Plastics and Chemicals Industries Association Skills Needs Research Project

Prepared by Manufacturing Learning Victoria on behalf of the Plastics and Chemicals Industries Association

Manufacturing Learning Victoria

PACIA

ACCI
AUSTRALIAN CHAMBER OF COMMERCE AND INDUSTRY

Australian Government
Department of Education, Science and Training
National Skills Shortages Strategy

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Foreword

The plastics and chemical industry is a diverse manufacturing sector and plays an important role in Australian manufacturing. 70% of its outputs are used as inputs to the components of other manufacturing sectors. The ability of the industry to adopt new approaches to manufacturing, successfully implement emerging technologies and develop the capability of its work force, will determine its ability to remain competitive in the global economy.

The development and maintenance of a highly skilled workforce is crucial to boosting innovation and to maintaining global competitiveness. This highlights the importance of investment in education and training. Industries are currently experiencing difficulty in maintaining the quality and quantity of production due to a shortage of sufficiently skilled workers. This is a result of skills gaps in existing workers and difficulty in recruiting workers with the required skills.

These difficulties are accentuated by the lack of clear understanding of the skills needs of the industry and the ability to accurately quantify these. The Chemical and Plastics Action Agenda report to Government in March 2001 articulates the need to conduct research into defining industry skills needs and to quantify the skills shortages and gaps currently experienced by industry and the skills needs to meet future production demand.

In 2004 the Department of Education, Science and Training (DEST) invited the Australian Chamber of Commerce and Industry (ACCI) to conduct a Plastics and Chemical Industries Skills Needs Research Project to identify the industry responses to skills needs, associated issues, impediments experienced and potential solutions. The Plastics and Chemical Industries Association (PACIA) took on the project on behalf of its industries and commissioned Manufacturing Learning Victoria (MLV) to conduct the research.

The resulting report includes a comprehensive review of previous research and identifies the current situation in relation to skills needs, skills shortages and skills gaps.

It is important to acknowledge the members of the project working party for their focus and expert advice - Paul Beerworth Department of Education, Science and Training (DEST), Suzi Hewlett (DEST)), Ron Burns Australian Chamber of Commerce and Industry (ACCI), Steve Balzary (ACCI), Celeste Howden Manufacturing Learning Australia (MLA) and Michael Carton (Chemical & Plastics Action Agenda Education & Training Working Party)

I also wish to acknowledge the team at Manufacturing Learning Victoria (MLV), who worked within a curtailed timeline, to conduct the research and complete the report - David Graham (Chair), John Molenaar (Executive Director), Tina Berghella (Lead Researcher), Graeme Churchward (Research Assistant) and Sue Ritson (Data Management).

The plastics and chemical industries generally are to be congratulated on the quality of the informed data they provided through surveys, forums and consultations. This has enabled the development of this comprehensive report.

Michael Catchpole

Chief Executive Officer

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Executive summary

The project presents quantitative and qualitative data about skills shortages and gaps in the plastics and chemical industries and reports the skills needs to the Department of Education, Science and Training (DEST).

This project arose from the recommendations of the report of the Plastics and Chemicals Action Agenda conducted during 2000 by the Chemicals and Plastics Action Agenda Steering Group. Australian Government funding was provided to Australian Chamber of Commerce and Industry (ACCI) and the project has been subcontracted through the Plastics and Chemicals Industries Association (PACIA) to be managed by Manufacturing Learning Victoria (MLV).

Australia's plastics and chemical industries are represented in nearly every aspect of our daily lives, from the car we drive and the technology we use, to the food we eat and the clothes we wear. The industries are also critical customers and suppliers to a wide range of economic sectors including the packaging industry, the building and construction industry, the textiles, clothing and footwear industry, the automotive industry, the pharmaceutical industry and the mining industry.

Employers in the plastics and chemical industries report difficulties in recruiting workers with the required skills at the right levels. Some of these difficulties meet the definition of skills shortages, where vacancies remain unfilled over long periods. These are predominantly in the professional and traditional trade occupations which are cross industry. A range of initiatives have recently been established to address skills shortages in fields such as engineering, automotive and IT.

However, overwhelmingly employers in the plastics and chemical industries report skills gaps and recruitment difficulties rather than skills shortages. They have the most difficulty with process workers/plant operators. These occupations are not represented in current initiatives to address skills shortages. In the absence of adequately skilled and experienced candidates, employers endeavour to fill vacancies with those who have generic employability skills but not the required job task skills, with the intention of up skilling them. However, many employers report difficulties in achieving adequate up skilling while maintaining efficient operations under conditions of increasing global competitiveness.

This report presents evidence of real skills issues for employers in the plastics and chemical industries which are intertwined with recruitment and retention issues. It proposes a number of solutions to address the problems. In summary these projects are:

- Appoint nationally coordinated Industry Liaison Agents to assist employers access appropriate training linked to their business needs.
- Develop a “Skills Gap Program” modelled on the WELL Program that funds skills gap training linked primarily to business sills needs and secondly linked to competencies.
- Develop flexible learning resources to support delivery of the Plastics, Rubber and Cablemakning Training Package.
- Develop an online system for clients of RTOs to provide feedback on the services they have received and view the feedback from other clients.
- Research the emerging labour hire practices of the plastics and chemical industries and the impact on skills needs.
- Assist companies with workforce planning and the development of effective recruitment strategies and practices including understanding recruitment targets (eg adult workers, mature workers, females and youth) and what they want and promoting skills and aptitudes sought rather than specialised skills and encouraging flexible workplace arrangements.
- Implement a Manufacturing Awareness Program to selected secondary schools in Australia.
- Develop an integrated manufacturing awareness program for incorporation in school curriculum at years 5 through to 10

These recommended solutions are presented in detail in the body of the report

1. Introduction

The vision of the Australian plastics and chemicals industries as stated in the Chemical and Plastics Industry Action Agenda Report: Underpinning Australia's Growth, is:

> *"To be a sustainable, dynamic and innovative industry underpinning Australia's industrial growth capturing significant domestic and export markets" (Chemicals and Plastics Action Agenda Steering Group, 2001)*

To achieve this vision the industry must address a number of key concerns, one of which is the shortage of appropriately skilled employees. A stated objective is to develop a highly skilled, well qualified and flexible workforce:

> *"The industry is very technically orientated and requires personnel in order to be competitive. However the industry's failure, in particular to attract school leavers, has serious implications for its future. So too does the evidence emerging over recent years of a retreat from science based learning in education generally. This retreat, if it is not reversed, will adversely affect the stock of suitably skilled and qualified people to work in these technology intensive industries." (Chemicals and Plastics Action Agenda Steering Group, 2001)*

The plastics and chemical industries consistently report ongoing difficulties in recruiting workers with the required skills at the right levels. Some of these difficulties meet the definition of skills shortages, where vacancies remain unfilled over long periods. These are predominantly in the cross industry professional and traditional trade occupations. Other difficulties more accurately meet the definitions of skills gaps and recruitment difficulties.

Employers report that they have the most difficulty in recruiting process workers/plant operators who are adequately skilled. These occupations are not represented in skills shortages initiatives. They are also not licensed or regulated and therefore do not lock employers into leaving vacancies unfilled.

In the absence of suitably skilled candidates, vacancies are likely to be filled with workers who require up skilling to be able to perform the role at the required level. The flexibility to employ workers with less than the required skills defines skills issues for these occupations as predominantly skills gaps, rather than skills shortages. Many employers report difficulties in achieving adequate up skilling while maintaining competitive operations.

1.1 Project objective

To identify which occupations have skill needs, the future skills requirements of the industry and to propose potential solutions to these issues.

1.2 Project outcomes

- Undertake research and/or provide evidence of research that demonstrates the benefits to employers of having highly skilled staff.
- Identify the current and future (3-5 year timeframe) skill set needs of each occupation including common cross-industry issues.
- Identify the impediments and/or barriers to satisfy those needs.
- Recommend short, medium and long term initiatives or solutions that may assist in addressing those needs.

2. Methodology

This paper has been developed through literature research, consultations with key stakeholders, a national employer survey and industry forums.

Literature Search

Key papers researched for this project included:

- Australian Council of Trade Unions (ACTU) (2004). Australia's Looming Skills Shortage. ACTU Background Paper, Australian Council of Trade Unions (ACTU).
- Australian Industry Group (AIG) (2000). Training to Compete, the Training Needs of Industry. Report to the Australian Industry Group by Allen Consulting Group. Melbourne, Australian Industry Group (AIG).
- Australian Industry Group (AIG) (2004). World-Class Skills for World Class Industries. Accelerating Reforms to Vocational Education and Training, Australian Industry Group (AIG).
- Chemicals and Plastics Action Agenda Steering Group (2001). Underpinning Australia's Industrial Growth. Chemicals and Plastics Action Agenda Report to Government.
- Department of Employment and Workplace Relations (DEWR) (2003). Current and Future Skills Needs.
- Australian National Training Authority (ANTA) (2003). National Skills Report. A discussion paper on the drivers of industry skills needs.
- J. Buchanan, J. Evesson and C. Briggs (2002). Reviewing the Capacity for Skills Formation. A Challenge for Victorian Manufacturing.

Survey of Employers

An employer survey was developed for this project and is presented in the appendices. The survey was designed to gather information from employers about their current skills needs, their future skills needs and the difficulties they face meeting those skills needs.

Industry Forum

An industry Forum was conducted in Sydney to engage stakeholders in constructive dialogue around the issue of skills shortages in the plastics process manufacturing industries. The results of the Forum are presented in the appendices.

Validation Meeting

A validation meeting was conducted in Melbourne with industry stakeholders to present and verify the initial survey findings. The results of meeting are presented in the appendices.

Industry Stakeholder Consultations

Consultations were conducted with industry stakeholders to validate information collected from the listed sources and to gather further information. The following industry stakeholders were consulted:

- Association of Rotational Moulders Australasia (ARMA).
- A national labour hire company.
- A Registered Training Organisation (RTO).
- New Apprenticeship Centre (NAC).
- Employer using New Apprenticeship training.

3. Plastics and chemical industries profile

3.1 Definitions

Industry

The plastics and chemical industries are the dominant industries within the Australia New Zealand Standard Industrial Classification (ANZSIC) division C Manufacturing, subdivision 25 Petroleum, coal, chemical and associated products.

This subdivision contains six industry groups. These include 253 Basic Chemical Manufacturing and 254 Other Chemical Product Manufacturing, which cover the chemical industry and 256 Plastic Product Manufacturing and 255 Rubber Product Manufacturing which cover the plastics industry.

This report does not include the petrochemical industry.

Occupations

The plastics and chemicals industries employ a wide range of occupational groups. Some are common to other industries, such as managers, accountants, tradespersons, packers and store persons. Some are specific to the plastics and chemical industries, such as chemical plant operators and plastics production machine operators.

The occupations specific to the plastics and chemicals industries as defined by the Australian Standard Classification of Occupations (ASCO) are listed in the following table.

Table 1 ASCO groups and occupations specific to the plastics and chemical industries

ASCO Group	ASCO Occupation
7291 Plastics production machine operators - operates machines to manufacture and finish plastics products by extruding, moulding, mixing, drawing, embossing laminating, welding, cutting and other processes	7291-01 Supervisor, plastics production machine operators 7291-11 General plastics production machine operators 7291-13 Plastics compounding and reclamation machine operator 7291-15 Reinforced Plastics and composite production worker 7291-17 Plastics cablemaking machine operator 7291-79 Plastics production machine operators nec
7292 Rubber production machine operators – operate machines to manufacture rubber products such as tyres and other rubber products	7292-01 Supervisor, rubber production machine operators 7292-11 Tyre production machine operators 7292-79 Rubber production machine operators nec
7293 Chemical production machine operators – operate machines and equipment to produce chemical goods such as soaps, detergents, pharmaceuticals, toiletries or explosives	7293-01 Supervisors, chemical production machine operators 7293-11 Chemical production machine operator
9219 Other process workers – covers process workers not elsewhere classified	9219-15 Chemical plant labourer 9219-17 Rubber and plastics factory hand

Source: (McLennan, 1997)

3.2 Industry overview

A comprehensive overview of the chemicals and plastics industry is included in the Chemical and Plastics Action Agenda Steering Group Report to Government. What follows is a summary of the key points from this report.

The products and services of the plastics and chemicals industries are fundamental to the commercial and social well being of Australia. The combined industries produce an annual turnover of more than $20 billion, representing 10% of Australian manufacturing. The industries employ over 69,600 people nationally, representing 6.4% of Australia's manufacturing workforce and add $7 billion in value to the economy. The industries represent 12% of Australia's imports to the value of $11 billion. These imports are growing by over 8% each year. Exports represent only $2.8 billion, creating a significant trade deficit.

The industries produce a diverse range of outputs including base and feedstock products, specialty and refined chemicals, intermediate goods and components and consumer products.

The chemical industry provides a significant contribution to the quality of Australian life, producing compounds and products such as personal care and hygiene products, metal and water treatments, cleaners and coatings for household/commercial cleaning, medical/medical products industries and food hygiene.

The chemical industry produces a versatile range of synthetic fibres from polymers which are derived from oil and gas and used for specialised surgical devices and organs and flame resistant fabrics. Chemicals provide additives for a diversity of products including medicines, cosmetics and cleaners and are used to produce dyes and paints.

The plastics industry produces 50% of packaging used in Australia including 25% of all food packaging. The strength, durability and light weight of this packaging material is its key advantage over other packaging materials. An increasing number of automotive components and parts are produced from plastics. As a construction material, plastics provide efficient insulation, flexible pipes and durable surfaces. Moulded plastics are a key component of automobiles and consumer goods. . Plastic sheeting is increasingly used in agriculture for crop protection, propagation and weed control.

Though the Australian domestic market is relatively small, the global chemicals and plastics market is intensely competitive and controlled through a range of trade barriers. The industry attempts to compete against imports with lower tariffs. In Australia much of the production is isolated from the end users. The lack of infrastructure is an impediment to

multinational investors. Competing Asian countries have more attractive policies and incentives.

The plastics industry has been growing steadily, increasing turnover by up to 3% annually and in employment by 1%. The sector has seen continual growth in domestic demand. In contrast the chemical industry's annual turnover is decreasing by just over 1% with domestic demand remaining static.

The plastics industry export growth has continued at an average of 11% compared to chemical exports which have halved over the last three years. Import of plastics goods has fallen considerably in recent years but is still at 5% compared to chemical imports which have risen consistently at rates greater than exports.

The plastics and chemical industries have one of the largest inputs to Australia's manufacturing as a whole. However, they have not kept pace with other manufacturing sectors and operate with an aging and increasingly less competitive assets base. This has significant implications for the future of the industry. It highlights the importance of increasing value adding capacity, reversing the trend of rising imports, enhancing linkages across the Australian economy, increasing research and development, increasing the level of industry investment and developing a well-qualified and trained workforce.

Plastics industry

The plastics industry produces finished products, inputs for other products and components. These include:

- Injection moulded products – automotive components, crates, pales, fittings for pipes, baths, showers, basins, lavatory pans and cisterns, stoppers, lids, spools, kitchenware, household articles, tanks, furnishings, floor coverings, blinds, insulators, fittings, buttons.
- Extruded plastics – pipes, sheet, profiles, strips.
- Plastic bag and film – plates, sheets, films and foils, adhesive products, sacks and bags, plastic coated paper and paperboard.
- Blow moulded products – bottles, flasks and containers for paints, chemicals, cleaners, detergents, pharmaceuticals, food and beverages.
- Compounded raw materials.
- Rubber compounds and products.

Chemical industry

The chemical industry produces finished products and inputs for other products. These include:

- Paints and inks.
- Fertilisers and pesticides.
- Explosives.
- Resins and industrial organics.
- Industrial gases and inorganics.
- Soaps, detergents and cosmetics.

3.3 Industry facts and trends

The combined plastics and chemical industries is the fourth largest manufacturing sector in Australia responsible for almost 10% of total manufacturing turnover in 2000/2001. The sector includes over 1,400 companies with a combined annual turnover of more than $22 billion.

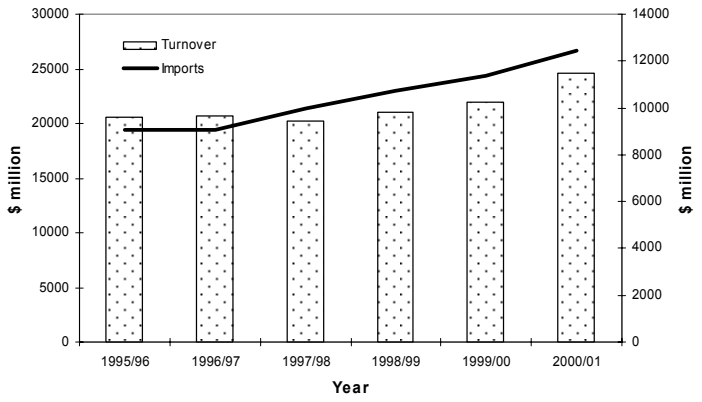
Table 2 Contribution of the plastics and chemicals industries to total manufacturing

	1999/00			2000/01		
	Chemical & Plastics	Total Manufacturing	% of Manufacturing	Chemical & Plastics	Total Manufacturing	% of Manufacturing
Turnover ($m)	$21,924	$228,951	9.58%	$24,630	$251,759	9.78%
Wages and salaries ($m)	$3,337	$35,088	9.51%	$3,783	$38,746	9.76%
Average Wage ($)	$43,281	$38,529	112.33%	$46,530	$40,962	113.59%
Exports ($m)	$2,827	$57,982	4.88%	$3,338	$69,128	4.83%
Imports ($m)	$11,348	$102,383	11.08%	$12,419	$108,330	11.46%

Source: (Chemicals and Plastics Action Agenda Steering Group, 2004)

The industries are growing at an average of 4.5% per annum. However there is increasing pressure to maintain share of the domestic market.

