

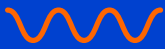
PERCEPTIONS OF MANUFACTURING RESEARCH

Young people, parents and school influencers
2024



msq.org.au

 **MANUFACTURING
SKILLS
QUEENSLAND**



We need to change perceptions of the industry

The manufacturing industry in Queensland is set to grow, with modelling suggesting manufacturing will need to employ more than 310,000 people by 2040-41 (QGSO, 2024). Consumer-demand, the renewables boom, and technology changes in line with industry transformation and the frontier of intelligent manufacturing offer an unprecedented opportunity to be part of dynamic, exciting and life-changing innovations that will shape the future of production and sustainability in the state.

We heard from Queensland manufacturers that one of their biggest challenges is attracting people to the workforce. While many manufacturers are prioritising how they attract and engage young people, particularly school-aged and school-leavers, it can be challenging. A lack of awareness, outdated stereotypes, an educational emphasis on higher education pathways, and competition from other industries are factors impacting the pipeline of talent for manufacturing. We undertook this research to strengthen promotion of the industry, and support manufacturers in making better connections with young people and schools.

This report explores the perceptions of manufacturing through the lens of young people, their influencers (parents) and schools.

Our findings paint a clear picture; despite the passion that many of us have for the industry, unfortunately a career in manufacturing lacks strong appeal to young people. There is a narrow view of jobs, and work is primarily seen as being hard, physically demanding, and repetitive. While the industry has evolved, perceptions of it haven't.

Our research reveals a fascinating paradox: while young people perceive manufacturing occupations as less attractive compared to other industries, they simultaneously recognise the

industry's positive societal impact and innovative nature. This insight presents a unique opportunity to enhance the appeal of manufacturing careers. By sharing compelling stories of groundbreaking innovations and life-changing products, we can begin to shift perceptions and ignite passion for this dynamic field.

Moreover, our findings underscore the critical need for easily accessible, high-quality information on roles and career pathways in manufacturing. Schools play a pivotal role in guiding students' next steps, however feedback from students suggests that there is often a priority given to higher education pathways. Like many industries, these pathways are important for manufacturing. This level of thinking can drive forward innovation, however, it's often overlooked that a degree can significantly contribute to the industry. Similarly, we need more celebration of vocational education and training, and more encouragement of these pathways.

However, it's encouraging to note that parents are increasingly supportive of vocational pathways, viewing them as attractive options for their children. By addressing the current scarcity of comprehensive information on manufacturing jobs, we can bridge the gap between perception

and the exciting reality of careers in this sector, inspiring the next generation of innovators and creators.

While young people and their parents rely on diverse sources for career guidance, our research underscores the need for enhanced digital resources that vividly showcase the full spectrum of pathways in manufacturing. We must provide clearer explanations of how school-to-work transitions unfold in practice, bridging the gap between education and industry.

At Manufacturing Skills Queensland, we're committed to changing perceptions of our industry. This research gives us a baseline for strategic action. By clarifying career paths and promoting industry benefits, we can attract the next generation of workers.

Now is the time for our industry to shape how young people view and engage with manufacturing, ensuring its growth and success in Queensland.



Rebecca Andrews

Chief Executive Officer
Manufacturing Skills Queensland





Introduction

In 2024, Manufacturing Skills Queensland (MSQ) commissioned Enhance Research to investigate how young people, parents, and school influencers perceived the manufacturing industry.

Qualitative data was gathered from school influencers – teachers and career counsellors. Participants represented each region of Queensland (Far North, North, Central, North Coast, Darling Downs-Southwest and Metropolitan), both public and private school sectors and a variety of teaching areas.

Quantitative research involved 200 high school students and school leavers aged 15 to 18 years (referred to as ‘students’ or ‘young people’ in this report) and 200 parents of 15 to 18 years olds (referred to as ‘parents’ in this report). Participants surveyed in the quantitative research resided in Queensland and were distributed across metropolitan and regional areas, and private and public school sectors.

KEY TAKEAWAYS

Parents and schools influence the career pathways aspirations of students

When deciding on a career path, parents are the main influence on students. Students agree that university is encouraged after school and that ATAR pathways are encouraged over non-ATAR pathways. They cite school as the main source of encouragement for this. Both students and parents find university pathways equally appealing as a post-school option, but encouragingly, parents are significantly more likely to find vocational pathways appealing.

The appeal of manufacturing is low among students, but stronger among parents

Manufacturing is viewed as an appealing industry to have a career in by 16% of students. Parents are more likely to find a career in manufacturing appealing for their child/ren (16%).

Low awareness and narrow perceptions of manufacturing

There is a narrow view of what manufacturing is and top of mind associations highlight a low level of knowledge about the industry and its roles

(e.g., boilermaker or welder). Manufacturing is viewed as a less desirable career path compared to other industries; however, it is seen as positively contributing to society, and as an innovative industry.

Stigma and stereotypes of the manufacturing industry exist

Manufacturing is viewed as a lower status occupation, and workers are seen as being lower skilled. Generally, people see manufacturing as being hard work, physically demanding and repetitive. School influencers hold strong stereotypes of the types of students they would consider recommending manufacturing to.

Salary, work-life balance and stability are the most important career factors

Among students, work-life balance is the most important career factor, while parents feel job stability is most important. Salary, opportunities for career progression and lifestyle are the other factors in the top five for both groups.

Who contributes to career decision-making?

There are a range of factors that influence a young person's choice of career and industry. Internal, external, interpersonal, institutional and socio-demographic factors play a crucial role in shaping a young person's decisions. In this research we asked young people, parents and school influencers about the level of influence various stakeholders have on the selection of career paths.

Perhaps unsurprisingly, young people perceive that their parent or caregiver is the most influential when it comes to career decisions. Sixty-four per cent of students report their parents as influential or very influential. This high percentage underscores the critical role of family in shaping future career paths. Schools and career counsellors should consider ways to engage parents effectively in career guidance programs.

From a young person's perspective, outside of parents and care givers, the most influential groups are friends/peers (45%), societal influences (44%), teachers (42%) and career counsellors (39%) (Figure 1). The near equal ranking of friends/peers and societal influences is noteworthy. Peer influence suggests the importance of social circles in career discussions, and societal influences may include media, cultural norms, and economic factors. Interestingly, when school influencers were asked to participate in a similar ranking exercise, they made the observation that friends/peers are more influential in subject selection, rather than career choice.

