill requirements.

24. Can you identify any newly emerging tasks that are required either now or in the future? These may result from changes in consumer demand, new technologies, environmental awareness, legislation, standards, or regulations.

25. In general is the workforce will prepared to perform the newly emerging tasks?

26. Does your organisation apply any of the following measures to address newly emerging tasks?

- External training
- On-the-job training
- Supplier/manufacture training
- Internal reorganisation to better use the existing skills and competencies
- Recruitment of new staff
- Other (please specify)

27. Has the organisation met any difficulties finding courses or trainers for the newly emerging tasks?

No

Yes (please specify difficulty)

28. Has the organisation met any difficulties recruiting staff to carry out the newly emerging tasks?

No

Yes (please specify difficulty)

29. Can you identify any newly emerging job roles?

30. Have you discussed your future training needs with a training provider?

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6. Final comments

31. Would you like to make any other comments about the topics covered in this survey?

32. Thank you very much for your kind cooperation with this survey. Would you like to be notified of any activities that result from this project (eg new training programs, changes to existing programs)?

- No thanks
- Yes, you can notify me by sending a message to the following phone number or email address