Figure 1 Chemical and plastics industry turnover



Source: (Chemicals and Plastics Action Agenda Steering Group, 2004)

3.4 Employment facts and trends

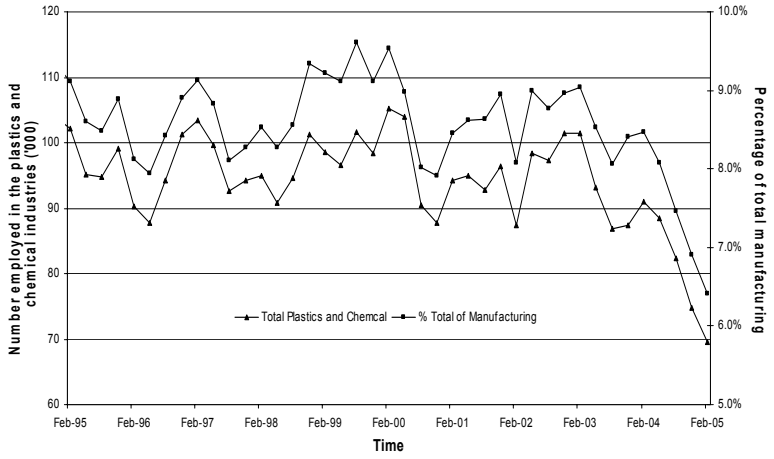
3.4.1 Numbers employed

Total

The plastics and chemical industry employs 69,600 people including 35,400 in the plastics industry and 34,200 in the chemical industry and accounts for 6.4% of employment in the Australian manufacturing industry (ABS, 2005a).

The total number of persons employed in the plastics and chemical industries has steadily decreased from a high of 105,200 in February 2000, to 91,000 in February 2004 and 69,600 in February 2005.This closely follows a recent general trend towards declining employment observed in the in total manufacturing employment in Australia.

Figure 2 Number of employed persons in the plastics and chemical industries as a percentage of total manufacturing

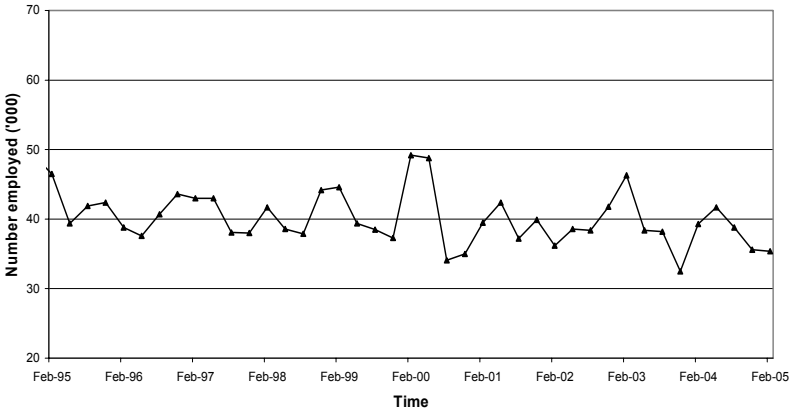


Source: (ABS, 2005a)

Plastics industry

The total number of persons employed in the plastics industry decreased from a high of 44,600 in February 1999, to 39,300 in February 2004 and 35,400 in February 2005. In the 12 months to February 2005 the total number of persons employed in the plastics industry has decreased by 10%.

Figure 3 Number of employed persons in the plastics industry

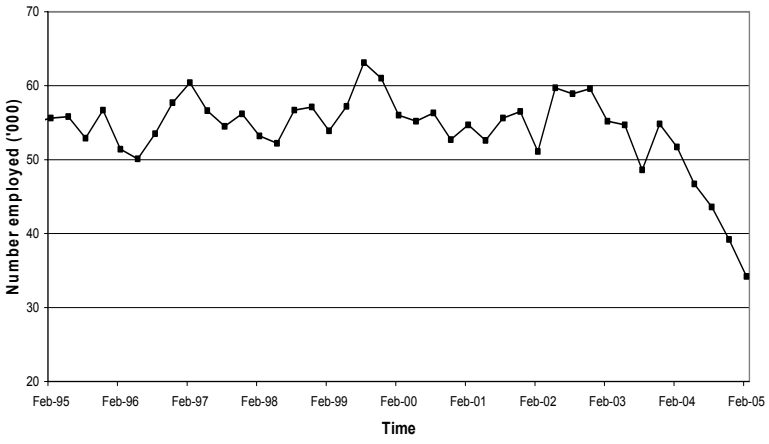


Source: (ABS, 2005a)

Chemical industry

The total number of persons employed in the chemical industry has steadily decreased from a high of 63,100 in August 1999, to 51,700 in February 2004 and 34,200 in February 2005. In the 12 months to February 2005, the total number of persons employed in the chemical industry has decreased by 34%.

Figure 4 Number of employed persons in the chemical industry

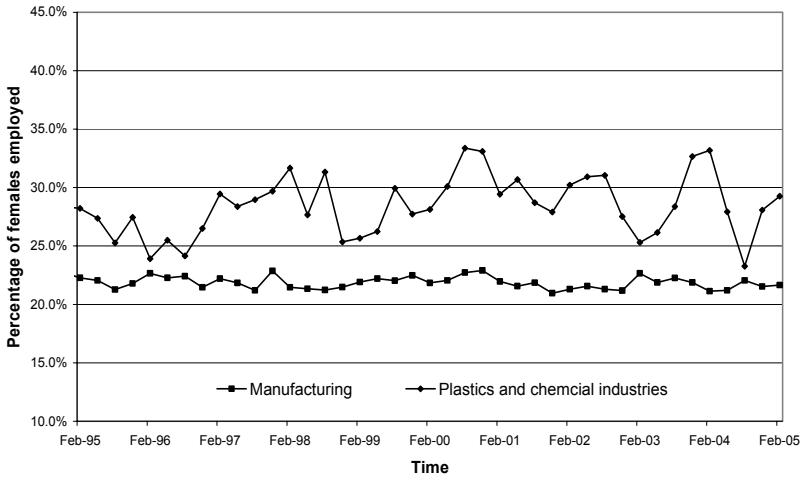


Source: (ABS, 2005a)

3.4.2 Gender

The plastics and chemical industries consistently employ a higher proportion of females than the total Australian manufacturing industry.

Figure 5 Percentage of females employed in the plastics and chemical industries

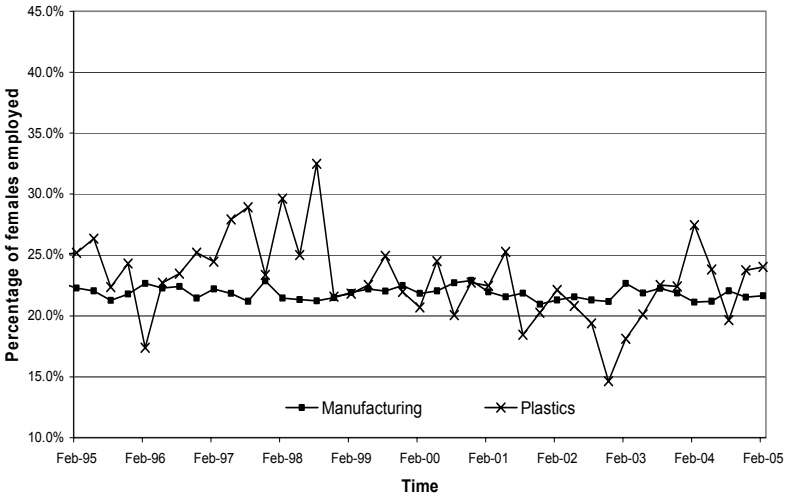


Source: (ABS, 2005a)

In February 2005 the plastics and chemical industries employed 18,600 or 29.2% females compared to the Australia manufacturing industry which employed 21.6% females. This included 10,600 or 35.0% in the chemical industry and 8,000 or 24.0% in the plastics industry (ABS, 2005a).

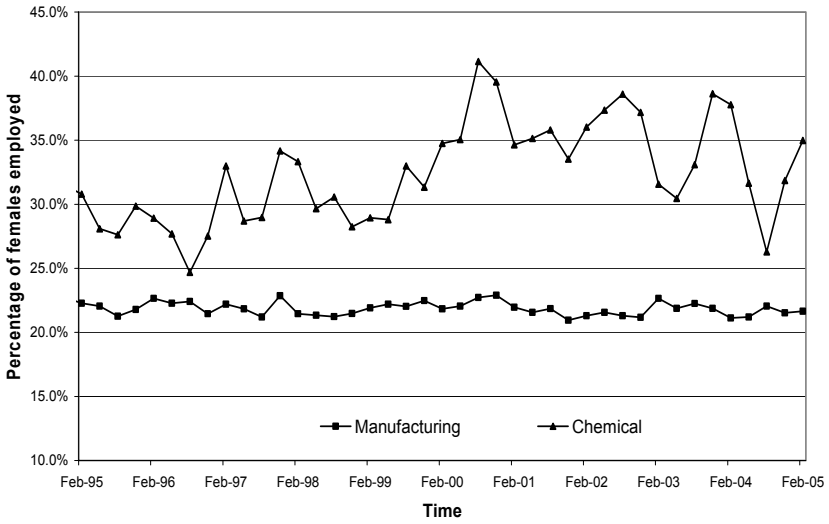
The proportion of females employed in the plastics industry is approximately the same as the proportion employed in the Australian manufacturing industry. The chemical industry employs a higher proportion of females compared with the Australian manufacturing industry.

Figure 6 Percentage of females employed in the plastics industry



Source: (ABS, 2005a)

Figure 7 Percentage of females employed in the chemical industry

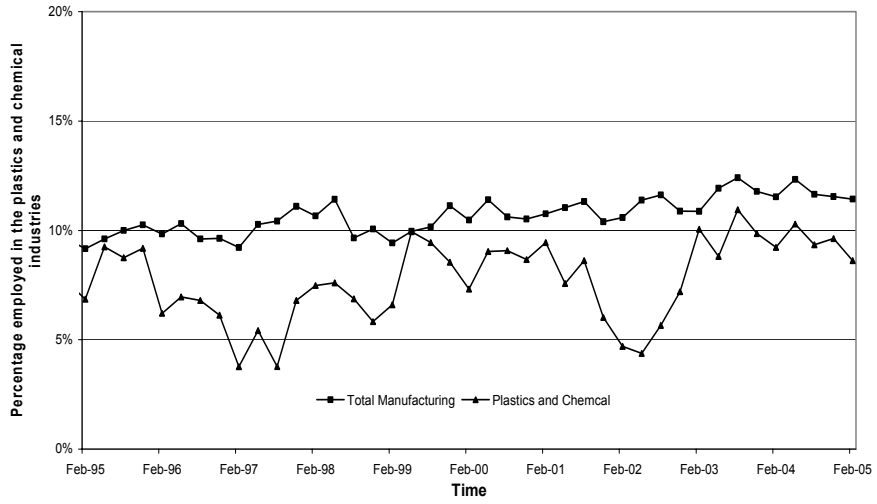


Source: (ABS, 2005a)

3.4.3 Status in employment

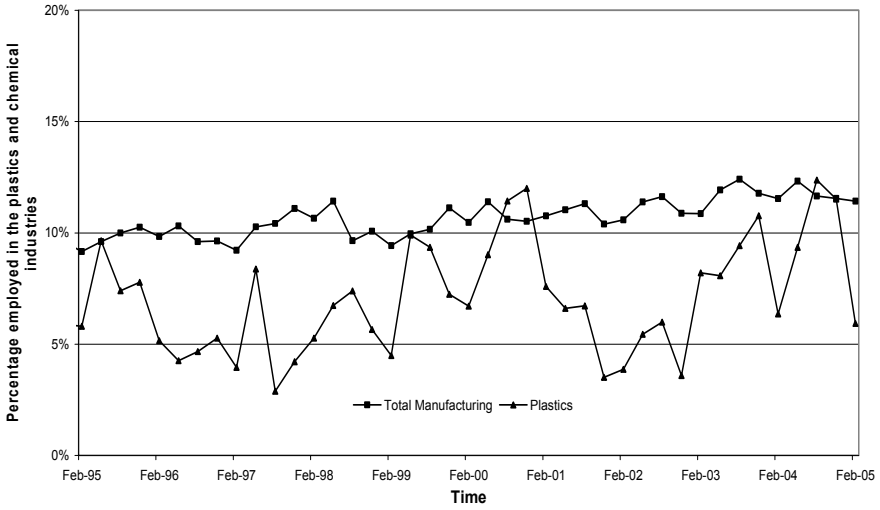
In February 2005 the plastics and chemical industries employed 6000 or 9.0% part time workers compared to the Australian manufacturing industry which employed 11.4% part time workers. This included 3,900 or 11.4% in the chemical industry and 2,100 or 5.9% in the plastics industry.

Figure 8 Percentage part time workers in the plastics and chemical industries



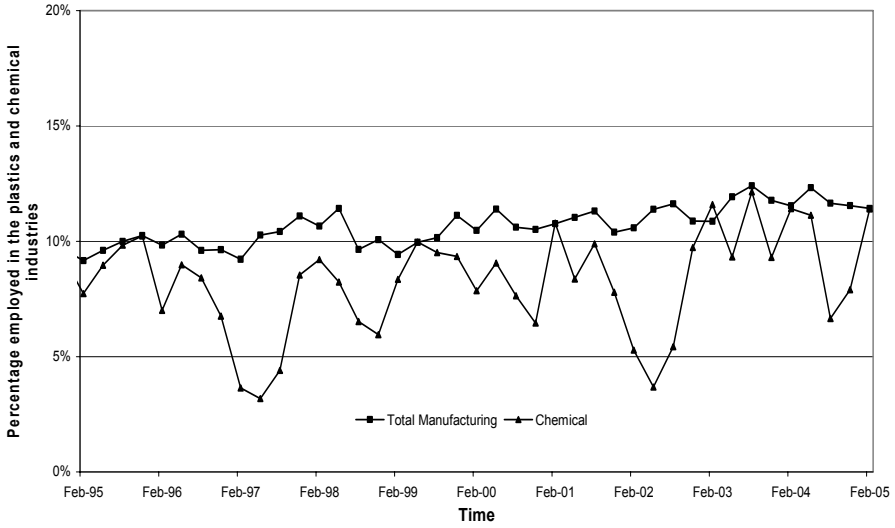
Source: (ABS, 2005a)

Figure 9 Percentage part time workers in the plastics industry



Source: (ABS, 2005a)

Figure 10 Percentage part time workers in the chemical industry

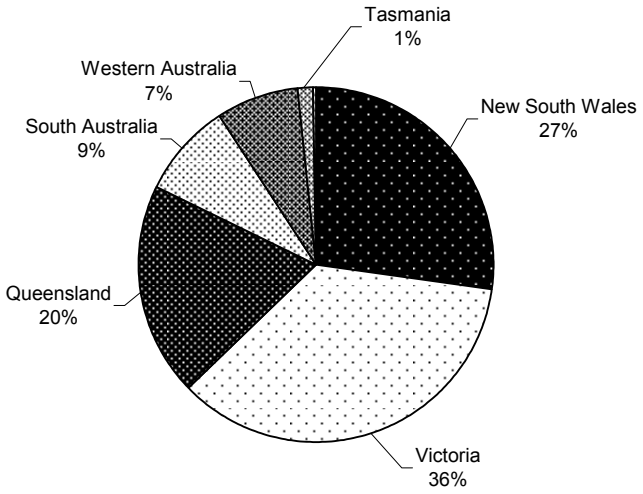


Source: (ABS, 2005a)

3.4.4 Geography

The majority of workers in the plastics and chemical industries are employed in the eastern states with 24,700 or 36% in Victoria, 18,900 or 27% in New South Wales and 13,600 or 20% in Queensland.

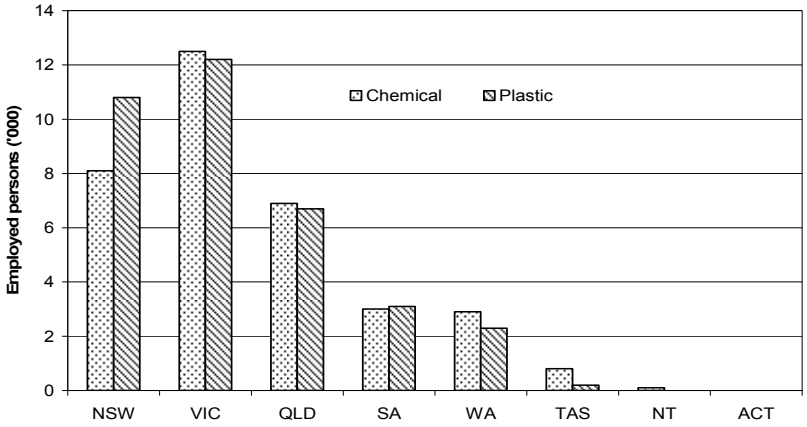
Figure 11 Percentage employees in the plastics and chemical industries by state



Source: (ABS, 2005a)

The plastics and chemical industries each show a similar geographic distribution by state.