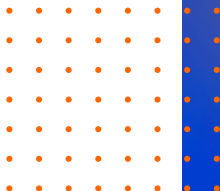
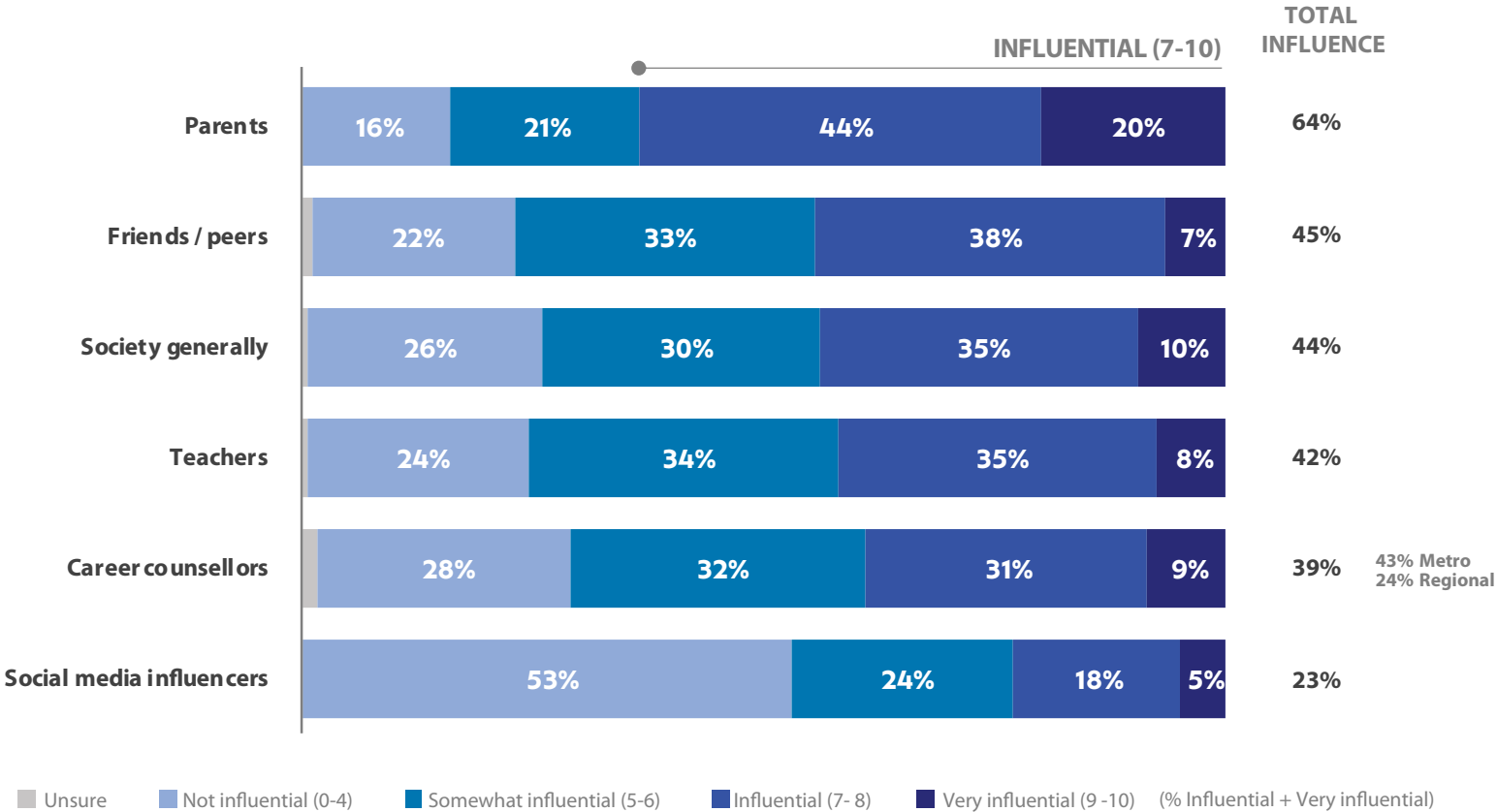
Notably, teachers play a significant role, likely due to their daily interaction with students. Their influence suggests an opportunity for integrating career guidance into regular curriculum. While slightly lower than teachers, career counsellors still have a substantial influence. Greater visibility of career counselling in schools could improve the impact of this influencer. Collaborative efforts between teachers and counsellors could provide consistent and reinforcing career messages.

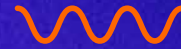
The relatively low impact of social media is intriguing in our digital age. It suggests that personal relationships and face-to-face interactions still dominate career decision-making. However, this doesn't negate the potential of social media as a tool for disseminating career information.





FIGURE 1.
Career influencers





When it comes to understanding career pathways, the way young people access information from teachers and parents is contrasting. Students look to their parents for support and encouragement to pursue a career in the industry they are interested in, while they seek information from their teachers about the kind of qualifications needed to work in an industry of interest (Figure 2).

Our research indicates that strong stereotypes persist regarding the profile of students potentially interested in manufacturing careers. These stereotypes typically characterise the ideal candidate as:

- Male
- Less academically inclined
- Hardworking
- Enjoys hands-on tasks
- Possibly already pursuing vocational education and training qualifications.

While students fitting this profile often align well with manufacturing roles, the industry faces significant competition for talent. Sectors with higher visibility and stronger brand recognition—such as construction, automotive trades, and the defence forces—tend to receive more frequent recommendations from school influencers.

This preference for traditional workers and competing industries highlights a critical challenge for the manufacturing industry: the need to enhance its visibility and appeal among potential candidates and career advisors. This has broad implications. Addressing these perceptions and competing effectively for talent will be crucial for the future workforce development in manufacturing.

Ultimately, a young person's career decisions are influenced by the information they receive, particularly during their senior years of schooling. Students are presented with advice and information from a range of sources about how to approach their career pathway. Because teachers are such a critical influence on the exploration of industry and post-school qualifications, stronger collaboration between schools, employers and peaks could help challenge stereotypes by showcasing diversity in roles, emphasising innovation, and highlighting career progression and transferable skills.

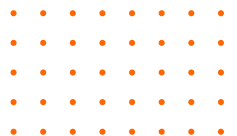
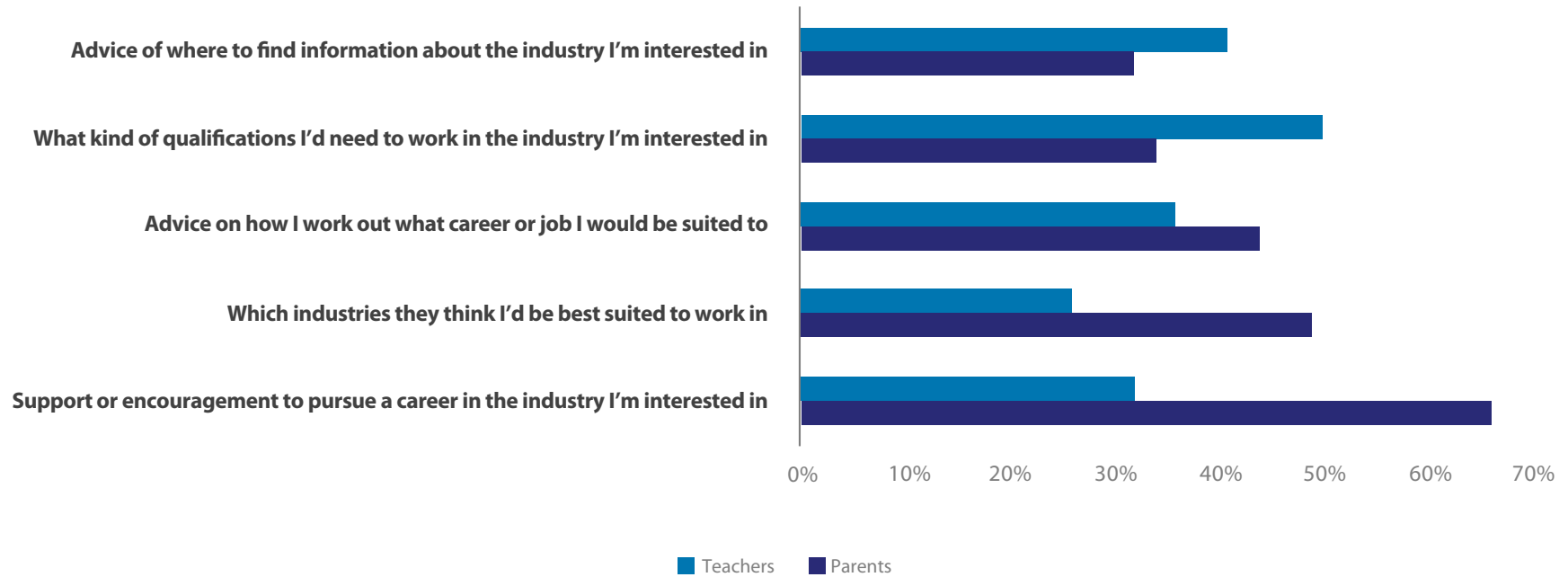