Figure 12 Persons employed in the chemical industry and the plastics industry by state



Source: (ABS, 2005a)

3.4.5 Overtime

In 2004 the Australian Industry Group's (AIG) Survey of Australian Manufacturing reported an overall decline in overtime worked in the chemicals, petroleum and coal products sector. In the December 2003 quarter a net balance of +18% of employers surveyed, reported higher overtime compared with -10% in the December 2004 quarter.

Table 3 Net balance of employers reporting an increase in overtime in the chemicals, petroleum and coal sector

Quarter	Net balance of employers reporting an increase in overtime
December 2002	+25%
March 2003	+10%
June 2003	+2%
September 2003	-8%
December 2003	+18%
March 2004	+29%
June 2004	-8%
September 2004	-4%
December 2004	-10%

Source: (Australian Industry Group and PricewaterhouseCoopers, December 2002 to December 2004)

3.4.6 Wages

The Australian Industry Group's (AIG) Survey of Australian Manufacturing reported steady average wage growth over the last two years in the chemical, petroleum and coal sector.

Table 4 Net balance of employers reporting an increase in wages in the chemical, petroleum and coal sector

Quarter	Net balance of employers reporting an increase in wages
December 2002	24%
March 2003	24%
June 2003	23%
September 2003	27%
December 2003	30%
March 2004	24%
June 2004	26%
September 2004	25%
December 2004	26%

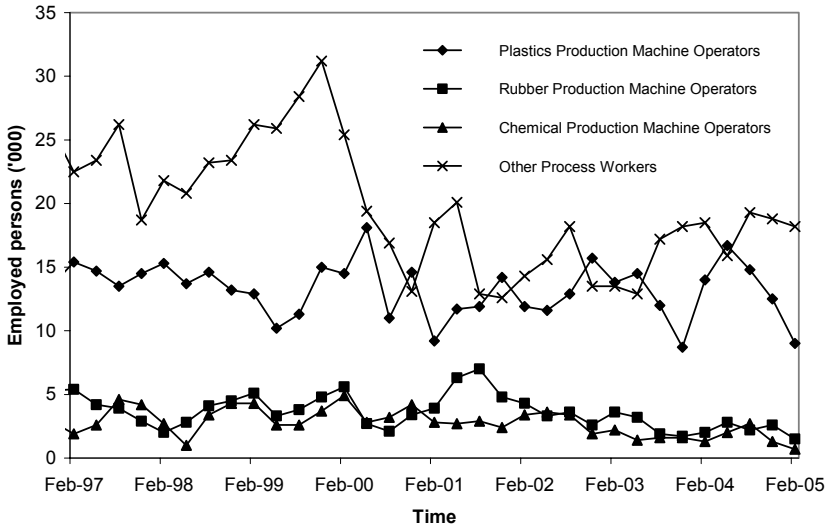
Source: (Australian Industry Group and PricewaterhouseCoopers, December 2002 to December 2004)

3.4.7 Occupational trends

In the past nine to twelve months there has been a reduction in employment in the occupational groups specific to the plastics and chemical industries defined in Table 1, mirroring the trend in employment for the total industries.

The recent downward trend in employment in both the plastics and chemical industries indicates that the demand for labour is decreasing.

Figure 13 Employed persons by occupational group



Source (ABS, 2005b)

4. Benefits to employers of highly skilled staff

4.1 Literature review

There is a wide body of both national and international research into the benefits of training to employers, demonstrating a strong link between training activities and improved productivity.

A recent National Centre for Vocational Education Research (NCVER) study (Smith, 2001) provides an overview of the empirical studies available from Australia and overseas. Smith reports “enterprise returns on training investment overwhelmingly indicate that firms recoup their investments in training many times over in raised productivity and enterprise performance.”

A number of difficulties are associated with identifying and measuring the benefit of training to employers (Blandy et al., 2000), (Smith, 2001). One difficulty is the shared cost of training between the employer and the employee, making collecting data about the real cost of the training complicated. Another difficulty is the fact that training is integrated with other productivity impacting business activities. So the effects of training are difficult to isolate. For example: it would be difficult to determine whether a productivity increase from a capital investment in new technology came about from the new technology, the new work practices and associated training or just the training itself.

The qualitative benefits are summarised in a 2004 literature review of the benefits of training (Office of Post Compulsory Education and Training Tasmania, 2004). It identifies eleven benefits to employers. These are:

- Increased productivity.
- Improved human resource management.
- Improved profitability.
- Increased competitiveness.
- Meeting quality standards.
- Assisting with workplace change.
- Meeting legal obligations.
- Assisting business survival.

- Improved occupational health and safety.
- Growth of business.
- Meeting skill needs.

This qualitative data is supported by the feedback gained from employers. The Australian Industry Group (AIG) report, “Training to Compete” (Australian Industry Group, 2000), presents the findings from a survey into the training needs of 350 employers. The survey found that 75% of employers see training as an essential competitive tool and 71% of employers see a strong link between their decision to train and their competitive edge in the next three to five years.

Quantitative research uses a range of analytical tools to measure and calculate the costs and benefits of training to employers. In 2001 the National Centre for Vocational Education Research (NCVER) funded a series of reports addressing employer return on investment in training:

- The National Centre For Vocational Education And Research (NCVER) report “Enterprise Return on Training” (Doucouliagos and Pasquale, 2000) presented quantitative case studies of seven Australian organisations. It concluded that significant returns can be expected from training activities that are well designed, expertly delivered and relevant to needs of the organisation.
- The National Centre For Vocational Education And Research (NCVER) report “Training for Productivity” (Maglen et al., 2001) found strong evidence of Australian manufacturers gaining increased labour productivity from training expenditure. This report also found that “firms with the higher levels of labour productivity in both manufacturing and services considered the success of their businesses to have been predicated on training of their personnel.” It emphasised the importance of linking training with business strategy to gain the most benefit.
- The National Centre For Vocational Education And Research (NCVER) report “Does Training Pay” (Blandy et al., 2000) found a direct link between profitability and training and concluded that significant returns were available where the training was “highly specific, rapidly accomplished and related to the introduction of new technology or working patterns.”

It is important to note that the studies all emphasise the importance of the quality of the training and the importance of the link between the training and the business strategy.

4.2 Training participation rates

The plastics and chemical industries are covered by two different Training Packages.

The plastics industry is covered by PMB01, the Plastics Rubber and Cablemaking Training Package introduced in 1998 and revised in 2001.

The chemical industry is covered by PMA02, the Chemical, Oil and Hydrocarbon Training Package introduced in 1998 and revised in 2001.

The National Centre for Vocational and Educational Research (NCVER) collects statistical data on the number of commencements, completions and trainees in training. These include both new entrants and existing worker trainees.

The statistics demonstrate significantly higher levels of commencement in the plastics industry than the chemical industry.

However the levels of completions are in both industries are comparable indicating a very poor completion rate in the plastics industry. This could be due to a number of reasons such as the timeframe over which the data is available (insufficient time has passed for commencements to translate into completions). Other explanations could be that Certificate III is not a preferred option for this industry (some roles only require Certificate II outcomes), a possible dissatisfaction with the training service or a change in enterprise requirements preventing the training from continuing.

Plastics industry training participation statistics, Australian Qualifications Framework (AQF)

Table 5 Plastics, Rubber and Cablemaking Training Package commencements December 31st, 2004

	Year					
AQF	1998	1999	2000	2001	2002	2003
2	0	70	130	120	130	280
3	0	170	770	650	1,050	3,040
4	0	0	20	0	0	20

Source: NCVER unpublished statistics, Due to confidentiality reasons (a) represents values 1 to 9 inclusive

Table 6 Plastics, Rubber and Cablemaking Training Package completions December 31st, 2004

	Year					
AQF	1998	1999	2000	2001	2002	2003
2	0	(a)	50	70	30	20
3	0	0	(a)	40	210	290
4	0	0	0	0	0	(a)

Source: NCVER unpublished statistics, Due to confidentiality reasons (a) represents values 1 to 9 inclusive

Table 7 Plastics, Rubber and Cablemaking Training Package in training December 31st, 2004

	Year					
AQF	1998	1999	2000	2001	2002	2003
2	(a)	70	120	80	140	320
3	(a)	160	770	1,170	1,720	3,590
4	0	0	20	20	20	20

Source: NCVER unpublished statistics, Due to confidentiality reasons (a) represents values 1 to 9 inclusive

Chemical industry training participation statistics Australian Qualifications Framework (AQF)

Table 8 Chemical, Oil and Hydrocarbon Training Package commencements December 31st, 2004

	Year					
AQF	1998	1999	2000	2001	2002	2003
2	0	(a)	10	20	40	(a)
3	0	110	80	370	160	140
4	0	20	70	30	(a)	0

Source: NCVER unpublished statistics, Due to confidentiality reasons (a) represents values 1 to 9 inclusive

Table 9 Chemical, Oil and Hydrocarbon Training Package completions December 31st, 2004

	Year					
AQF	1998	1999	2000	2001	2002	2003
2	0	(a)	(a)	(a)	(a)	4
3	0	0	(a)	30	100	280
4	0	0	0	0	20	(a)

Source: NCVER unpublished statistics, Due to confidentiality reasons (a) represents values 1 to 9 inclusive

Table 10 Chemical, Oil and Hydrocarbon Training Package in training December 31st, 2004

	Year					
AQF	1998	1999	2000	2001	2002	2003
2	0	(a)	(a)	10	40	(a)
3	0	90	150	370	380	250
4	0	20	90	120	90	80

Source: NCVER unpublished statistics, Due to confidentiality reasons (a) represents values 1 to 9 inclusive

5. Current and future skills needs

5.1 Defining skills needs

It is important to clearly define the terms related to skills needs, since they can mean different things to different people and lead to confusion regarding the actual problem, the cause and the possible solutions. In particular it is important to distinguish between skills shortages, skills gaps and recruitment difficulties as these different problems require very different responses (Shah and Burke, 2004).

The Australian Government's National Industry Skills Initiative (Department of Education Science and Training, 2002) defines skill shortages, skill gaps and recruitment difficulties as follows:

> *Skill shortages exist when employers are unable to fill or have considerable difficulty filling vacancies in an occupation, or specialised skill needs within that occupation, at current levels of remuneration and conditions of employment, and reasonable accessible location.*
>
> *Skill gaps occur where existing employees do not have the required qualifications, experience and/or specialised skills to meet the firm's skill needs for an occupation. Workers may not be adequately trained or qualified to perform tasks, or may not have up-skilled to emerging skill requirements.*
>
> *Recruitment difficulties may be due to characteristics of the industry, occupation or employer, such as: relatively low remuneration, poor working conditions, poor image of the industry, unsatisfactory working hours, location hard to commute to, inadequate recruitment or from specific and highly specialized skill needs.*

Interviews with employers may highlight a skills shortage at face value. However on closer examination the issue may in fact be a skills gap or recruitment difficultly. Identifying the problem correctly leads to a more informed discussion of the problem and the opportunity to develop a viable solution.

5.2 Factors influencing skills needs

The drivers of skills needs are varied and complex. Factors that impact skills needs are presented in Australian National Training Authority's (ANTA) National Skills Report (ANTA, 2003a). Nine factors have been identified by current industry advisory arrangements as significant to the manufacturing industry and are explored below.

Demographic trends

The Australian workforce is aging. The proportion of workers over the age of 55 has increased from 12.0% in 2002 to 13.6% in 2005 (ABS, 2001).

This trend is reflected in the manufacturing industry. The declining employment share limits entry by young workers and creates an increasingly aging workforce. Potentially skills will be lost from the impending retirement of older workers, without sufficient replacement from young workers, creating a skills regeneration crisis that has been described as "farmers eating their seeds." (Buchanan et al., 2002). More emphasis needs to be placed on up skilling existing, older workers as this problem becomes increasingly urgent for the survival of the industry.

Serviced by a training industry biased towards younger people, evidenced by the plethora of government initiatives and programs aimed at this group, demographic trends in the manufacturing industry present a serious skills need threat.

Competitiveness and productivity demands

The manufacturing industry is under increasing pressure to improve global and local competitiveness (Thomson, 2004a) and is threatened by the growth in China's manufacturing capacity and the development of Free Trade Agreements (Plastics and Chemicals Industries Association, 2004). The quick gains to be had from basic cost cutting and restructuring have been exploited and manufacturing needs to explore other avenues requiring ongoing skill development (Thomson, 2004b).

Worker attraction and retention

The manufacturing industry's difficulty in attracting young people is linked to a negative perception of the sector's image. Young people think that jobs in manufacturing are characterised by a combination of long hours, low status work, dirty conditions, unsafe environments, male domination and low rates of pay. This image is shared with the people who provide them with career advice including parents, teachers and careers counsellors (Draper, 2001).

This is supported by recent research involving extensive consultation with young people and their key influencers (Manufacturing Learning Victoria, 2002). An extract of this research is provided in the appendices.

Initiatives such as the Make It! Campaign (www makeit.net .au) aim to turn this image around. The Make It! Campaign was funded by ANTA (Australian National Training Authority) in 2002-2003 and produced a range of marketing resources.

Technological advancement

The manufacturing industry has been heavily impacted by technological advancement. This will continue in the future.

The Australian National Training Authority (ANTA) National Skills Report (ANTA, 2003a) suggests the following implications for skills:

- Reduced shelf-life of skills, necessitating accelerated skill development.
- Expansion of skill needs across industry sectors as technologies well established in one sector are diffusing to and transforming others. An important example is the need for underpinning skills that are necessary for computer competence.
- Occupations as we have known them are changing along with technology and their industrial application. Multi-skilling is more common and the sharing of technologies between industries is increasing.

The increasing knowledge intensity and corresponding diminishing labour intensity of goods and services are characteristic of the emerging "knowledge economy." The knowledge economy demands different skills, learning, organisation and innovation by traditional manufacturers as they evolve and adapt. There is a gap between the manufacturers who embrace new technology and those that resist new technology threatening the survival of some firms. This is caused by a lack of skills to use the new technology and a lack of confidence to procure and deploy the new technology effectively (Manufacturing Learning Victoria, 2005).

Globalisation

The manufacturing industry is expanding into and competing with the global market as part of the rapid globalisation of economic activities affecting most industries. In addition global manufacturers are expanding into Australia.

This creates pressure for manufacturers to become increasingly competitive through strategies such as high performance teams, high degree of task integration, decentralised decision making, continuous innovation and organisational learning. This in turn transforms the workplace and places new demands on workers and management and has significant implications for skills development (Sheehan and Houghton, 2000).

Employment arrangements

The manufacturing industry has undergone a major shift in employment arrangements particularly with respect to the casualisation of the workforce and the use of labour hire companies. A 1998 report (KPMG Management Consulting, 1998) found that labour hire workers represent 19% of the manufacturing workforce.

The concerns for the manufacturing industry argued by Manufacturing Learning Australia (MLA) (Manufacturing Learning Australia, 2003) are two-fold. Firstly is the issue of continuity of skills, workforce organisation and specialist skills. Secondly is the issue of responsibility for skills development within the labour hire industry.

A third concern is raised by a recent report into the Victorian manufacturing industry (Buchanan et al., 2002). In the past manufacturers employed excess labour (termed “labour hoarding”) to prepare for increases in demand. Today manufacturers, in the interests of managing labour costs, are very lean and use labour hire to meet fluctuations in demand. This means that there is no longer the capacity within the permanent workforce for release time for training and development activities, impacting capacity for skills development. The report also highlights the fact that training levels for casual labour are “notoriously low” in both host and client firms.

Health and Safety issues

In 2002/03 27 claims of workplace injury or disease per 1000 employers were made in the manufacturing industry down from 36 claims per 1000 employees in 1998/99 but still higher than the national average of 16 claims per 1000 employees (National Occupational Health and Safety Commission, 2004).

The manufacturing industry is under increasing pressure to improve its safety performance and reduce Workcover premiums through risk prevention strategies. Safety skills development is a vital risk prevention strategy.

Consumer and customer service demands

The manufacturing industry operates in mature competitive markets which are characterised by tough competition, shrinking margins and a proliferation of differentiated products.

Australian National Training Authority (ANTA) (ANTA, 2003a) identified the following issues impacting skills needs:

- Changing customer tastes, preferences and expectations.
- The need for innovative products and service delivery.
- Increased environmental awareness and the expectation that products are environmentally friendly.
- Increased awareness of consumer safety and security.

Regulatory compliance

The manufacturing industry faces increasing regulatory requirements.

These include:

- Environmental compliance.
- Safety compliance.
- Quality standards compliance.
- Food safety compliance.
- Licensing compliance.
- Codes of practice.

As the regulatory demands increase and the cost of non compliance (whether monetary or loss of reputation) increases, so too do the skills needs of the industry.

5.3 Industry surveys, consultations and Forum results

Stakeholders from industry were asked to provide feedback on their perception and experiences around skills needs issues via the employer survey, the industry Forum and key consultations. The details of these are provided in the appendices. Following is a summary of the key findings.

Benefits of training

93% of survey respondents said that skills enhancement was important or very important to their business competitiveness, suggesting a very strong acceptance of the positive relationship between skills development and achieving business outcomes.

Recruitment difficulties

Many employers reported that they have difficulty recruiting suitable employees across more than one occupational area.

The Association of Rotational Moulders Australasia (ARMA) reported a real lack of people wanting to come into the industry limiting opportunities for growth and recommended a long term solution of improving the perception of the industry as offering a rewarding, safe and stable career choice to those who don't aspire to university. This was also suggested by the Registered Training Organisation (RTO).