While face-to-face or human interaction provides a rich source of information and advice, young people and their parents often rely on digital sources to find and gather information when deciding on a career path. Despite uptake of contemporary platforms like Facebook and TikTok, young people and parents are more likely to search the internet to inform a career pathway. The internet offers a good basis for this information, with information shared on social media to improve visibility. Other key sources of information for both young people and parents are communications from universities or training organisations, and career events organised through school.





FIGURE 2.
Types of information students source from parents and teachers



Post-school pathways and pathway communication

For people to be interested in investing in a career, there needs to be a pathway visible and available. In the context of Queensland school leavers, three clear pathways are available: entry straight into the workforce, vocational pathway or university pathway.

Our research found that a university pathway is significantly more appealing to most students, compared to other options (Figure 3), however, interestingly vocational pathways hold increasing appeal for parents.. A difference exists between students in metropolitan and regional areas, with more students in metropolitan areas preferring a university pathway (77%) compared to regional students (53%). Taking a direct entry approach from school straight into work still held strong appeal for students, and stronger appeal for parents.

While overall students find a university pathway appealing, only 30% are aware of how this pathway could lead to a career in manufacturing. This suggests a lack of quality information making a connection between higher education and the important role it plays in the industry.

Most students report that ATAR pathways and university education are strongly encouraged post-high school. This encouragement is more

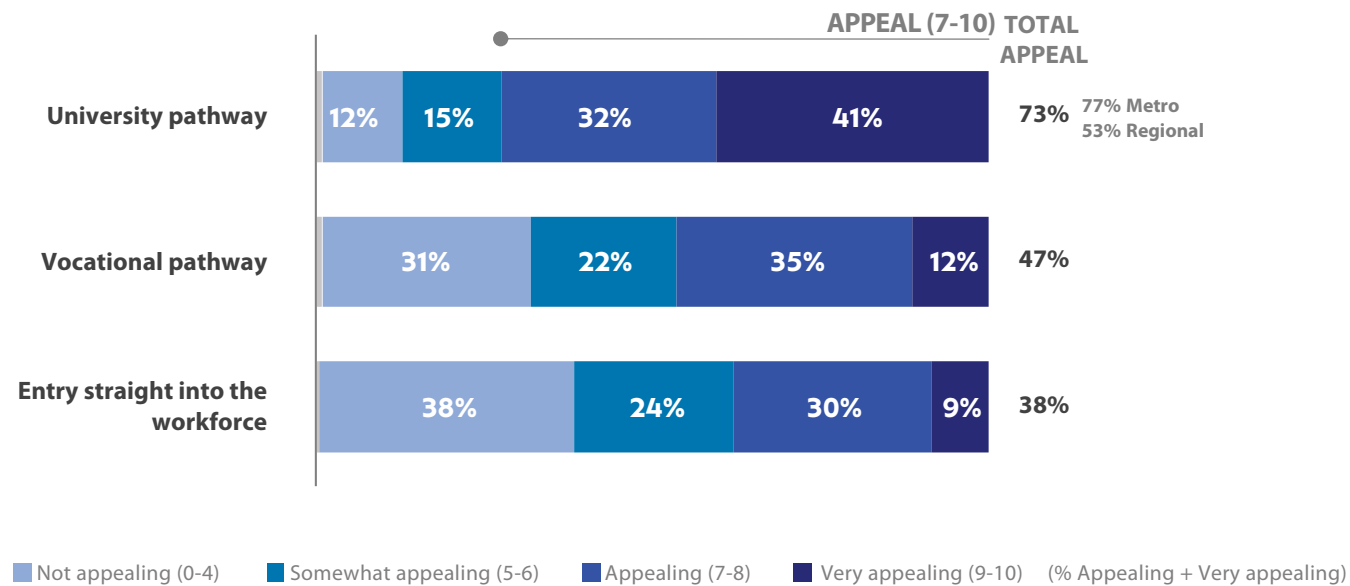
pronounced among metropolitan students compared to their regional counterparts. The emphasis on university education reflects a broader societal trend valuing higher post-secondary qualifications. Around 50% of students agree that vocational pathways are encouraged (Figure 4). This suggests a potential imbalance in career guidance, with a bias towards academic routes. The lower emphasis on vocational paths may lead to missed opportunities for students better suited to these careers.

Schools are the primary source of encouragement for university education, with approximately 2 in 3 students attributing this push to their schools—this is stronger for females than it is for males. Teachers follow closely as influential figures promoting university pathways. Societal expectations also play a significant role in encouraging university education. Parental influence, while still substantial, is less prominent, with about half of students citing parents as a source of university encouragement (Figure 4).





FIGURE 3.
Appeal of post-school pathways (students)



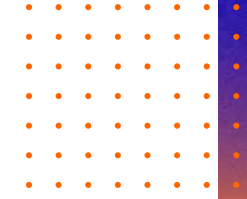
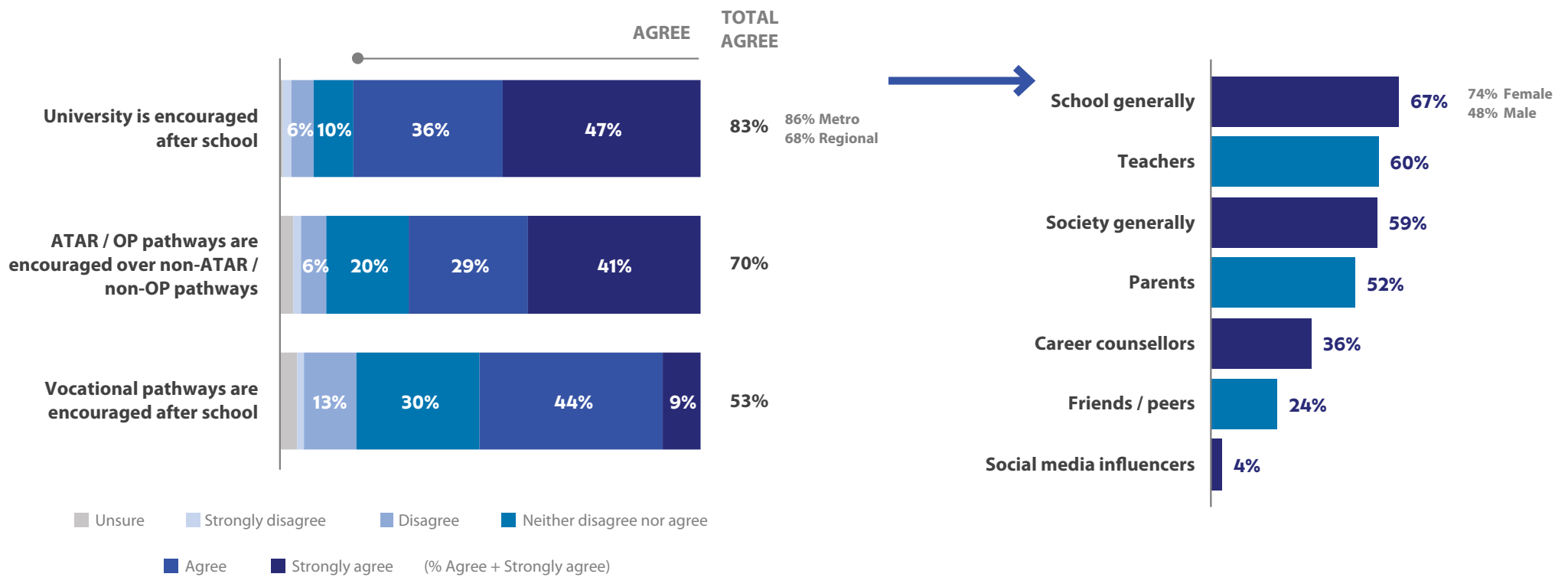