The labour hire companies reported a lack of skilled people wanting to come into the industry including forklift drivers, experienced operators/technicians and supervisors and that the situation is getting worse. They reported sufficient numbers of unskilled workers except in peak periods from September to January.

The labour hire companies suggestions to address the skills needs issues included attracting young people to traineeships whilst still at school (also suggested by the Registered Training Organisation and the Forum), promoting the industry to students and teachers and encouraging workers to gain some qualifications to make them more employable. They also suggested that by offering more flexible working arrangements, such as part time work (one to three days per week), companies could become employers of choice sought by people with a positive work ethic.

In majority of cases where employers reported difficulty in recruiting workers, they had applicants who either had the qualification and lacked the skill or who lacked the qualification.

The occupational areas where they did not have applicants include electrical engineers, mechanical engineers, mechanical trade apprentices

and electricians. These are by definition, the skills shortage areas in the plastics and chemical industries.

The plastics and chemical industries employ up to half their workforce at the process worker/ plant operator level and it was at this level that half the surveyed employers reported difficulties finding skilled workers across a wide range of specialised industry processes. Most employers reported that the most likely action they would take is to retrain their existing workers. A short term solution suggested by the Association of Rotational Moulders Australasia (ARMA) was immigration of skilled workers.

This suggests that the problem is not a skills shortage problem but a skills gap problem and that initiatives developed to support the industries be focused on assisting employers to retrain their existing staff.

The Forum suggested that overcoming recruitment issues required proactive measures such as workforce planing, recruitment and retention strategies and improved community profile.

New worker skills

The attributes that employers look for when recruiting process workers/plant operators may include job specific skills but are more likely to focus on what has been described in research as employability skills combining both personal attributes and skills (Commonwealth Department of Education, Science and Training, 2002).

In new recruits, employers value the attitude (e.g. cooperative, flexible, willingness to learn), experience (manufacturing environment specific) and generic skills (e.g. communication, numeracy, problem solving teamwork) above the job specific skills (e.g. die setting, extrusion, thermoforming).

Employers then take the new recruit and train them internally with the job specific skills.

The response from employers is supported by the feedback from labour hire companies who reported that the main requirement of client companies is for workers to have attributes such as willingness to work responsibly, good work ethic and good attitudes. They also reported that the ability to work safely is an essential requirement of their clients. A labour hire company also reported that recent relevant experience is more important than qualifications.

One employer, currently engaged in New Apprenticeships highlighted the need for workers to have an interest in the role and a mechanical aptitude.

The Forum suggested that there was potential for increased participation of labour hire companies in the training and skills development. Labour

hire companies reported that they do deliver training in areas such as safety, numeracy and work practices.

These findings have a number of implications for both industry and vocational education and training providers (which provides people with occupational or work-related knowledge and skills and includes both public and private providers).

For the VET sector, it has implications for pre-vocational and employability strategies suggesting that training content and delivery should focus on personal attributes and general skills and should include opportunities to gain manufacturing experience.

For industry, it has implications for the current recruitment practices where employers advertise for specific job skills (e.g. seeking extruder operator) rather than the skills and attributes they value most highly (e.g. seeking team player with manufacturing experience). It also suggests that further investigation into the relationship between labour hire firms and companies is required, given the emerging reliance on labour hire in the plastics and chemical industries.

Existing worker skills

The majority of employers surveyed reported that their existing workforce needed skills development primarily in the area of specialised skills (e.g. hydraulics, quality, fault finding), followed by generic skills (e.g. problem solving, planning, team skills) than attitude.

This was supported through the feedback from the Registered Training Organisation who reported a lack of production people with solid technical skills and good team leading skills. Similarly the Forum reported skill gaps in machine operator and production roles.

Interestingly when asked to give examples of the actual skills needs, the survey results revealed that there is not a common understanding of the categories of skills among employers. For example skills areas such as forklift license, quality, safety and leadership were reported by some employers as specialised skills and others as generic skills.

This lack of common understanding of training terminology between individual employers and between employers and The VET sector has significant implications. It strongly suggests that this sector needs to be very careful when marketing training services to employers and fully clarify any terms that may be misinterpreted. The sector must also ensure that employer feedback regarding skills needs is specific rather than general to avoid any misunderstandings.

Training expenditure

Employers surveyed reported training expenditure from $0 to $768,000.

The average training expenditure reported by chemical industry employers was $114,482 per employer or $1213 per employee compared with plastics industry employers who reported an average of $29,502 per employer or $461 per employee.

This suggests that training expenditure in the chemical industry is much higher than in the plastics industry. There are a number of reasons why this may be true, such business size, sophistication of processes, level of regulatory requirements or training culture. It may be a reflection of the significantly higher traineeship commencements in the plastics industry where employers access the incentive so decreasing their actual expenditure.

Training incentives

Employers were asked about what training incentives they had accessed in the last two years.

Thirty three employers surveyed were accessing training incentives. Twenty seven of these were accessing the New Apprenticeships Scheme and four employers were accessing the Workplace English Language and Literacy Program (WELL). This suggests that this program is under subscribed in the industries which implies it is either inappropriate, under marketed or workers in the industries do not need training because they have acceptable workplace communications skills.

The Forum also reported that the current time based funding focus on qualifications in the training system was a disincentive the employers and learners. The Forum also recommended that arrangements for government funding and incentives be expanded to include gap training, recognition services and Certificate II traineeships.

Training as a solution

Overwhelmingly employers surveyed identified training as the solution to their skills needs with internal training being a more popular choice than externally provided training.

Interestingly only half the surveyed employers reported that external training providers were important or very important to meeting their skills needs or improving their labour productivity. Also 19% of employers reported that formal industry qualifications were unimportant to their business.

Problems with the training industry reported by the Association of Rotational Moulders Australasia (ARMA) is the unwillingness of some training providers to work with smaller companies, the emphasis on assessing current competencies rather than skills development and the presence of prior qualifications removing eligibility for government incentives.

Problems with the training offered were also highlighted by the Registered Training Organisation (RTO) who reported that industry requires on-site, flexible delivery, focused on meeting business needs as opposed to a "sheep dip" approach. They suggested that gap training rather than whole qualifications would better meet the needs of industry. They also commented that implementation of specialised technology means that it is difficult for a Registered Training Organisation (RTO) to deliver technical training on company specific equipment or techniques. This was also highlighted by the employer currently engaged in New Apprenticeships and the New Apprenticeship Centre (NAC) who also reported that these training organisations may not have the staff or the willingness to source a trainer skilled in specialised technologies.

There are serious concerns with the quality of training that is delivered. The New Apprenticeship Centre (NAC) reported that employers are disappointed by the delivery since Registered Training Organisations (RTO) are not willing to invest in the resources to implement the training according to the employers needs. They suggested that the trainer needs both the Certificate IV in Assessment and Workplace Training and the qualification which they are delivering. The employer currently engaged in New Apprenticeships stressed that improving the quality of training was vital to ensure that it meets business needs.

Another barrier to training is the industrial relations concern raised by the New Apprenticeship Centre (NAC). This is because both the traditional trades and the traineeships are Certificate III level qualifications and where companies may see these qualifications as being at different levels, individuals and some unions desire equivalence to achieve equal pay. In fact the metals award prescribes equal pay for all Certificate III qualifications or equivalent.

The employer engaged in New Apprenticeships suggested the benefits of formal training to be recognized qualifications, learning optimised through delivery by professional trainers and that employees may be more comfortable admitting their skills needs to an outsider, rather than revealing their weaknesses to their line manager.

Employers are fully aware of the importance of training in overcoming their skills needs. This is important because it means that we cannot assume that the low take up of structured training reported in Vocational Education and Training (VET) statistics indicate that employers are not

committed to up skilling their workforce. In fact the opposite is suggested with most (63%) employers identifying internal training as the main strategy to overcoming their skills needs. They are evaluating what Vocational Education and Training (VET) has to offer and they are not satisfied with what is on offer.

Internal training is training that occurs informally in the workplace outside the services of the Vocational Education and Training (VET) sector. The level of informal training that occurs within enterprises is not measured and reported in training participation statistics. The CEO of the Association of Rotational Moulders Australasia (ARMA) reported that Registered Training Organisations (RTO) were simply not servicing the industry and that companies were doing in house training. This was also reported by the New Apprenticeship Centre (NAC) who indicated that significant amounts of training are done in house. Thus it is possible that although the official training participation rates are low, training is happening, but it is happening informally and totally sponsored by the employer.

This suggests that external training arrangements available may not meet the needs of the industries to the extent that employers are not attracted to the initiatives available and choose to deliver their training without government assistance. Therefore an opportunity exists to better understand how skills needs align with the business needs to develop more appropriate and effective incentives to support the industries.

5.4 Identified current and future skills needs

The evidence presented in this report suggests that the skills needs in the plastics and chemical industries are predominantly skills gaps and recruitment problems rather than skill shortages.

5.4.1 Skills shortages

The case against there being skills shortages generally across the industries is strong. The evidence includes:

- The overtime trend is in decline.
- Numbers directly employed within the plastics and chemical industries are in decline.
- Numbers directly employed within the plastics and chemical industries specific occupations are in decline.

  Decreasing overtime and numbers directly employed in the industry and in occupations is an indication of decreasing labour demands. Labour demands decrease as productivity increases (equal or more output from less workers as a result of improved work practices or new technology) or production decreases (less production output requiring less workers at the same level of productivity).

  Decreasing overtime and numbers directly employed in the industry and in occupations can also be an indication of increasing use of casual and labour hire workers as a flexible response to dealing with fluctuating labour demands such as in a seasonal market or where labour demands do not justify adding a full work team.
- The rate of wage increases has remained steady.

  In an occupation where labour is scarce we would expect to see accelerated wage increases as employers compete for a scarce resource.
- Employers report that there are applicants but they are not suitable.

  The availability of applicants who are unsuitable suggests that the problem is not a skills shortage but a skills gap.

Skills shortages were however reported for those occupations that are cross industry and are well recognised skills shortage areas.

These occupations are:

- Electrical engineers.
- Mechanical engineers.
- Mechanical trade apprentices.
- Electricians.

This skills shortage is both a current and a future skills shortage problem and reinforces the findings in the engineering industry (Engineering Industry Task Force 2001).

5.4.2 Skills gaps

The main problem reported by employers can be defined as a skills gap because there are both applicants for vacancies and a pool of existing workers, but neither have the necessary skills.

Current skills gaps highlighted in this report include:

- Specialised processes such as blow moulding die setting, extrusion, injection moulding, printing, thermoforming.
- Mechanical such as hydraulics, maintenance, tool set up, fault finding.
- Electrical such as electrical control systems, electronics.
- Knowledge such as plastics processes, chemical processes, chemical interaction, chemical handling, polymer processing.
- Management such as supervision, project management, quality management.
- Generic such as planning, problem solving, time management, team skills.
- Logistics such as forklift licence, warehousing.
- Language and literacy such as reading, writing and speaking English.
- Numeracy.
- Using new technology such as key board skills.
- Compliance such as safety, quality, environmental, food safety.
- Safety awareness such as hazardous substances, dangerous goods, manual handling.
- Skills that contribute to the development of good work ethics.

These skills needs are likely to become more pronounced in the future.

5.4.3 Recruitment issues

Employers also provided evidence of recruitment difficulties.

These difficulties include:

- Poor image of the industry.
- Poor remuneration (particularly apprentices).
- Ineffective recruitment processes and strategies.

These difficulties represent barriers to meeting skills needs which are explored in more detail in the next section.

6. Barriers to satisfy skills needs

A number of key barriers to satisfying the skills needs problems in the plastics and chemicals industries have been identified.

The VET Sector capacity to deliver

Training policy is focused on the needs of industry and this is reflected in the development of industry based Training Packages and generous incentive programs for existing workers such as the New Apprenticeship Scheme.

However feedback from employers and other stakeholders suggests that there are implementation issues that may be causing employers not to access nationally recognised training. Some of these issues are around the incentives themselves such as a primary focus on achieving qualifications rather than meeting skills needs, no mechanism for alignment with business strategy to ensure maximum training benefit and a lack of user choice. Other issues relate to the quality of the training such as the availability of training resources, the availability of appropriately skilled trainers and the “tick and flick” or “sheep dip” approach.

Training providers need to have the capacity and willingness to respond to industry needs for example flexible delivery, small numbers, balancing Recognition of Current Competencies (RCC) and skills development aligned with the company’s strategy. This makes a case for promotion of the Reframing the Future program to support professional development within training providers in areas such as business strategy, innovation and responsiveness to business needs.

These problems limit the uptake of external training. The training does not meet the needs of employers who recognised the importance of training but do not have faith that training system can deliver.

Labour force squeeze

The plastics and chemical industries are facing a labour force squeeze which is restricting the intake of new workers and leading to a serious aging workforce problem which is more severe than general Australian workforce population trends.

In the future these mature workers will reach retirement age and leave the industries, taking with them valuable skills and knowledge. This impending “skills drain” is a significant threat to the industries where there is a lack of appropriately skilled new entrants being prepared to replace them.

Changes in employment practices – Labour Hire employment

The plastics and chemicals industries increasingly use the services of labour hire companies to maximise the flexibility of their labour supply.

It is significant because it is a pathway for entry increasingly utilised by companies in the industries and raises the following issues:

- The division of responsibility between labour hire companies and companies for the management, induction and skill development of labour hire workers is unclear.
- Changing employment practices demand a different skills set for effective workforce planning and management and companies may not have these skills.
- The identification of skills needs and the training of labour hire workers is a grey area.

Very little is known about this emerging practice which is having a significant impact on employment patterns in the industries.

Industry image

The plastics and chemical industries have a poor image in the general community and is judged to be dirty, unsafe, poorly paid, low status and male dominated. This image is out of touch with the industries today and it means that potential new entrants are put off seeking employment in the industry.

7. Initiatives and solutions

The research reveals two key strategies to address the skills gaps and recruitment difficulties in the plastics and chemical industries. These are up skilling existing workers and attracting new workers.

7.1 Up skilling existing workers

Australian National Training Authority's (ANTA) national strategy for 2004-2010 (ANTA, 2003b) recognises the need for a highly skilled workforce and commits to "increase participation and achievement, particularly by existing workers" supported by the outcome statement "adults, through lifelong learning, continuously upgrade their skills to meet current and future work requirements."

7.1.1 Current initiatives

A range of initiatives exist that are designed to support the training of existing workers.

New Apprenticeships scheme

The New Apprenticeships scheme is an umbrella term for the national apprenticeship and traineeship arrangements that came into effect on 1st January 1998. The training delivered against a Training Package provides a nationally recognised qualification with links into further qualifications.

The Australian Government supports the training of existing workers in the plastics and chemical industries through the New Apprenticeships.

The New Apprenticeships scheme is limited by the focus of the training on a Certificate III qualification outcome rather than focusing on identifying and addressing skills needs. There is also no mechanism in place to ensure an alignment of the training to the business strategy. It is promoted by a network of New Apprenticeship Centres (NAC) that cannot have specific industry knowledge of all 1000 New Apprenticeships they offer.

The plastics and chemical industries need an unbiased, authoritative resource that can work with them to clearly identify skills needs aligned with the business imperative and assist companies to access training services from the most appropriate source.

Profile funding

Profile funding is an allocation of funded hours available to public providers to deliver training. Each TAFE applies for and is allocated profile hours according to Australian Qualifications Framework (AQF) level, industry and geographic location of delivery.

Profile funding enables delivery of single units of competency but providers are reluctant to enrol students in units in preference for enrolling in full qualifications. In some cases this reluctance is due to the limitations of the TAFE's student records system that requires enrolment against full qualifications.

This funding is limited by the fact that it is only available to public providers and does not promote user choice. Employers need to use the training provider that has the profile hours available, however often they do not know what profile hours training providers have available.

To promote user choice the plastics and chemical industries need access to information about what type of profile funding is available and which training providers have the funding.

State based user choice funding

State based user choice funding such as the Priority Education and Training Program (PETP) in Victoria, is a pool of funded hours allocated to private training providers.

This funding enables delivery of single units of competency by providers and is effective in being able to target specific skill requirements. However units are often delivered in isolation to identified business needs.

This funding is limited by the fact that it is only available to private providers and does not promote user choice as employers need to use the training provider that has the profile hours available. They often do not know what which training providers have hours available for their industry.

To promote user choice the plastics and chemical industries need access to information about what type of state based user choice funding is available and which training providers have the funding.

Workplace English Language and Literacy Program (WELL)

The Workplace English Language and Literacy Program (WELL) funds workplace communications training integrated with vocational training to help workers meet their current and future employment and training needs. It is a requirement of this program that the participants are not also undertaking in a New Apprenticeship.

The Workplace English Language and Literacy Program (WELL) is a flexible program that can deliver skills gap training that focuses on outcomes that meet the needs of the business rather than qualification or even unit of competency. However the program is limited by its focus on language, literacy and numeracy and the requirement to have a trainer with language and literacy qualifications to deliver the training.

The plastics and chemical industries need this program as it stands to meet their language, literacy and numeracy needs; it simply needs to be promoted more strongly in these industries.

The plastics and chemicals industries also need a "Skills Gap Program" that could be modelled on the Workplace English Language and Literacy Program (WELL) that focuses specifically on skills gaps and requires trainers to have both industry and business skills. This would enable trainers to work effectively with companies to ensure strong links between the training and the business strategy.

7.1.2 Proposed initiatives

- Appoint nationally coordinated independent "Industry Development Officers" in each state to promote training to industry and work with companies to provide unbiased advice, promote user choice, help align the training to the business strategy and help them to link with an appropriate training provider. This role is of particular value to small businesses, to enable them to link with a network and access training where otherwise the small numbers to be trained would make training prohibitively expensive. This role could be modelled on the Victorian Industry Liaison Agent Program operating in 2002-4 (Priority Project A)

- Develop a "Skills Gap Program" modelled on the Workplace English Language and Literacy Program (WELL) that funds skills gap training linked primarily to business skills needs and secondly linked to competencies (Priority Project B)

- Develop training resources to support the delivery of training in the plastics and chemical industries (Priority Project C)

- Develop an online system for clients of Registered Training Organisations (RTO) to provide feedback on the services they have received and view the feedback from other clients (Priority Project D)

7.2 Attracting new workers

New entrants to the plastics and chemical industries are typically adult workers recruited through agencies. Many of these are initially employed by a labour hire firm until a permanent opportunity arises. If and when they meet the selection criteria, they are offered permanent employment. This can be described as a transitioning process where both parties get the opportunity to "try before they buy."

It should be noted that parents returning to work could also make a valuable contribution to the development of the manufacturing workforce if more flexible workplace arrangements were avaiable.

The Australian National Training Authority's (ANTA) national strategy for 2004-2010 (ANTA, 2003b) recognises the need for a highly skilled workforce and commits to "increase participation and achievement, particularly by existing workers" supported by the outcome statement "workers in part-time, casual, contract and occasional employment have equal opportunities for learning."

Although this statement refers to existing workers, it is also relevant to new entrants in the plastics and chemical industries where new entrants are existing labour hire casuals.

7.2.1 Current initiatives

A plethora of local, state and commonwealth initiatives are available to promote opportunities for young people. Some of these are listed below. They are limited by the fact that they do not promote entry by the most likely new entrants who are adult workers with a good employability skills and experience in the manufacturing industry.

Cadetships

Cadetship programs have been available in a number of industry areas over recent years. They involve training programs that develop specific skill sets through indentured training and often reduce the duration of training, compared with trade apprenticeship training. Cadets can become competent and qualified in shorter timeframe and be independently productive sooner.

A number of technology cadetships have recently been developed however no training pathway has been developed for the plastics and chemical industries. These programs if and when developed, will provide a valued entry pathway for young people.

Make it! Campaign

Numerous programs have been initiated to attract young people to the manufacturing industries. The Make It! Campaign was launched in 2003 and provided a range of resources including a careers website. The M-Tec program, developed through funding from the Australian Government is another example of such a program.

Unfortunately these programs receive support for initial development and have a limited life. No ongoing implementation support is provided to enable the programs to make a real difference. As a result many career promotion programs come and go creating a clutter of initiatives with no state-wide or national coordination. There is a real need to harness the diversity of value programs, provide coordination role and "one-stop-shop" that will enable schools, employers and job seekers to access programs and resources.

Trade Apprenticeships

Traditional trade skill training is identified through established trade apprenticeships that have clear industry determined durations, employment conditions and qualifications. These trade apprenticeships have been extremely valuable for those industries where they exist. Employers value the rigour of skill development through these programs. Plastics and chemical industries have only recently had access to nationally recognised qualifications that have been developed with the advent of the relevant training packages. No trade apprenticeships have been developed for the plastics or the chemical industries, except for few isolated industry sectors in some states.

Trade apprenticeships provide a valuable pathway for young people into the industries. They are well recognised and respected by parents and employers and provide a valuable careers marketing tool.

A number of current initiatives are attempting to establish nationally consistent trade apprenticeships however this needs a coordinated approach and requires the development of sufficiently rigorous Certificate III and IV qualifications in training packages.

The development of the Australian Technical Colleges will provide valuable training to support new entrants to the industries; however access is limited to trade apprenticeship training. It is therefore imperative to develop trade apprenticeships for plastics and chemical industries if the technical colleges are to be of any value to these industries.

School-based New Apprenticeships

School-based New Apprenticeships are open to students 15 years of age or over. It involves the student undertaking their final secondary school years as well as being employed and trained. These programs are

developed through individual state arrangements. It is important that nationally consistent arrangements are in place across Australia to enable national manufacturing to access consistent programs across their enterprises.

Vocational education and training in schools

Vocational education and training can be accessed through the school system via the VET in Schools program. This program allows secondary students to combine traditional classroom based learning with workplace learning. It is important that nationally consistent arrangements are in place Australia wide to enable national manufacturing to access consistent programs across their enterprises.

New Apprenticeship Access Program (NAAP)

The New Apprenticeships Access Program (NAAP) provides job seekers who experience barriers to skilled employment, with pre-vocational training, support and assistance to obtain and maintain a New Apprenticeship. Alternatively, a job seeker may be supported into employment, further education or training.

The program is incentive based and Registered Training Organisations (RTO) iare paid an incentive for participants who move into a New Apprenticeship and a significantly lesser incentive for participants who move into employment or other training. If there is no demonstrated outcome these organisations may break even.

Skill up program

Programs to re-train workers retrenched through company closures to develop the skills to work in alternative industry sectors. These programs are administered on a state basis and provide valuable opportunities for workers displaced in one industry to develop skills for employment in other industries.

7.2.2 Proposed initiatives

- Research the emerging practice of labour hire in the plastics and chemical industries and its implications for skills needs. Develop a best practice model of labour hire practice (who are the labour hire companies, where are they, how big/small are they, how many casuals do they place, demographics of casuals, qualification and skill levels of casuals, wage levels, induction and training processes, how casuals are placed etc) (Priority Project E).

- Assist companies with workforce planning and the development of effective recruitment strategies and practices including understanding recruitment targets (e.g. adult workers, mature workers, females, youth) and what they want, promoting skills and aptitudes sought by employers rather than specialised skills and encouraging flexible workplace arrangements. (Priority Project F).

- Continue promoting a positive industry image through initiatives such as the Make It! Campaign and industry open days for schools and businesses (Priority Project G).

- Develop an integrated manufacturing awareness program to be used in the school curriculum for years 5 through to 10 (Priority Project H)

7.3 Priority projects

7.3.1 Priority Project A – Industry Development Officers

Appoint nationally coordinated Industry Development Officers to assist employers access appropriate training linked to their business needs. This is project is based on the findings from the Plastics and Skills Industries Association Skills Needs Project.	
Purpose	To support employers in the plastics and chemical industries to implement cost effective training which both up skills employees and supports business strategies.
Proposal	Initially appoint three nationally coordinated independent Industry Development Officers in each state to promote training to industry and work with companies to provide unbiased advice, promote real and effective user choice, help align the training to the business strategy and help them to link with an appropriate training provider. This service would be particularly valuable for assisting small and medium enterprises.
Outcomes	Greater uptake of effective training by industry.
Timeline	Medium – Two year serial appointments.
Indicative Cost	$90,000 per appointment per year.
Industry Contribution	Advisory group of industry stakeholders to oversee and guide the project coordinated through PACIA and industry contribution organised through PACIA.
Responsible Parties	Australian Government.
Sustainability	To encourage training providers to develop this role within their business. Over time industry will be empowered to effectively perform this role themselves.

7.3.2 Priority Project B – Skill Gap Program

Develop a "Skills Gap Program" modelled on the Workplace English Language and Literacy Program (WELL) that funds skills gap training, linked primarily to business skills needs and secondly linked to competencies. This is project is based on the findings from the Plastics and Skills Industries Association Skills Needs Project.	
Purpose	To assist employers with the up skilling of non professional level workers in the plastics and chemical industries to meet business needs.
Proposal	One of the key messages from the research is the need for skills gap training of non professional workers in the plastics and chemical industries. Current funding and incentive initiatives do not support the user choice delivery of skill gap training aligned to business needs. The most effective working model to achieve skill gap training is the WELL Program but it is limited by its focus on language, literacy and numeracy and the requirement to have a trainer with language and literacy qualifications to deliver the training. This project proposes to pilot a similar model to the WELL model with 5 companies nationally including: - Application and reporting processes (excluding the National Reporting System- NRS) - Funding levels (75% in first year then 50% in second and third years, allocated by work site, 12 month contract) - Training priority (Meeting identified enterprise needs takes priority over qualification or unit of competency outcomes) The critical differences from the WELL Program being: - Focused on meeting skills gaps aligned to business needs - Requires trainer to have Certificate IV Assessment and Workplace Training, direct industry

	experience and business management qualifications or experience - Includes action learning projects, a delivery mode requirement to ensure that training activities are used to help drive the business forward The aim of this project is that it will lead to a long term program.
Outcomes	Evaluation of funded service specifically designed to meet the skill gap needs of the industries.
Timeline	Short term - 12 month pilot project. Ongoing projects would be contingent on the success of the pilot project.
Indicative Cost	$150,000
Industry Contribution	$50,000 (Five companies to contribute $10,000 each). Advisory group of industry stakeholders to oversee and guide the project.
Responsible Parties	Department of Education, Science and Training (DEST). Department of Employment and Workplace Relations.
Sustainability	Builds intellectual capacity within the training industry to deliver aligned to business needs.

7.3.3 Priority Project C - Training resources

The development of flexible learning resources to support delivery of the Plastics, Rubber and Cablemaking Training Package. This is project is based on the findings from the Plastics and Skills Industries Association Skills Needs Project.	
Purpose	To develop flexible, relevant and up to date quality training resources.
Proposal	The capacity of our industries to be globally competitive is highly dependent on the maintaining and enhancing the skills of our workforce. The framework is in place but the training providers are not adequately resourced and have not been since the Training Package was first introduced in 1998. The information and material in the out of date National Transition Program (NTP) resources are viewed by industry and providers as potentially valuable, but they are not aligned to the national competencies. The resources were originally developed in the mid-1990s to support delivery of the then polymer processing certificates, which preceded the original (1998) Training Package. The substantial development cost - around $750,000 at the time, equivalent to well over $1 million today. This money is “sunken money” as things stand because the use of the resources by industry and providers is minimal. A lesser investment to rework these resources and return them to active use would in this light be highly cost-effective. This proposal seeks to rework the existing National Transition Program (NTP) resources to make them Training Package compliant. The revised resources will be developed in a customisable format that is easy to update and to tailor to specific enterprise needs.
Outcomes	60 resources completed, aligned with Plastics, Rubber and Cablemaking Training Package available on CD ROM.
Timeline	Short term - This project would take 12 months to complete.

Indicative Cost	To rework all 60 NTP modules could cost up to $400,000.
Industry Contribution	Advisory group of industry stakeholders to oversee and guide the project, input into resource design and content and trialling of resources.
Responsible Parties	Department of Education, Science and Training (DEST). Coordinated by the Manufacturing, Engineering and Related Services Industry Training Advisory Body.
Sustainability	Resources available publicly and designed to be easily updated and customised to enterprise needs.

7.3.4 Priority Project D - Online employer feedback system

Develop an online system for clients of Registered Training Organisation (RTO) to provide feedback on the services they have received and view the feedback from other clients. This is project is based on the findings from the Plastics and Skills Industries Association Skills Needs Project.	
Purpose	To empower employers to provide and view direct feedback on the services provided by RTOs.
Proposal	Whilst the funding arrangements are generous, this project raised serious concerns regarding the quality of the RTO service delivered in areas such as training delivery (“tick and flick”, “sheep dip” approach), training resources and quality of trainer. Although RTOs are audited and monitored through the Australian Quality Training Framework (AQTF). These audits check the systems and processes not the effectiveness of the training. By providing access to a resource where prospective RTO clients can view direct feedback from other RTO clients, employers are empowered to make informed decisions about the RTO they select. RTOs are also encouraged ensure that they deliver the best possible service and respond effectively when problems arise. This project proposes to pilot an online feedback system within the web site www.training.com.au. Current clients of RTO services would be issued with a user name and password that would enable them to log on and post feedback regarding all aspects of the service they have received. The security of having a user name and password would protect against misuse of the system by anyone who is not a direct client. RTOs would then be rated by a star system similar to that used in eBay that shows at a glance the number of positive or negative reviews. Prospective clients and indeed anyone interested would have free access to view the feedback about a particular

	RTO but not post feedback themselves. In structuring this pilot program all the legal issues would need to be thoroughly researched.
Outcomes	Development and evaluation of an employer feedback system designed to improve the quality of training service delivery.
Timeline	Short term - 12 month pilot.
Indicative Cost	$75,000
Industry Contribution	Active involvement in the project. Advisory group of industry stakeholders to oversee and guide the project.
Responsible Parties	Department of Education, Science and Training (DEST)
Sustainability	Self maintain once established with a minimal ongoing administration cost.

7.3.5 Priority Project E – Labour Hire Research Project

To research the emerging labour hire practices of the plastics and chemical industries and the impact on skills needs. This is project is based on the findings from the Plastics and Skills Industries Association Skills Needs Project.	
Purpose	To ensure that the plastics and chemical industries are supplied labour who have all the relevant skills to work safely and reliably as part of a team.
Proposal	Research the emerging practice of labour hire in the plastics and chemical industries and its implications for skills needs to identify needs, issues and solutions. This would be accomplished through a literature search, labour hire company surveys, stakeholder consultation and employer case studies to develop a best practice model of labour hire use to ensure that people working in the industry have the necessary training and skills. To include in the study: who are the labour hire companies, where are they, how big/small are they, how many casuals do they place, demographics of casuals, qualification and skill levels of casuals, wage levels, induction and training processes, how casuals are placed, future trends and relevance of Certificate I competencies..
Outcomes	Final research report with best practice models.
Timeline	Short term - 12 months.
Indicative Cost	$100,000
Industry Contribution	Advisory group of industry stakeholders to oversee and guide the project. Industry validation. Participation in surveys, consultations and forums.
Responsible Parties	Department of Employment and Workplace Relations (DEWR). Department of Education, Science and Training (DEST)
Sustainability	Identified best practice model adopted by industry.

7.3.6 Priority Project F – Recruitment Assistance

Assist companies with workforce planning and the development of effective recruitment strategies and practices, including understanding recruitment targets (e.g. adult workers, mature workers, females and youth) and what they want and promoting skills and aptitudes employers require, rather than specialised skills and encouraging flexible workplace arrangements. This is project is based on the findings from the Plastics and Skills Industries Association Skills Needs Project.	
Purpose	Improve labour recruitment and retention practices in the industry
Proposal	To assist a selection of small, medium and large companies around Australia with workforce planning and to develop effective recruitment and retention strategies and practices. This would include assisting companies in their understanding of recruitment targets (e.g. adult workers, mature workers, females, youth) and what they want and promoting skills and aptitudes sought by employers, rather than specialised skills and encouraging flexible workplace arrangements. Strategies would include introducing systems which enable people to work part time, such as job sharing a full time role, or working 3 shifts per week rather than five.
Outcomes	Authoritative advice and case studies on effective recruitment and retention strategies for the plastics and chemicals industries.
Timeline	Short term – 12 months.
Indicative Cost	$120,000
Industry Contribution	Advisory group of industry stakeholders to oversee and guide the project. Industry validation, focus groups, stakeholder consultations.
Responsible	Department of Employment and Workplace Relations

Parties	(DEWR).
Sustainability	Improved recruitment and retention practices promoted to industry.

7.3.7 Priority Project G - Manufacturing Awareness Program

Implement a Manufacturing Awareness Program to selected secondary schools in Australia. A similar program was developed by South East Development with Australian Government funding through the Regional Assistance Program (Department of Transport and Regional Services) and provides a comprehensive, structured manufacturing awareness program for Year 9 and 10 students. The Institute of Trade Skills Excellence (ITSE) focuses on 'trade' qualifications and years 11 and 12. This project focuses on years 9 and 10 and includes all manufacturing careers, the majority of which are non trade. The DEST funded ZOOM+ Careers in Manufacturing resource provides a valuable careers information resource however it is not integrated into school programs. This project would use ZOOM+ as a recruitment resource. The Australian Network of Industry Careers Advisors would benefit greatly from this project and promote to school communities. This is project is based on the findings from the Plastics and Skills Industries Association Skills Needs Project.	
Purpose	To implement a manufacturing exposure program in secondary schools as part of the ongoing curriculum. At each year level there would be a focus on relevant aspects. For example, the Year 9 component focuses manufacturing in the environment and analysis of employment opportunities and skills required to pursue a manufacturing career. The Year 10 program focuses on globalisation and impact on manufacturing and exposure to manufacturing workplace culture, safety and environment.
Proposal	To fund a project officer with the appropriate expertise to work with selected schools to implement the program and work with relevant state government agencies to development a sustainable program in schools.
Outcomes	An authoritative and contemporary curriculum program introduced to the national and state curriculum for students.
Timeline	An initial twelve month program followed by state funded sustainability programs.
Indicative	$150,000 for the initial 12 month implementation across

Cost	Australia.
Responsible Parties	Department of Education, Science and Training
Industry Contribution	Advisory group of industry stakeholders to oversee and guide the project.
Sustainability	Builds awareness and a positive image of the industries.