FIGURE 4.
Encouragement of post-school pathways (students)



Pathways into manufacturing

Pathways need more clarity. Long-term efforts need to focus on changing the perception of manufacturing as a low-skilled industry and increasing the availability and accessibility of information about diverse career paths, including both vocational and higher education routes.

Students see the clearest pathway into a career in manufacturing is through vocational training (63%) and are also aware of the school-based apprenticeship pathway (53%). Half this awareness exists for university pathways into the industry (30%). The visibility of available pathways may be correlated with the composition of the workforce, where 15% of the Queensland manufacturing workforce hold a bachelor's degree or higher, while 39% have a vocational education and training (VET) qualification as their highest qualification (ABS, 2023).

The low awareness of university pathways leading to a career in manufacturing perpetuates the notion that it has a low skilled workforce. Providing high quality VET will continue to capture the large portion of the workforce but highlighting pathways to higher education from a secondary

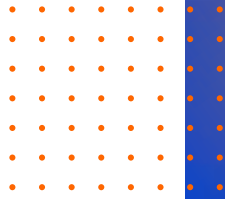
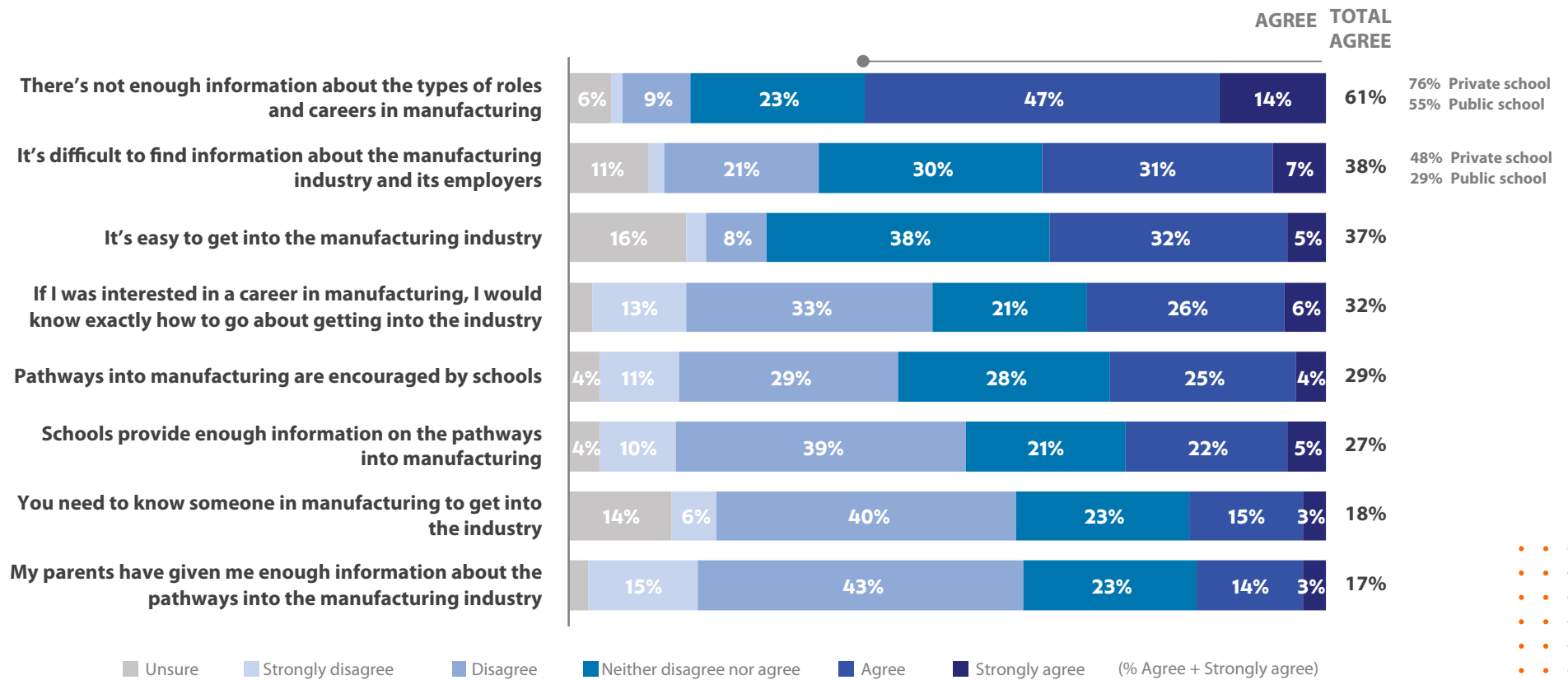
school or VET launchpad is important to provide industry with the next wave of skills required for Industry 4.0 manufacturing (e.g. automation, robotics).

When considering the pathways into the manufacturing industry, 61% of respondents agreed that there is not enough information about the types of roles and careers in manufacturing, and 40% agreed that it's difficult to find information about the manufacturing industry and its employers (Figure 5). There are clearly barriers for individuals before even starting a career in manufacturing. If there is not enough information available, and a lack of knowledge about a pathway to a career in manufacturing, young people and their parents will continue to find and favour other industries.

Without quality information, the industry will then continue to struggle to attract young people into employment. While awareness for the VET pathways is high, the volume of information in front of students, parents, and school influencers needs to increase. They need to know what and where to train/study, and how the acquired skills fit within the industry.



FIGURE 5.
Perceptions of pathways into manufacturing among students





The appeal of a career in manufacturing

The appeal of a career in manufacturing for young people lies in the industry's efforts to adapt to the changing demands and preferences of the younger workforce by shifting perceptions, showcasing technology, offering appealing work environments, and engaging with them through innovative recruitment strategies. This section outlines how young people view the manufacturing industry – both good and bad.

Some 16% of students find manufacturing careers appealing—with only 2% finding a career very appealing. Most students (over 60%) believe a manufacturing career to be unappealing (Figure 6). Parents show more openness to manufacturing careers for their children—38% of parents find manufacturing careers appealing for their children. This places it in the lower range of appeal, compared to other industries.

In terms of appealing industries, health care and social assistance, education and training, and science or mathematics are more frequently noted as appealing to students (Table 1).

The current appeal of the industry could be the result of a number of factors. A total of 71% of students agree that a career in manufacturing involves working long hours, while 16% strongly agree that working in manufacturing is boring (Figure 7). Fifty-six per cent of students are

concerned that working in the manufacturing industry involves physically demanding work. Safety is another area where perception hasn't kept pace with reality. Only 17% of young people agree that manufacturing is a safe industry to work in, a significantly lower rate than parents (37%).

On a positive note, a majority of young people and parents believe that the manufacturing industry contributes to society. There is also some appeal in the fact that manufacturing offers roles that enable you to work with the latest technology, and that jobs aren't office based. Parents see manufacturing more positively as 71% agree that working in manufacturing means not being stuck in an office all day (63% in students) and that a career in manufacturing offers job stability (61%). These attributes offer an opportunity for the industry to leverage these strong perceptions in communications when promoting jobs in industry.

Low appeal is a likely contributor to talent shortage in the industry. The persistent negative perceptions about manufacturing (long hours, boring work, physically demanding, and unsafe) are at odds with the industry's technological advancements and modernisation efforts. This misalignment could slow down the industry's transformation and adaptation to Industry 4.0 technologies, affecting its long-term productivity and global competitiveness.



FIGURE 6.

The appeal of a career in manufacturing to young people



Unsure

2%



Not
Appealing

63%



Somewhat
Appealing

20%



Appealing

14%



Very
Appealing

2%





TABLE 1.
Ranked industries by preference – young people

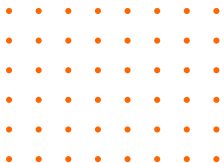
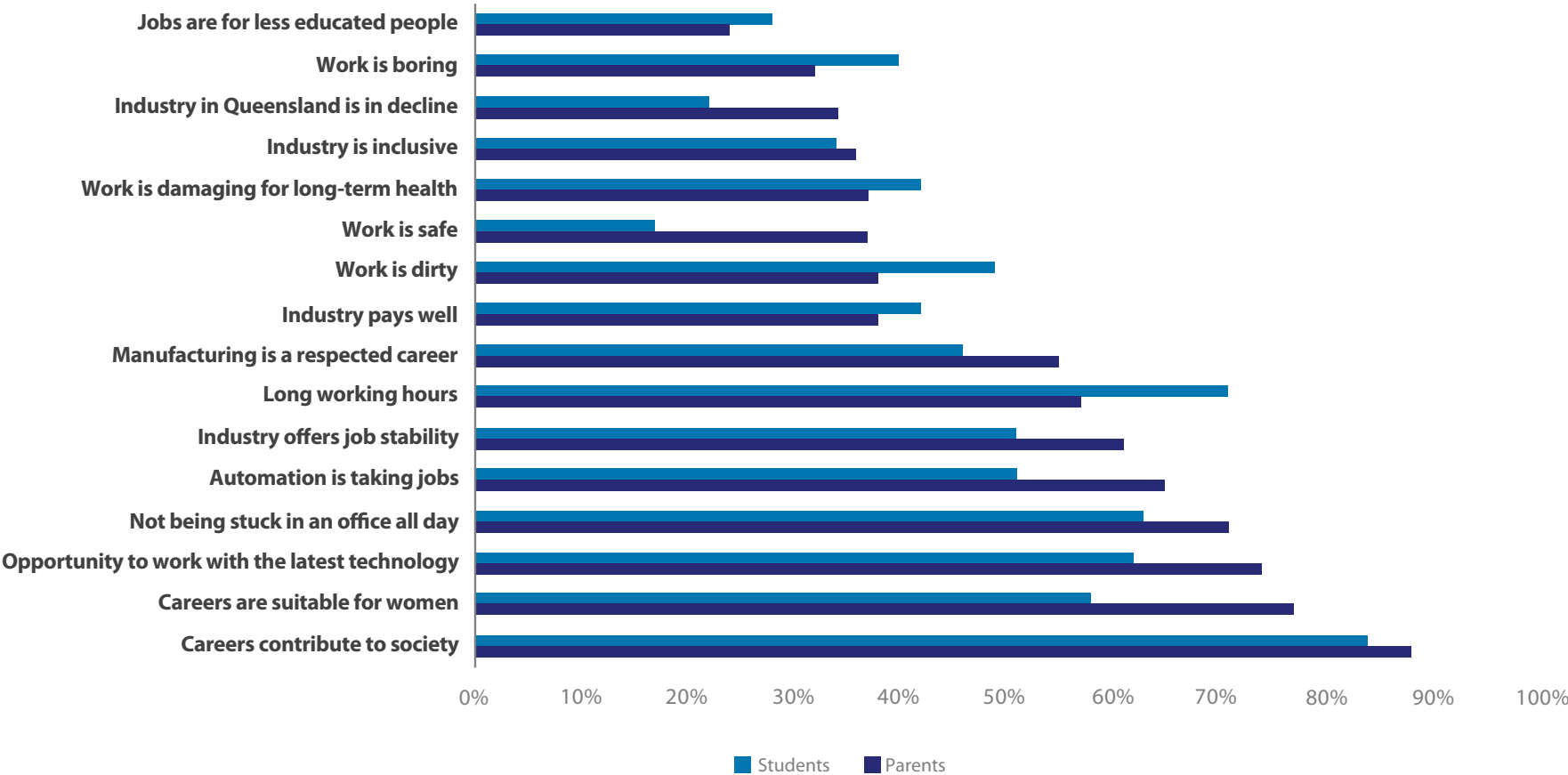
Rank	Industry	Percentage of young people that find the industry appealing
1	Health Care and Social Assistance	36
2	Education and Training	26
3	Science and Mathematics	23
4	Real Estate	21
5	Technology	19
6	Advertising and Marketing	18
7	Retail	17
8	Police or Emergency Services	16
9	Accounting	16
10	Defence Forces	14
11	Construction	10
12	Finance or Insurance Services	10
13	Mining	9
14	Telecommunications	7
15	Manufacturing	5
16	Transport	5



FIGURE 7.

Attitude to work in manufacturing

(Percentage of agreement with statements)



Perception of industry



The manufacturing sector's appeal to young professionals hinges critically on its ability to reshape industry perceptions. As career decisions are heavily influenced by how an industry is perceived, manufacturing faces the challenge of aligning its image with the aspirations and values of the emerging workforce.

The manufacturing industry's prompted awareness reveals a clear hierarchy in public recognition of various sectors. Motor vehicles and their parts, building materials, furniture, and mining, construction machinery and equipment emerge as the most widely recognised manufacturing categories. This heightened awareness likely stems from the ubiquity of these products in daily life and their visible impact on local and national economies. The prominence of these sectors in public consciousness may be attributed to factors such as consumer interaction, media coverage, and the tangible nature of their outputs (Figure 8).