7.3.8 Priority Project H- Integrated Manufacturing

To develop an integrated manufacturing awareness program for incorporation in school curriculum at years 5 through to 10. The DEST funded ZOOM+ Careers in Manufacturing resource provides a valuable careers information resource however it is not integrated into school programs. This project would use ZOOM+ as a recruitment resource. The Australian Network of Industry Careers Advisors would benefit greatly from this project and promote to school communities. This is project is based on the findings from the Plastics and Skills Industries Association Skills Needs Project.	
Purpose	To attract young people to a manufacturing career it is important that they have exposure from an early age. Young people make decisions about their careers based on information they gather at an earlier age. Current programs focus on the later years of school. An exposure to the manufacturing industry throughout school and through science, studies of society, chemistry, literacy and mathematics will enable young people to make career decisions based a broader base of knowledge.
Proposal	To fund the development of an integrated manufacturing awareness program to include in school curriculum and to support the learning about society, science, mathematics, chemistry and language. This program will focus on a sequence of curriculum content appropriate to years 5 – 10 of schooling (10 year olds to 16 year olds). The development of the program will require industry research, program writing, trialling, and publication and dissemination workshops. The program will need to be developed by people with appropriate teaching and industry experience.
Outcomes	A comprehensive integrated program to support existing school curriculum providing a valuable resource for teachers.
Timeline	The development of the program will occur over a twelve month period.
Indicative Cost	$200,000
Responsible	Australian Department of Education, Science and Training

Parties	(DEST).
Industry Contribution	Active involvement in the project. Advisory group of industry stakeholders to oversee and guide the project.
Sustainability	Once the program has been disseminated, it will be maintained in line with school curriculum developments.

8. Appendices

8.1 Employer survey sample

A total of 59 surveys were collected and processed for this report.

The sample represents over 4,400 employees in the plastics and chemical industries. It includes 36 employers and 2,302 employees from the plastics industry and 23 employers and 2171 employees from the chemical industry.

These companies manufacture a range of products including detergents, paints and solvents in the chemical industry and plastic packaging, automotive components and master batch in the plastics industry.

Survey distribution

Surveys were distributed via the membership databases of the Plastics and Chemicals Industries Association (PACIA), Manufacturing Learning Australia (MLA), Manufacturing Learning Victoria (MLV), Plastic Injection Moulders Association (PIMA) and Process Manufacturing Industries Training Council of WA (ITC).

Table 11 Distribution of survey by state and by industry

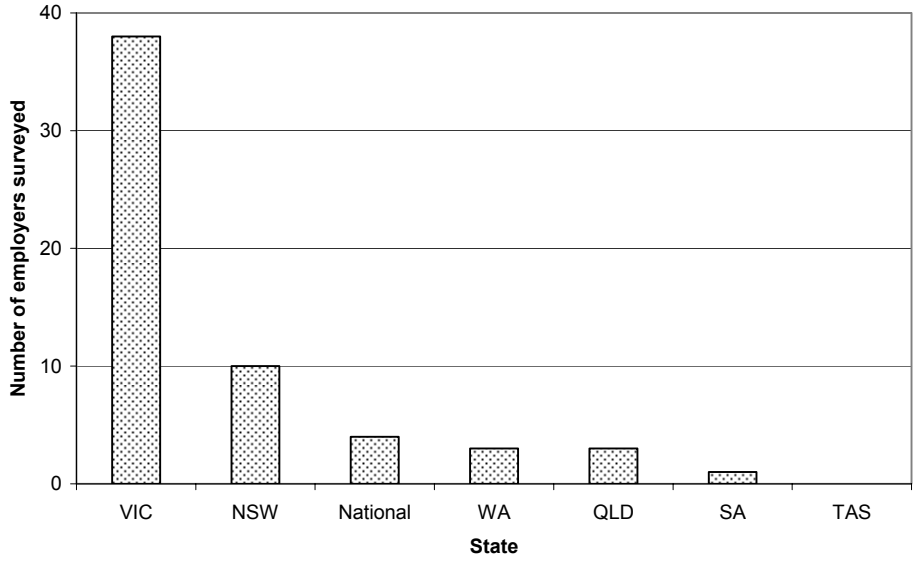
State	Industry	
	Plastics	Chemicals
NSW	102	110
QLD	17	40
VIC	598	291
WA	56	24
TAS	1	0
SA	3	1
Total	777	466

A total of 59 usable surveys were returned representing a return rate of 4.7%. This return rate is comparable with previous surveys conducted in these industries.

Geographical spread

The sample is national. The majority of respondents (64%) are based in Victoria. The sample compared with the total population is over represented in Victoria at the expense of New South Wales and Queensland.

Figure 14 Survey sample by location

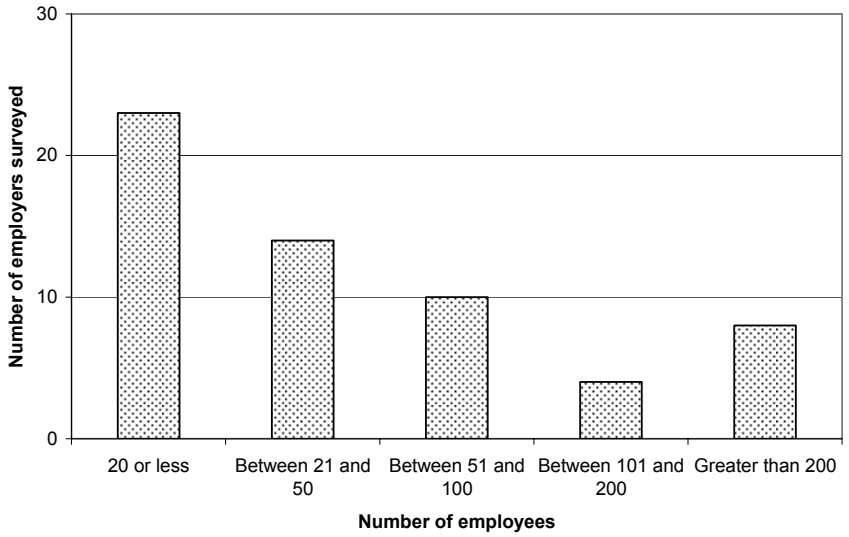


Business size

The sample includes a broad representation of small, medium and large businesses. The smallest employer had three employees, the largest had 500 employees. This is generally representative of the total population.

The average number of employees in businesses in the plastics industry was 63 .The average number of employees in businesses in the chemical industry was 94.

Figure 15 Survey sample by number of employees



Workforce structure

The sample represents organisations employing 80% males and 20% females. The overwhelming majority of these employees (93%) are employed full-time.

The sample does not include those workers employed through labour hire companies.

Table 12 Survey sample by employee employment type and gender

Gender	Employment type			Total
	Full-time	Part-time	Casual	
Males	3330	25	132	3487

Females	845	64	77	986
Total	4175	89	209	4473

Age

One third (33%) of employees in the survey sample are aged 35 to 46 years old and a small proportion (6%) is aged 15 to 25 years. The proportion of workers aged more than 55 years and reaching the retirement age of 65 within the next ten years is 9%.

The sample survey age profile of employers from the plastics and chemical industries is very similar although the chemical employers show a more pronounced aging workforce. This is consistent across occupational areas.

Figure 16 Survey sample by age range (All employees)

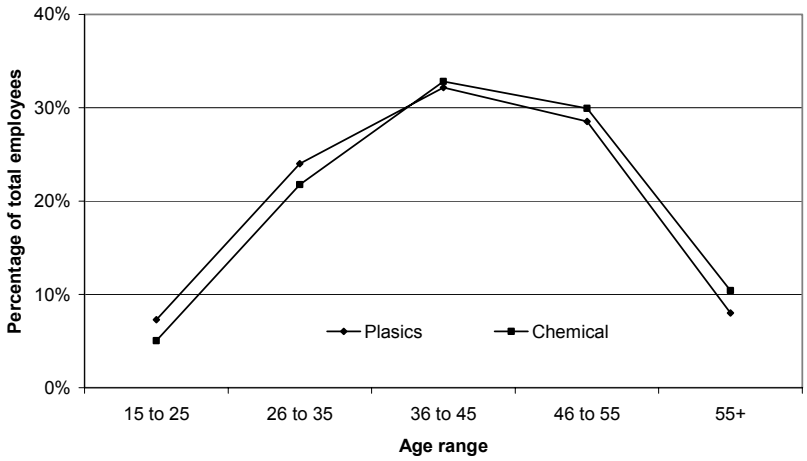


Figure 17 Survey sample by age range (Professional e.g. chemists, engineers)

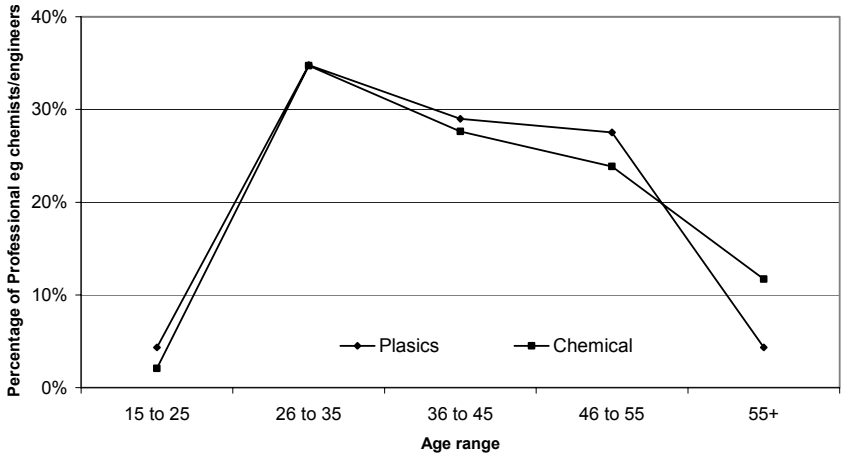


Figure 18 Survey sample by age range (Supervisors, Team Leaders)

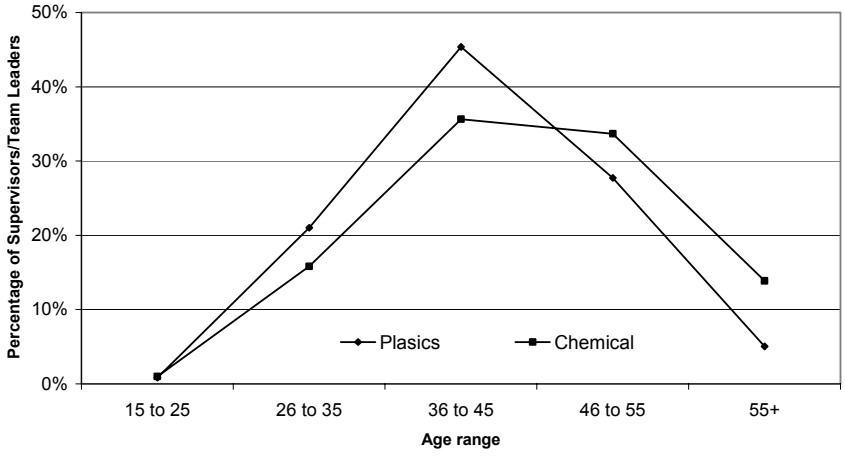


Figure 19 Survey sample by age range (Tradespeople)

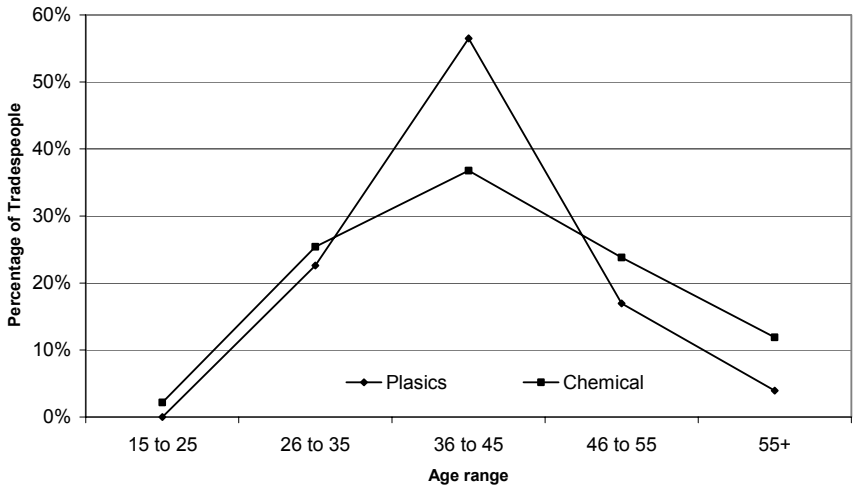


Figure 20 Survey sample by age range (Technicians/Advanced Operators)

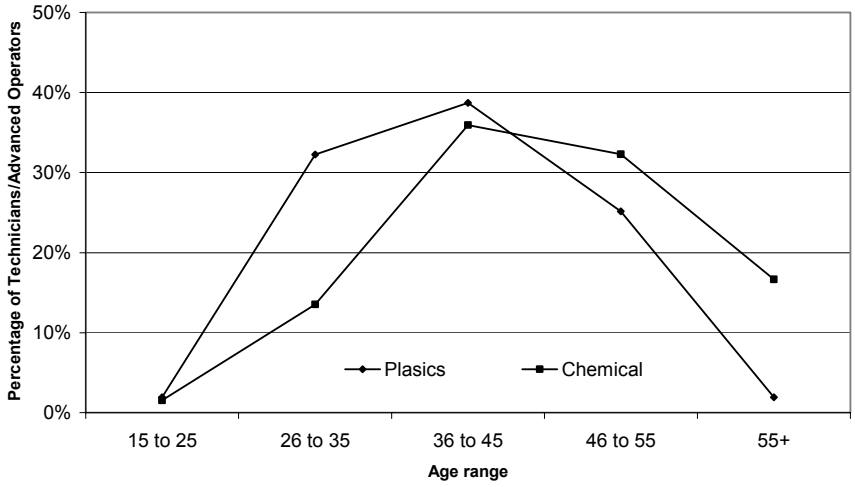
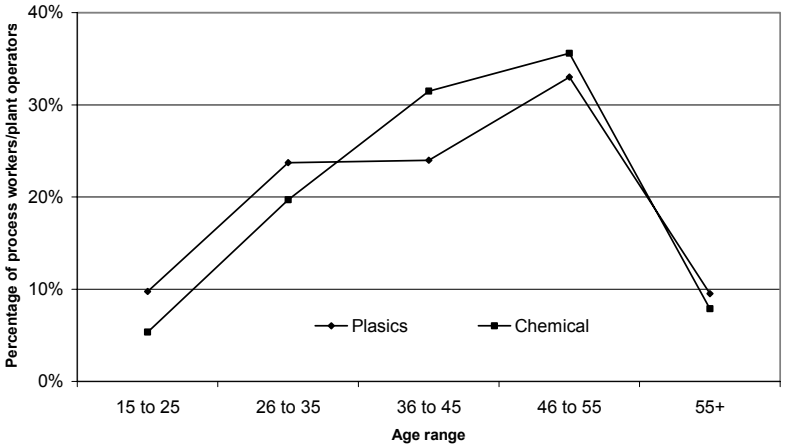


Figure 21 Survey sample by age range (Process Workers/Plant Operators)



Occupational Groups

The breakdown of the survey sample employees by occupation area shows that the majority of employees (47%) are employed in the plastics and chemicals industry as process workers or plant operators.

In the plastics industry proportionally more females were employed (52%) than males (46%) in these roles. This is similar to chemical industry with 55% of females and 40% of males employed as process workers or plant operators.

Table 13 Survey sample by employee occupational area

Occupation		Total	
	Male	Female	Total
Management	9.4%	4.5%	8.3%
Finance/Clerical/Admin	4.6%	31.5%	10.5%
Professional e.g. chemists, engineers	9.6%	7.3%	9.1%
Supervisors/Team Leaders	6.7%	1.9%	5.6%
Tradespersons	11.6%	0.4%	9.1%
Trade Apprentices	1.3%	0.0%	1.1%
Technicians/ Advanced Operators	10.6%	2.6%	8.8%
Process Workers/Plant Operators	46.2%	51.7%	47.4%
Total	100.0%	100.0%	100.0%

8.2 Employer survey results

8.2.1 Skills shortages

Of the employers surveyed, 93% said that skills enhancement was important or very important to their business competitiveness and 61% (22 plastics industry employers and 14 chemical industry employers) said that they were experiencing difficulties recruiting skilled employees.

Occupational areas

Most employers who reported that they had difficulty recruiting suitable employees reported problems in more than one occupational area. The greatest difficulty was reported in the area of process workers/ plant operators.

Table 14 Number of responses where employers cannot find anyone suitable per occupational area

	Difficulties finding skilled employees		
Occupation area	Plastics	Chemical	Total
Management	2	4	6
Finance/Clerical/Admin	0	4	4
Professional	9	1	10
Supervisors/Team Leaders	4	3	7
Tradespersons	7	1	8
Trade Apprentices	2	1	3
Technicians/ Advanced Operators	9	0	9
Process Workers/Plant Operators	18	12	30
Total	51	26	77

Six employers (10%) reported difficulties recruiting management level employees. The occupations listed included operations and sales management in the plastics industry and operations, product and project management in the chemical industry.

Four employers (7%), all from the chemical industry, reported difficulties recruiting employees for finance/clerical/administrative occupations including customer services, purchasing and sales.

Ten employers (17%) reported difficulties recruiting professional employees. These included nine employers seeking engineers in the plastics industry and one employer seeking industrial chemists in the chemical industry.

Seven employers (12%) reported difficulties recruiting supervisory level employees. All three employers from the plastics industry were seeking injection moulding supervisors whilst the four employers in the chemical industry were seeking electrical and mechanical supervisors.

Nine employers (14%) reported difficulties recruiting trade level employees. Seven of these employers were from the plastics industry and were seeking toolmakers, electricians and mechanical fitters.