A notable disparity exists in awareness levels between parents and students, with parents demonstrating a more comprehensive understanding of the manufacturing landscape. This generational gap in awareness could be influenced by parents' broader life experiences, exposure to various industries through employment, and engagement with a wider range of products and services. Additionally,

regional variations in parental awareness have been observed, potentially reflecting the diverse industrial compositions of different geographical areas. These regional disparities may be shaped by local economic structures, the presence of specific manufacturing facilities, and community involvement in particular sectors, underscoring the importance of considering geographical context when assessing industry awareness and developing targeted educational or promotional initiatives.

This research has also highlighted an interesting paradox in perceptions on the industry's career value proposition. On one hand, 62% of students (74% of parents) believe that careers in manufacturing provide an opportunity to work with the latest technology, while in contrast, 51% of students (65% of parents) believe automation is taking manufacturing jobs (Figure 9).

Despite robust employment figures, a significant portion of the population believes the industry

is declining, with 22% of students and 34% of parents holding this view. This misperception likely stems from the prominence of motor vehicle manufacturing in public awareness, recognised by 85% of parents and 68% of students as the most familiar manufacturing sector.

The automotive industry's historical significance in Australia may have inadvertently shaped current perceptions of manufacturing as a whole.

The lingering effects of these high-profile closures appear to have cast a long shadow over public perception, leading to an overgeneralisation of the industry's health.

FIGURE 8.

Prompted awareness of types of manufacturing

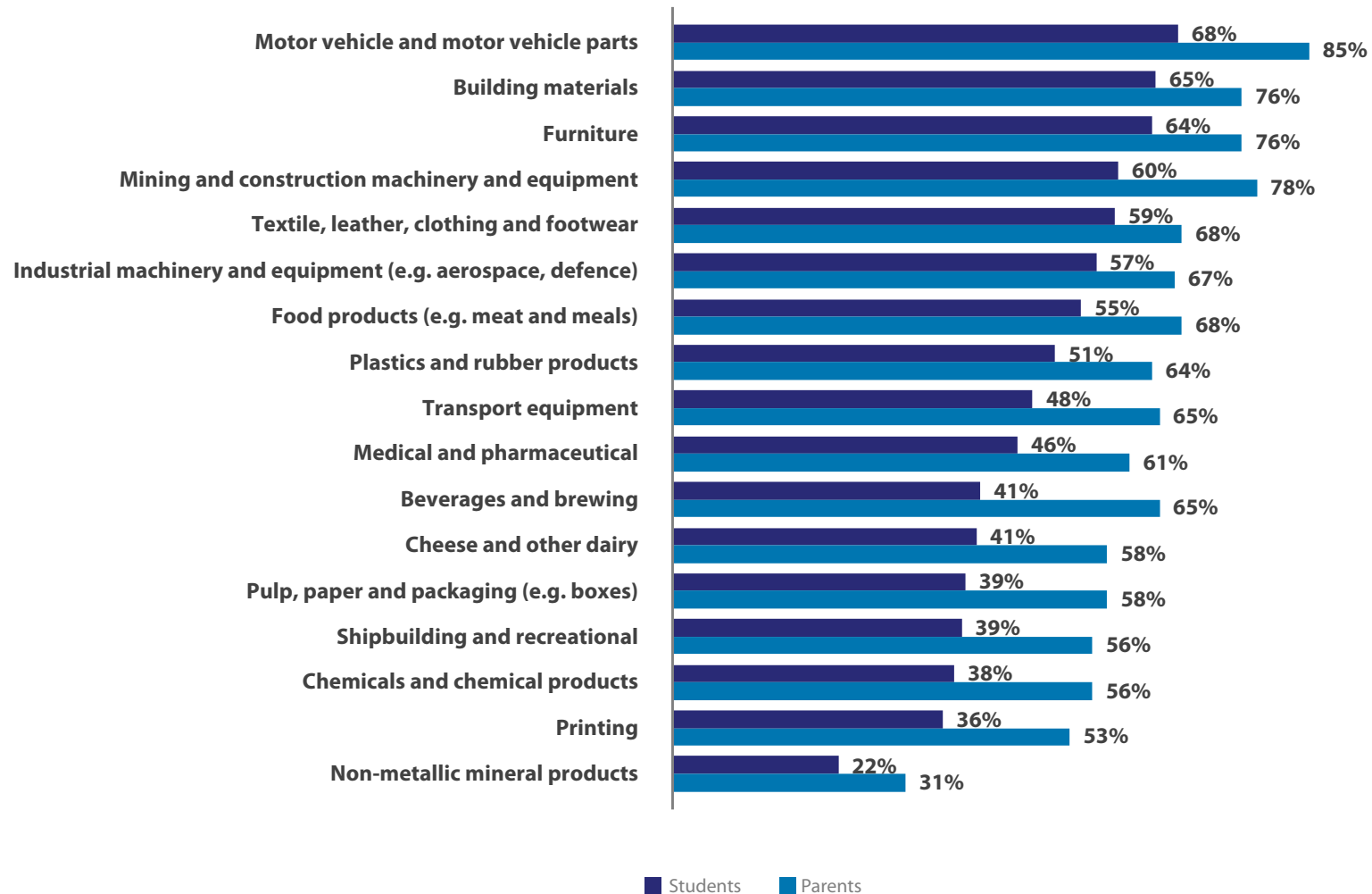
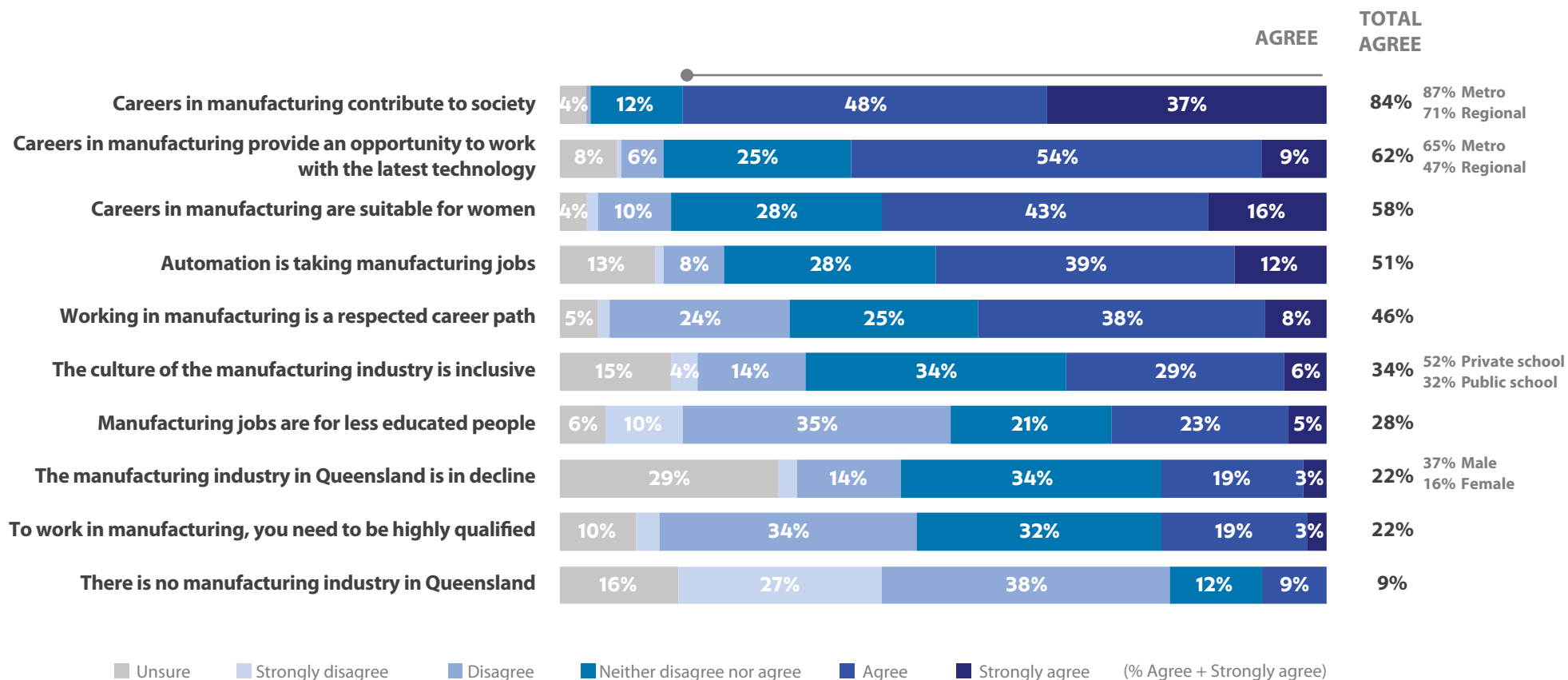




FIGURE 9.
Attitudes Towards the Manufacturing Industry (students)



Changing long-held beliefs

The importance of changing long-held beliefs in manufacturing and challenging stereotypes lies in creating an inclusive and diverse industry. While introducing more communication about manufacturing careers will help drive awareness, we need to simultaneously challenge and disrupt thinking about what the manufacturing industry is, how it works, and who it employs.

The stigma that exists towards careers in manufacturing is present and may act as a barrier for students considering the industry. This is more evident in metropolitan areas than regional. These stigmas included social status, value of profession and type of work. School influencers believe that manufacturing has a lack of social status, that students might not consider it a valued profession and that the work itself is perceived as boring, repetitive and low skilled (Table 2). The impact of these is felt in regional areas but considered as less of a deterrent for students considering manufacturing. Manufacturing has strong associations in regional areas most likely due to the visibility of the industry.

Research confirms the interest the public have in technology, but perceptions of the type of student suited to manufacturing and the industry itself are poor. These perceptions are a barrier to considering manufacturing as a career. Manufacturing is not being considered a first-choice career and an industry with a lack of opportunities for career progression or ownership of a business. Coupled with stigma of being a low status industry and the belief that jobs are moving offshore or being lost to technology, manufacturing will continue to struggle to attract talent. Without new talent, the domestic workforce pipeline will struggle to meet demand. Industry needs to find ways to appeal to young people and begin to shift the dial on its perception in the community.





TABLE 2.
Level of agreement with various statements about the manufacturing industry

	Statement	Group
Agree ↑ Disagree	A career in manufacturing involves working long hours	Students and Parents
	Working in manufacturing is boring	Students
	Manufacturing is dirty	Students and Parents
	Manufacturing jobs are for less educated people	Students
	Working in manufacturing is a desirable career path	School influencers
	The culture of the manufacturing industry is appealing	School influencers
	Manufacturing is not a safe industry to work in	School influencers
	To work in manufacturing, you need to be highly educated and qualified	School influencers



Connecting with the new, young, modern worker

For the manufacturing workforce to continue to grow in Queensland, there is a need to connect with the new, young, modern worker. New generations have different expectations when it comes to work.

Young people see work/life balance as the most important career factor, alongside job stability and salary (Figure 10).

Research found clear perceived benefits of working in the manufacturing industry – variety of roles, and its appropriateness for individuals with an interest in hands-on or practical work. Manufacturing is seen as a hands-on career by 66% of parents and 60% of students. These are value propositions that could be utilised by manufacturers to attract and retain talent in the workforce. Eighty-four percent of young people agree that careers in manufacturing contribute to society and 62% agree that careers in manufacturing provide an opportunity to work with the latest technology (Figure 11). These are two other avenues to capturing the attention of potential young workers. Industry needs to consider how it can use these statements to inform the way it promotes itself and attracts and retains talent. Connecting the workforce and public to notions of utilisation of technology to produce items that are contributing to people's lives will improve how the industry is perceived.

Our findings suggest it's critical to engage students from Years 7-12 by clarifying career paths, emphasising connections between STEM subjects and manufacturing roles, and showcasing the industry's technological advancements and societal contributions. By highlighting diverse job opportunities and developing clear pathways into various manufacturing sub-industries, the sector can effectively bridge the gap between students' current academic journey and potential future careers. This approach could foster curiosity and interest in manufacturing careers early, ensuring that students are aware of the opportunities before they exit school, thereby expanding the pool of potential future employees and shifting perceptions of the industry.





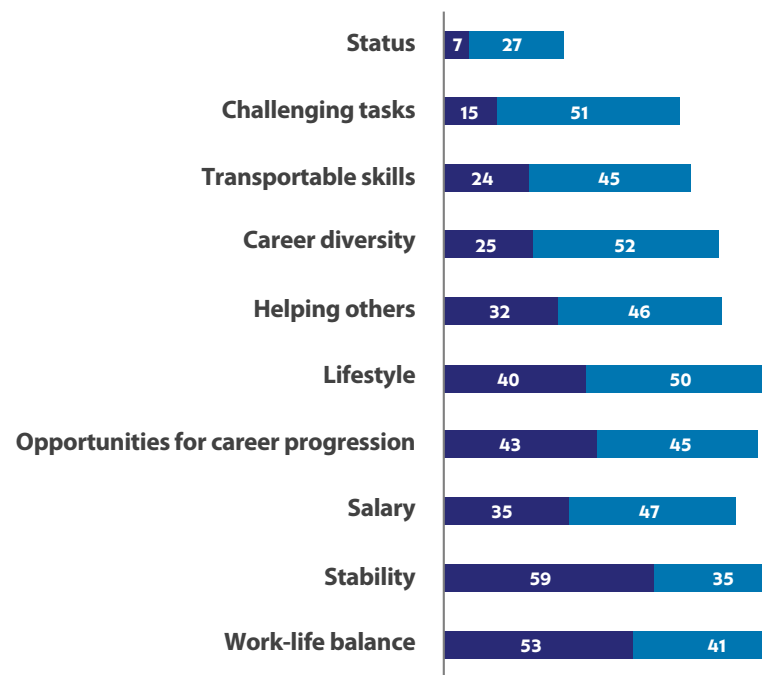
FIGURE 10.