Three employers (5%) reported difficulties recruiting mechanical apprentices, two in the plastics industry and one in the chemical industry.

Nine employers (15%) in the plastics industry reported difficulties recruiting technicians/advanced operators. The occupations sought included die setters and a CNC machinist.

Thirty employers (51%) reported difficulties recruiting process workers/plant operators. In the plastics industry there were 18 employers seeking process workers for mixing, fabricating, extruding, thermoforming, granulating and injection moulding processes. In the chemical industry there were 12 employers seeking plant operators and forklift drivers.

Problems encountered

In the occupations where employers had difficulty recruiting, thirty three of the occupations had applicants with qualifications but not the skills, twenty six had applicants but they lacked the qualifications, ten did not receive any applicants for employees they were seeking and eight had applicants with the skills but they were not employable.

The occupations for which there were no applicants included project managers, engineers, die setters, the three apprentices and process workers/plant operators.

Of the thirty employers who reported having difficulty recruiting process workers/plant operators, three reported that there were no applicants.

Where they did receive applicants the biggest problem they identified was applicants without the qualifications (14) followed by applicants with the qualification but not the skills required (7) and applicants with the skills but not employable (6).

Table 15 Problems reported by occupation area

	Problem			
Occupation area	A	B	C	D
Management	1	3	2	0
Finance/Clerical/Admin	0	3	1	0
Professional	2	1	7	0
Supervisors/Team Leaders	0	1	6	0
Tradespersons	0	1	6	1
Trade Apprentices	3	0	0	1
Technicians/ Advanced Operators	2	3	4	0
Process Workers/Plant Operators	3	13	7	6
Total	11	25	33	8

Legend A = No applicants, B = Applicants but they do not have the qualifications, C = Applicants with qualifications but not skills required by the business, D = Applicants with the skills but not employable

Employer action

All but 2% of employers reported that they are likely to take action to overcome problems obtaining skilled employees. The most likely action (66%) was to retrain existing staff followed by other actions (53%).

The other actions proposed by employers included engaging recruitment agencies, promoting from within, employing under-skilled people, recruiting young graduates to prepare for future leadership requirements, recruiting off shore, training casual workers, new staff and unskilled workers and using process workers whenever possible in lieu of tradespeople and attempting to up-skill them.

Table 16 Likely action from employers to overcome problems recruiting skilled employees

Likely Action	Percentage of employers
Retrain existing staff	66%
Other	53%
Invest in plant and equipment	20%
Recruit from training providers	17%
Outsource the work	8%

No action	2%
Total	

8.2.2 Recruiting process workers

Employers were asked about what skills they were looking for when recruiting new process workers.

Table 17 Skills that employers look for when recruiting process workers as a percentage of total respondents

Skill	Total
Attitude	84.7%
Experience	59.3%
Generic skills	57.6%
Specialised skills	49.2%
Presentation	39.0%
Qualifications	23.7%
Other	15.3%

The majority of employers said they were looking for attitude (85%) and gave the examples listed in the table below.

Table 18 Examples of attitudes that employers look for when recruiting process workers

Attitude
Behavioural competencies such as punctuality
Pride
Civil and conscientious
Flexible
Willing to learn and adapt
Team oriented
Motivated
Willing to take ownership
Positive and interested in what they do
Reliable
Cooperative
Honest
Safety conscious
Good work ethic

Secondly employers were looking for experience (59%) followed by generic skills (58%).

Employers gave a wide range of the examples of the generic skills they look for listed in the table below.

Table 19 Examples of generic skills that employers look for when recruiting process workers

Generic skills
Ability to read tape measure
Action orientated
Any qualifications suitable to our industry
Aptitude for learning
Attention to detail
Common sense
Communication,
Computer literacy
English language and literacy (spoken and written)
Experience in chemical area
First Aid
Forklift license
Good Manufacturing Practice
Housekeeping
Leadership
Manual dexterity
Manufacturing experience
Mechanical aptitude
Metal working
Numeracy
Power tool skills
Practical skills
Prepared to take new approaches
Problem solving
Safety awareness
Team skills
Trade background

Employers were also looking for specialised skills (49%) and gave examples of the specialised skills they were looking for listed in the table below.

Table 20 Examples of specialised skills that employers look for when recruiting process workers

Specialised skills
Ability to do the job
Attention to detail
Boiler Operation
Colour matching
Commitment to quality production and output
Dangerous goods handling
Die Setting
Extrusion
First aid
Forklift license
Hazardous goods
Injection moulding
Machinery operation
Manufacturing awareness
Mechanical aptitude
Megatronics
OHS
Permit isolation processes
Plant operation skills
Previous industry exposure
Quality document completion
Thermoforming
Trade
Troubleshooting
Understanding chemical batch manufacturing
Understanding chemicals and chemical processes
Understanding principles of Distributed Control Systems
Understanding Programmed Logic Controllers

The examples of other skills that employers were looking for included character, commitment, willingness to learn, commonsense, dangerous goods handling, good work history, English language and literacy, mechanical experience and a willingness to stay in the job.

8.2.3 Skills needs of existing workers

Employers were asked about the skills needs of their existing workforces.

Table 21 Identified areas of existing worker skills needs as a percentage of total respondents

Skill	Total
Specialised skills	71.2%
Generic skills	44.1%
Attitude	27.1%
Other	3.4%

The majority of employers (71%) reported that their existing workers need skill development in the area of specialised skills. Examples of specialised skills needs reported by employers are listed in the table below.

Table 22 Examples of specialised skills needs of existing employees

Specialised skills	Specialised skills
Advanced moulding	Hydraulics
Better trade knowledge	Injection moulding
Blow moulding	Logistics/warehousing
Chemical interaction	Machine operation
Die setting/moulding	Maintenance and operation of specialised equipment
Electrical control systems	Management
Electronics	Mobile equipment
Engineering	Safety
Equipment operation	Plastics manufacture
Extrusion	Polymer processing
Fault finding	Printing applications
Forklift	Project management
General knowledge of plastics and chemicals	Quality assurance
Good Manufacturing Practice	Quality management
Handling chemicals	Supervisory leadership
Hazardous goods	Thermoforming
High Speed Injection Moulding	Tool setup
Higher Mgt Quals - MBA's	Versatility

Employers also reported that their employees needed skill development in the area of generic skills (44%). Examples of generic skills needs are listed in the table below

Table 23 Examples of generic skills needs of existing employees

Generic skills
English language and literacy
Forklift license
General improvements
Keyboard skills
Manual handling
Personal development
Planning
Problem solving
Quality assurance
Safety
Supervision and leadership
Team skills
Time management

Employers also identified attitude (27%) as a skills development area for existing workers. Examples of attitude reported by employers were respect and values.

It is worth noting that employers did not have a common understanding of the concept of specialised, generic and attitude skills as is demonstrated by the examples of the skills needed under each of those categories.

8.2.4 Solutions

Employers were asked to identify what types of assistance would help them to overcome their skills needs.

Training delivered internally (63%) and training delivered by external providers (49%) were the most popular responses, followed by improved training incentives and improving the image of the industries.

Overcoming skills needs	Percentage of employers
Workforce training/mentoring internally	62.7%
Workplace training by external providers	49.2%
Improved training incentives/funding	35.6%
Marketing to change perceptions of industry	32.2%
External recruitment assistance	30.5%
Better links with schools	28.8%
Qualifications	25.4%
Skilled migration	23.7%
Gap training	20.3%
Use of labour hire companies	15.3%
Govt pre-employment training	10.2%
Other	10.2%
Govt retraining unemployed	6.8%

Thirty two (54%) of employers reported that external training providers were important or very important to meeting their skills needs and thirty three (56%) of employers reported that the achievement of formal industry qualifications was important or very important to their labour productivity improvements.

Eight (14%) of employers reported that external training providers were unimportant to meeting their skills needs and eleven (19%) of employers reported that the achievement of formal industry qualifications were unimportant to their labour productivity improvements.

8.2.5 The training dollar

Expenditure

In the last twelve months the 59 employers surveyed spent a total of $3.7m on training ranging from $0 to $768,000 with an average expenditure of $62,630 per employer or $826 per employee.

There was a significant difference in training expenditure between the plastics and chemical industries.

Employers from the chemical industry reported spending over two and a half times more on training per employee than employers in the plastics industry.

The average training expenditure reported by chemical industry employers was $114,482 per employer or $1213 per employee compared with plastics industry employers who reported an average of $29,502 per employer or $461 per employee.

Training incentives

Thirty three (52%) of employers were accessing training incentives twenty seven employers accessing the New Apprenticeships Scheme and four employers (7%) accessing the Workplace English Language and Literacy Program (WELL).

8.3 Industry stakeholder consultations

8.3.1 Association of Rotational Moulders Australiasia (ARMA), CEO

The following information is a summary of an interview with the CEO of the Association of Rotational Moulders Australiasia (ARMA).

Background

The Association of Rotational Moulders Australasia (ARMA) represents 107 manufacturers, distributed across the country, employing 1,410 people of whom 700 are process workers. None of the 700 have relevant qualifications. An apprenticeship in Rotational Moulding has commenced in 2005 Queensland by Partec and has 5 starters. The industry does not use labour hire firms. The larger companies have up to 200 employees, but most are smaller with sometimes less than 10 employees, many in regional towns.

The Association of Rotational Moulders Australasia (ARMA) reports that the number of rotational moulding companies is growing at 10% pa and with the government encouraging water collection at each home site, there will be ongoing growth in the coming years.

Current Skills Needs

- There is a real lack of people wanting to come into the industry, which will limit the opportunities for growth.
- Companies are doing some in house training e.g. safety.
- Smaller companies are not required to have Occupational Health and Safety (OHS) representatives and systems, so often do not.
- Industry training of current employees by Registered Training Organisations (RTO) is not happening.

Future Skills Needs

The skills needs above will increase as employees retire and the industry grows.

Solutions

- The short term solution is seen as immigration of skilled workers, however if they are over 45 years old, immigration is difficult.

- The medium term solution is seen as apprenticeships and training of existing workers. This training would be at Certificate III level, since mould setting and problem solving is needed by each operator. Registered Training Organisations (RTO) are not attracted to working with smaller companies. Also the aim should be to develop skills not just assess current competencies. Many employees have qualifications from previous careers which excludes them from Government subsidies. If they were eligible then Registered Training Organisations (RTO) would be more interested.

- The longer term solution is seen as improving the perception of process workers' role and the industry. The approach should be that this is a growing industry, so offers a rewarding, safe and stable career choice. This should be an attractive career option for those who will never aspire to university, but want a good income and a job that will endure.

8.3.2 National labour hire company, Manager

The following information is a summary of an interview with the Manager of a national labour hire company.

Background

They supply casual labour across many industry sectors including manufacturing. They thoroughly assess their clients' needs, to understand the roles, skills, safety issues, workplace culture and attitudes required. New workers are interviewed and given thorough induction and safety training on policies (including drug and alcohol) and work practices. A small proportion cannot demonstrate the required skills and attitudes and are rejected at this stage.

Current Skills Needs

- There is a real lack of skilled people wanting to come into the industry, e.g. qualified forklift drivers and supervisors. The only area where there are sufficient people is unskilled labour.
- The ability to work safely is an essential requirement of clients.
- The main client requirement is for workers to have the willingness to work responsibly with good attitudes. This is assessed initially by behaviour based interviewing.

Future Skills Needs

The skills needs above will increase as current employees retire and the industry grows. With the closing of technical schools and scaling back of apprentices there is a lack of suitable young people seeking employment.

Solutions

- Seek to attract young people into traineeships while still at school, i.e. school based new apprenticeships.
- Encourage people to achieve some qualifications, even Certificate I, since any qualification makes them more employable.
- Historically the industry has not encouraged part time employment. However by facilitating part time employment,

companies could become employers of choice, being sought by people with positive work ethic.

8.3.3 Registered Training Organisation (RTO) - Experienced trainer

The following information is a summary of an interview with an experienced trainer employed by a Register Training Organisation (RTO).

Background

The Registered Training Organisation (RTO) delivers traineeship and fee for service training to several industries including manufacturing, in all states.

Current Skills Needs

- Industry requires on-site flexible delivery, focused on meeting the business needs, as opposed to a “sheep dip” approach.
- The current traineeship model successfully develops the skills of production operators and process workers. However it would be better to be able to deliver training to meet client needs for gap training, rather than whole qualifications.
- There is a lack of production people with solid technical skills and good team leading skills.
- Implementation of new specialised technology means that it is difficult for Registered Training Organisations (RTO) to deliver technical training on company specific equipment or techniques.

Future Skills Needs

The skills needs above will increase as current employees retire and the industry grows.

Solutions

- Ongoing promotion of the opportunities in the industry.
- Seek to attract young people into traineeships while still at school, i.e. VET in Schools and school based new apprenticeships.

8.3.4 New Apprenticeship Centre (NAC), Manager

The following information is a summary of an interview with the Manager of a New Apprenticeship Centre (NAC).

Background

The New Apprenticeship Centre (NAC) provides advice to companies giving them options for traineeships and apprenticeships, Federal Government incentives and other choices for training delivery. They work closely with clients to identify and maximize the uptake of traineeships and apprenticeships and administer the funding available to ensure cost effective training. They are attempting to help employers to integrate training into the overall business strategy, as well as address productivity and quality issues. This centre has produced documented case studies to demonstrate the returns on training investments.

Current Skills Needs

- Employers use Registered Training Organisations (RTO) to access Certificate III training. However some employers are disappointed with the delivery, since the Registered Training Organisation (RTO), both public and private is not willing to invest the resources to implement the training according to the employers' real needs. There is often a need for training in specialized skills (such as chopper gun and gel coat fabrication). However the organisation may not have the staff or the willingness to source a trainer skilled in these specialized technologies.
- There is a labour shortage due to a lack of people at both the process worker and trade level.
- There is a significant industrial relations issue, due to the differences in the real competencies/skills sets developed by a traditional trade (Certificate III) and existing worker traineeship (Certificate III in Engineering-Production Systems, Plastics or Process Manufacturing). Companies see these qualifications as being at different levels, but individuals and some unions' desire equivalence to achieve equal pay.

Future Skills Needs

The global economy is increasing the need for best practices in manufacturing. This will require less people, but they will need higher skills sets. Therefore the skills needs will increase over time.

Solutions

- The competitive manufacturing package at Certificate III and IV levels will be a valuable training opportunity to meet industry need for competitive practices. However there is a lack of financial incentives for those workers who have completed Certificate III as new apprentices.
- The quality of some Registered Training Organisations (RTO) needs to be improved, in order to satisfy their clients' real needs. For example: Certificate IV in Workplace Training and Assessment is valuable for all trainers. It is desirable that trainers have completed the actual qualification which they are delivering.
- The need for a generic manufacturing qualification (similar to process manufacturing) that is flexible enough to match employer needs, while cutting across all industrial relations barriers.

8.3.5 Employer using New Apprenticeship Training

The following information is a summary of an interview with an employer using New Apprenticeship Training.

Background

This metal fabrication company took on two new apprentices through two different training organisations. They have been a good investment. A Registered Training Organisation (RTO) delivered Certificate III Process Manufacturing training on Tuesdays for over a year. There were some good outcomes, however there was insufficient depth in the training on the company's specialized processes.

A significant amount of training is done in house. However the benefits of external trainers delivering training are:

- Recognized qualifications can be achieved.
- Training can be delivered by professional trainers, so optimizing learning.
- Employees can admit their skill needs without their weaknesses being known to their line manager.

Current Skills Needs

- They have skills gaps in welding. Applicants have the qualification, but are only experienced in a narrow field and so need further training.
- The main requirement for new employees is interest in the role and mechanical aptitude.

Future Skills Needs

The global economy is increasing the need for improved efficiencies and for people who are more highly skilled. There will be an increasing need for people willing to take responsibility for a team and leadership skills.

Solutions

- Improving the quality of training is vital, to ensure it meets business needs and expectations. It is desirable that trainers have completed the actual qualification which they are delivering. There is often a need for training in

specialized equipment and techniques e.g. metal fabrication. Trainers need to be able to learn sufficient about the clients' equipment to deliver value adding training.

8.3.6 National labour hire company, Business Development Manager

The following information is a summary of an interview with the Business Development Manager of a national labour hire company.

Background

They supply casual labour across many industry sectors including manufacturing and warehousing. They thoroughly assess their clients' needs, to understand the roles, skills and attitudes required. New workers are interviewed and given training in Occupational Health and Safety (OHS), manual handling, numeracy and work practices. Clients need people with relevant experience. Certificate qualifications for casual labour do not count. Companies want to know that the people have had recent relevant experience.

The labour hire industry has become very competitive, with clients primarily focusing on cost margins. Also, many workers will have their names down with up to seven labour hire agencies, and take whichever job has the higher pay rate. Therefore there is little incentive or commitment to train workers, either by the labour hire company or the client.

Current Skills Needs

- There is a real lack of skilled people wanting to come into the manufacturing industry, e.g. trades people, qualified forklift drivers and experienced production operators/technicians. This situation is getting worse each year. From September to January each year, there is a lack of unskilled labour, such that they regularly cannot meet the clients' needs.
- The main client requirement is for workers to have a good work ethic with good attitudes. For clients requiring higher skills sets, this is developed by behaviour based interviewing and training.

Future Skills Needs

With the closing of technical schools and scaling back of apprentices there is a lack of suitable young people seeking employment. The skills needs situation will follow the trend of previous years and become more difficult.