Importance of careers factors to students

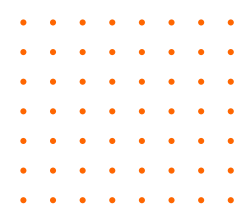


Very Important Important

Importance of careers factors to parents



Very Important Important



Value propositions for the manufacturing industry for students

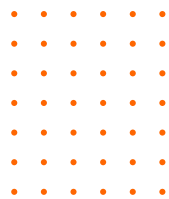
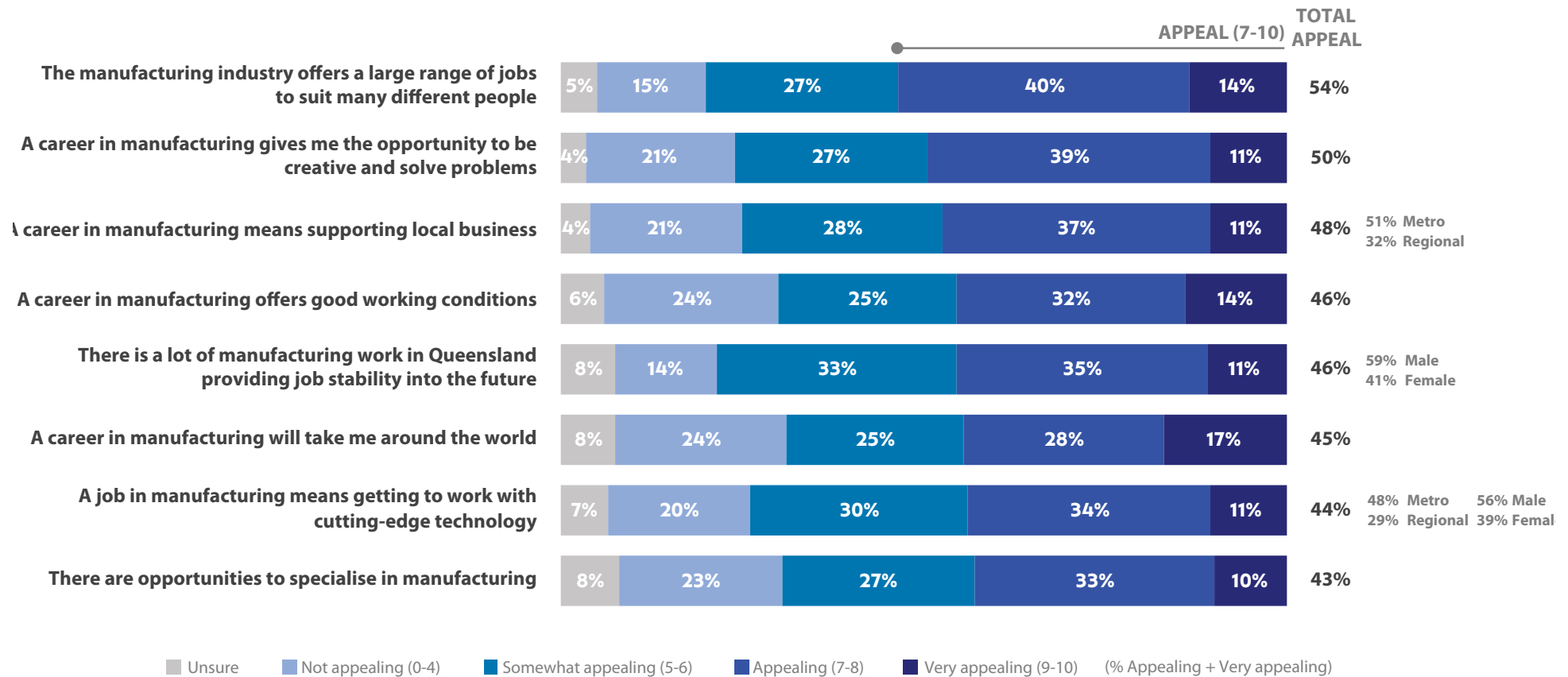
To address the issue of the industry's appeal, we need a two-pronged strategy. First, leverage the influential position of parents and teachers, encouraging them to share insights about the industry's diverse opportunities and technological advancements with young people. Second, develop targeted messaging and experiential programs for young people, highlighting the industry's innovative aspects, potential for creative problem-solving, and opportunities for meaningful local impact.

The manufacturing industry's appeal to students is primarily driven by three key value propositions: the diversity of job opportunities, the potential for creative problem-solving, and the chance to support local businesses (Figure 11). These aspects resonate with approximately half of the student population, indicating a moderate level of interest. The variety of roles within manufacturing aligns with students' desire for career flexibility, while the emphasis on creativity and problem-solving caters to their aspirations for engaging and intellectually stimulating work. The appeal of supporting local businesses suggests that students value making a tangible impact on their communities through their career choices.

Interestingly, the appeal of certain value propositions varies based on demographic factors. Metropolitan students show a higher interest in supporting local businesses and working with cutting-edge technology compared to their regional counterparts. This urban-rural divide may reflect differences in exposure to diverse industries and technological advancements. Gender also plays a role in shaping preferences, although specific details were not provided. These variations highlight the importance of tailoring recruitment strategies and educational initiatives to address the unique perspectives and priorities of different student segments, ensuring that the manufacturing industry can effectively attract a diverse range of young talent.



FIGURE 11.
Value propositions important to students





Working together to shift the dial

We are on the cusp of another industry revolution. Now is the perfect opportunity to reinvigorate our efforts to promote careers in the industry – our collaborative efforts can create lasting change.

The manufacturing industry is important to the Queensland economy. As at May 2024, 191,700 individuals are employed by manufacturers, and in the 2022/23 financial year the industry added \$24.4b (chain volume measure) to the economy.

In 2024, industry reports around 23,000 job vacancies nationwide, with approximately 3,300 of those in Queensland—improving the pipeline of young people considering manufacturing as a worthwhile career could have a significant positive impact on the industry, and our economy.

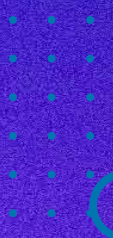
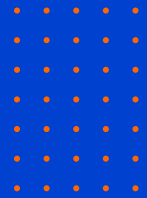
Enhancing the information that is provided about the sub-industries and career pathways in manufacturing to influence a new cohort of people into manufacturing will be as vital, if not more

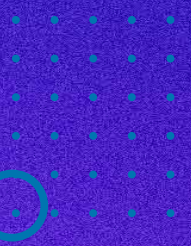
important, as upskilling the current workforce. It would be advantageous to see the percentage of young people who are attracted to a career in manufacturing increase, and the percentage of individuals who believe information about the manufacturing industry is lacking or difficult to find decrease. This can be achieved through finding qualifications and short courses that will fill skill gaps, and enhancing the training that is provided by skilling industry trainers.

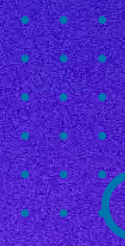
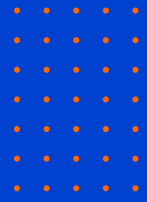
There is an urgent need to shift perceptions about manufacturing careers among parents and students. This can be achieved through a collaborative effort to provide clear information about modern manufacturing opportunities, emphasising the integration of advanced technologies, competitive salaries, and potential for career growth. Strategies include educating parents with success stories, engaging students through interactive experiences, addressing

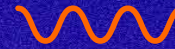
misconceptions about the industry, promoting the benefits of manufacturing careers, and partnering with educational institutions to develop relevant training programs. By working together, industry leaders, educators, and policymakers can effectively change the narrative, opening exciting opportunities for the next generation of skilled workers and contributing to economic growth and technological innovation.











About Manufacturing Skills Queensland

Manufacturing Skills Queensland (MSQ) is building a sustainably skilled workforce for a future-proofed manufacturing industry. We're here to connect and support employers and the wider industry with the skills, opportunities, and information to build a thriving sector. Established as part of the Queensland Government's Making it in Queensland: Building a Stronger Manufacturing Sector policy, our vision is to create the skills pathways for the future of manufacturing in Queensland.

msq.org.au