Solutions

- Promote the industry to schools and teachers.
- More flexible working arrangements. Some workers prefer just one or three shifts per week, but most clients insist on five shifts. Clients would need to be guided for this change to occur.

8.4 Industry Forum report

Sydney, 17th March 2005

This report provides an overview of the Forum and outlines the themes arising from the discussions. It also draws out areas for future work in finding solutions to the skills issues facing process manufacturing employers.

The key areas indicated from the Forum were:

- Advice and assistance for industry to increase participation and success with programs such as school based traineeships, job network services and group training schemes.
- Expanded arrangements for government funding and incentives to include gap training, recognition services and Certificate II traineeships.
- Increased industry engagement with proactive measures such as work force planning, recruitment and retention strategies, improving community profile.
- The potential for increased participation of labour hire companies in training and skills development.

Manufacturing Learning Australia (MLA) hosted the breakfast Forum on the 17th March 2005 which attracted 23 participants. Nine were process manufacturing enterprises; three were training providers (two of them private providers) and three were agencies who work closely with industry (an Industry-Education Partnership, a Business Development Centre and an Area Consultative Committee). The Manufacturing Industry Skills Council (MISC), now known as Manufacturing Skills Australia, was also represented.

Information about the Forum was disseminated via the Manufacturing Learning Australia (MLA) networks and web site, and via the Plastics and Chemical Industries Association NSW networks.

The Forum comprised five presentations and a facilitated discussion. Participants were provided with the employer survey and encouraged to return the completed survey.

The presentations covered the Competitive Manufacturing Initiative (CMI), the federal government's Action Agendas, the national Plastics and

Chemical Industries Skills Needs Research Project, Boral's experiences with skills gaps and school based traineeships, demographic projections prepared by the Department of Employment and Workplace Relations (DEWR) and an outline of Department of Employment and Workplace Relation's (DEWR)'s skills programs and subsidies.

Feedback indicated that the participants liked the opportunity to network, the mix of people and variety of viewpoints, the discussions and presentations, and the focus of the Forum. Some participants would have liked more time for discussion and most would have liked clearer outcomes, in particular for the Forum to identify solutions and initiatives to carry forward. Most of the participants registered willingness to participate in a group to continue to work on the issues.

8.4.1 Skills shortages, skills gaps

Participants at the Forum reported mixed experiences with respect to skills shortages. Some companies found recruiting operators "not too bad" while others experienced real difficulties. One company reported that 60% of its operators and trades work force are over 45 years old and that they found it very hard to get young apprentices and operators. They recently employed four unskilled adults in non-trade positions to be up skilled to meet the requirements of the job roles. While this took longer for the worker to be fully operational at the required level, the company reported that these are their best and most motivated workers.

Process manufacturing employs a range of "traditional trade" occupations and professionals such as engineers, fitters, mechanics, and electricians. The Forum participants identified skills shortages in engineers (taking up to 18 months to recruit), Occupational Health and Safety (OHS) professionals and traditional trades such as heavy vehicle mechanics, electrical engineers and electricians. Skills gaps were noted in machine operator and production roles.

One company reported needing 12 apprentices across a range of trades, including electricians, mechanics and boilermakers, but only being able to recruit five apprentice fitters.

8.4.2 Contributing factors

Issues raised at the Forum indicated various factors which may be contributing to skills shortages/gaps in process manufacturing. These can be grouped into three categories relating to systemic issues, the pool of recruits and the industry.

1a. Systemic issues - Demographics

The Department of Employment and Workplace Relations (DEWR) presented demographic projections to the Forum indicating that there will be increasing competition for a shrinking pool of recruits. The Department of Employment and Workplace Relations (DEWR) projects that over next 10 years the 45-64 age cohort will increase by around 274,000 while the increase in the 25-34 age cohort will be around 3,000; the 15-24 cohort will increase by 27,000; and the 35-44 cohort will increase by 22,000.

This is likely to result in increased competition for job candidates, with all industry sectors trying to recruit from the smaller population in the younger age groups. Recent topical issues are germane. There has been publicity about strategies for encouraging older workers to remain in the workforce; encouraging those not in the work force to take up employment, including the unemployed, the disabled and people on parenting allowances; and government consideration of increased immigration.

Many of these responses to the labour force "squeeze" are likely to result in increased demand for training existing workers to meet the needs of the employing industries. This will have high impact in the process manufacturing sectors. This sector has the flexibility to employ inadequately skilled workers and train them. For adult, mature aged and migrant workers – all of whom can be expected to have some existing skills – the current focus of the training system is on time-based completion of whole qualifications. This imposes a training regime which is often a disincentive to both employers and learners. The related time-based funding and incentive arrangements also act as a deterrent to the implementation of the Recognition of Prior Learning and Recognition of Current Competencies requirements of the Australian Quality Training Framework (AQTF).

1b. Systemic issues - School system

Many companies reported that the school system and individual teachers or advisors as well as many parents push students towards university pathways and away from Vocational Education and Training (VET) related occupations and industries, often using them as the 'stick' – "if you don't study you'll end up in a factory." This is reflected in the increased value placed on keeping students at school through year 12.

Schools are seen to be discouraged from participating in Vocational Education and Training (VET) related courses which are positioned in competition with, rather than complementary to, non-VET courses – in terms of both content and funding arrangements.

The Forum participants raised concerns that despite the higher school retention rates students do not meet the literacy and numeracy requirements of many of the job roles in process manufacturing, including trades and operator roles.

1c. Systemic issues - Funding/Incentives

The Forum participants identified the need for realistic government assistance and one company reported “insufficient (government) funds for mature aged workers and assessment.” At present the employer incentive for mature aged trainees/apprentices is only available for over 45 year olds, therefore employers of adult workers under 45 are not eligible for this support. The lack of employer incentives for Certificate II traineeships was also raised at the Forum. Companies reported that Certificate II is valid and necessary for many work roles, not just a stepping stone to higher level qualifications and job roles.

1d. Systemic issues - Poor profile

The Forum participants identified negative perceptions of the process manufacturing industries as a barrier to recruiting adequately skilled workers. These perceptions operate at a societal level and have been identified (for example in the Make It! campaign) as prevalent in young people and their key influencers – parents, teachers and careers advisors. While the strategies required to bring about changes in attitudes and behaviour at the broad level can be complex and costly, some impact can be made at a local level. The significance of a positive community profile in successful recruitment is reflected in the experiences reported at the Forum.

One Forum participant reported their successful strategy of establishing a local community consultative committee which raised the company’s profile and resulted in improved recruitment. .Two Forum participants who reported few difficulties with skills gaps in the operational roles represent large companies who are both seen as having strong, positive community profiles. For some companies a lack of visibility or absence of a good reputation in the local area is seen as a barrier to attracting suitable recruits. One participant reported difficulties in redressing this issue despite concentrated efforts to raise its profile as one of the “best” local companies to local youth. Forum participants reported an example where neighbouring companies, effectively in the same industry, advertised similar jobs in the same local papers, but experienced vastly different response rates. The profiles of these companies may help explain the variance in outcomes.

2. The 'pool' of recruits

Young recruits are seen as being more focused and more selective. They are thought to know what they want and how to get it; they are believed to be likely to say "what's in it for me."

This is consistent with the findings of the Make It! campaign – that generation Y values opportunities and relationship, over income and security. Social research indicates that they are likely to want to take opportunities, keep their options open, and work where they are valued and where they have a sense of relationship or community. This may be interpreted as not having a good work ethic.

Young workers are aware that they are increasingly in demand; they feel they have choices about which jobs to take and they may only want to work in a particular location. One company reported an experience where a job applicant turned the job interview around so that he interviewed the selection panel members – then said "no thanks" to the company. Another company reported that there is "not much in the pool (of engineers) to select from," and that "we offer and they reject."

3. Industry

Stakeholders at the Forum identified several industry based issues that may contribute to skills shortages and skills gaps. Some of these are issues over which industry may arguably, have some control.

For example, companies are seen as no longer training to meet their own requirements. For example, one company employing around 150 people in trade occupations reportedly takes on only two apprentices each year. This is consistent with reports to Manufacturing Learning Australia (MLA) that many companies in process manufacturing are not planning for the retirement of a significant proportion of its aging work force over the next five to ten years.

Fluctuations in work force requirements can be significant in the process manufacturing sectors. For example, plant shutdown may require up to three times the regular work force, but may occur only once or twice per year. This additional labour is predominantly sourced from labour hire companies. Therefore companies do not need to take responsibility for full training of this component of the work force. However, this places increasing pressure on labour hire companies to play a primary role in training sufficient recruits to maintain the supply of skilled labour.

The Forum also identified potential impact from low wages for trainees and apprentices, poor wages in general and cultural issues such as employers' resistance to job sharing and an attitude of "us and them" from managers towards operators.

8.4.3 Effective industry responses

The Forum highlighted companies' use of creative initiatives, flexibility and adaptations in response to their skills shortages/gaps. For example, some companies do not fill vacancies but restructure job roles, sharing the tasks/responsibilities across several other roles. Three key issues were highlighted in the Forum – recruitment strategies, school based traineeships and the significance of community profile.

Recruitment strategies

Some companies reported that they have no problem recruiting operators, however in some cases this seems to reflect that they have actually established successful strategies to address earlier difficulties. For example, one large company reported a policy of opening up recruitment processes to a wider pool of potential recruits. This includes wider age range of candidates and they have recently employed 55 year olds.

Another strategy used by this company is to change the selection criteria for applicants so that they no longer advertise for "experienced machine operators." Instead they advertise for the skills and aptitudes that they have identified as most important – areas like language, maths, team work, good attitude and mechanical aptitude. They recognise that candidates with these capacities can be trained in the operational skills required for a particular job.

Several process manufacturing employers at the Forum reported adaptive responses to recruitment difficulties including broadening the selection criteria, school based traineeships and raising their community profile.

Community profile

One company reported a site which undertook a campaign in the local community and established a community consultative committee. The company distributed flyers in the local area and held meetings with local stakeholders. This resulted in increased recruitment of workers and significantly improved the company's community profile.

School based traineeships

One company reported investing significant time and money into enlisting school based new apprentices. They identified that the school system tends to push students towards university and that parents push against trade qualifications which are seen as "getting your hands dirty" roles.

The company aimed to "capture" year 10 students who are making choices about subjects and career. They approached local schools and met with school principals. They also attended Parents and Citizens (PC) meetings to promote awareness of the company, the traineeships and potential for employment with the company.

The company now has 20 trainees who attend school 3.5 days per week, go to TAFE for a half day and an evening, and work on site one day per week with training and support from the company. They also offer paid work to the trainees during school holidays. The trainee is covered by insurance as an employee. The traineeship equates to two competency units and forms part of the Higher School Certificate.

While there are currently no school based traineeships for the process manufacturing qualifications, the company uses business services traineeships and provides as much industry context as possible. For example, trainees do their computer work in the batching area.

The company finds that the traineeships give the student an experience of the company and the industry and they also give the company an experience of the student. Many of the trainees have been recruited into permanent employment with the company. The company reports work place cultural change is resulting from the traineeships. Their operators are becoming father figures and no longer allow bullying or swearing.

Solutions: indications for future work

The issues raised in the Forum indicate the need for actions and solutions which focus on up skilling, recognition of current competence, and flexibility – flexibility in duration, funding, gap training – to assist employers to establish and maintain an adequately skilled workforce.

Industry practices of broadening the selection criteria for recruits – recruiting for generic skills, attitude and aptitude and recruiting older workers – fit well with the demographic imperative to encourage people to enter, remain in or return to the work force and to increase the pool of candidates, for example via immigration. The process manufacturing sectors have a high participation of workers from non-English speaking backgrounds and, if immigration is increased, this relationship is likely to continue. Recognition of Prior Learning and Recognition of Current Competencies processes that identify existing relevant skills and map

them to process manufacturing competencies would assist industry to select and up skill recruits from these target groups. Pre-employment training in areas like physics, chemistry, maths, computer literacy and interpersonal skills would assist in ensuring a sound basis from which workers can develop required job specific skills and knowledge.

Increased flexibility in traineeships would assist employers to up skill workers to meet the skills requirements. Extensions to funding and incentives could be used to increase flexibility, for example, by targeting gap training (units of competency) and recognition of current competency, and by developing competency based funding formulae. Changes to the eligibility criteria for employer incentives could be used to assist the industry to up skill adult (under 45 year old) workers and to train across a broader range of levels, including Certificate II.

Further lobbying of both State and Commonwealth governments is needed in order to achieve increased flexibility and responsiveness in the training system and improved national coordination. Specifically the Forum identified:

- Support for recognition of competency.
- Support for gap skilling.
- Realistic government assistance to employers,
- National coordination.
- Incentives for adult trainees and apprentices.
- Funding/incentives for Certificate II,

The Forum also indicated the need to make comprehensive information and guidance available for “employers and employees trying to move through the maze to the goal.” This could include:

- Assisting small and medium businesses to apply/adapt the practice of larger companies: for example, assisting companies to work with their local schools to establish school based traineeships and providing liaison with their state training authority.
- Working with industry to establish appropriate pre-employment training programs: for example covering physics, chemistry, computer literacy, interpersonal skills and to access any available funding for implementing them.
- Promoting links between industry and local agencies such as job network providers, Group Training Organisations

and New Apprenticeship Centres (NAC). Industry reports mixed experiences with job network agencies. However, the Forum identified the "hidden unemployed" as a potential pool of workers. Work could be undertaken to assist industry to engage with initiatives that target unemployed people, the disabled, indigenous workers and/or other special needs groups seeking employment and to achieve good outcomes for all stakeholders.

- The process manufacturing sectors currently have limited participation in group training schemes and report inconsistent results. However, Group Training Organisations can provide valuable services: for example recruiting trainees, managing the training and employment requirements and providing ongoing support and mentoring to the trainee in the workplace. Work could be undertaken to raise awareness of the process manufacturing sectors with Group Training Organisations, and in promoting group training schemes to process manufacturing employers.

Work is still required in order to improve the image of the industries with young people and their influencers. This could be achieved by strategies such as:

- Further investment in marketing and publicity campaigns along the lines of the Make It! Campaign.

- Career information strategies – providing up to date, attractive career information for students via careers expos, targeting careers advisors, web sites.

- Providing advice and assistance to companies wishing to improve their community profile, developing and promoting case study examples, assisting companies with their recruitment processes.

The Forum highlighted that work could be undertaken to bring about changes in industry "culture" This could include: focusing on issues such as industry awareness and commitment to work force planning, recruitment and advertising practices, pay rates and job sharing.

The Forum also raised questions about the role of labour hire companies in training and skills development. Research is required to identify the current training practices of labour hire companies and to identify any barriers and potential for labour hire to increase participation in training.

8.5 Validation meeting

University of Melbourne, Hawthorn, 13th April 2005

The Melbourne Validation Meeting was attended by a total of 31 stakeholders including four employers.

The meeting was an opportunity for the participants to review the preliminary survey findings and share their industry experiences with skills shortages and gaps.

The participants reported that the survey findings generally reflected their own impressions of the skills needs of industry.

Issues raised

Industry image – The plastics and chemicals industries are competing with other industries that are more attractive to young people such as the retail and hospitality industries. These industries have a high employee turnover and need to keep topping up their workforce. This happens at the expense of other less attractive industries such as the plastics and chemicals industry.

New Apprenticeships – Young people undertaking temporary employment in the hospitality or retail industries whilst pursuing other interests such as completing secondary school, often complete a traineeship. This prevents them from being offered a traineeship through the New Apprenticeship Scheme in the plastics and chemical industries.

Recruitment – Industry is out of touch with the recruitment of young people. Careers counselling empowers young people to view the recruitment process as a two way process where the company interviews the candidate and the candidate interviews the company. They then both decide wether the match is suitable. Industry finds the new approach confronting and interprets the behaviour of young people in interviews as rude.

8.6 Youth consultations

The following information has been extracted from a research report conducted by Manufacturing Learning Victoria (MLV) involving extensive consultations with students, families, careers teachers and schools looking at the issues around young people choosing a career in manufacturing.

The current manufacturing workforce is aging and a large number of workers will be leaving the industry over the next ten to fifteen years. Few new entrants are attracted to manufacturing and future predictions indicate that unless this pattern is reversed, manufacturing will be in deficit of up to 20,000 workers in the year 2012.

The industry is, however, struggling to attract sufficient new entrants and is facing growing skill shortages. Manufacturing Learning Victoria (MLV) believes that the key barriers to achieving growth in new entrants is founded on misinformation about the industry and its potential. The research that surveyed careers teachers, parents, trades people teachers and current industry apprentices investigated the information sought by the stakeholders and their beliefs and understanding of the industry.

The research has shown that there are significant factors influencing the choice of the manufacturing industry as the initial and preferred career destination by young people.

- Young people themselves form their own opinions and see themselves, to a large extent, as controlling their career destinies.
- Family friends and acquaintances working in manufacturing are also an important source of information and influence.
- Careers teachers play a lesser role and their contribution to the provision of information is under-utilised.
- Careers teachers have a relatively limited understanding of the manufacturing industry and generally lack confidence in providing advice about the industry as a career choice.
- The power of positive and personal industry experience is important.
- Given that young people seem to “find manufacturing rather than manufacturing finding them,” early exposure and improved information are vital ingredients in influencing their future decision-making.

Key factors discouraging young people to consider careers in manufacturing:

- Apprentice wages are very low and it is difficult for students to cover their living expenses.
- Many students consider that four year apprenticeships are too long.
- Negative media coverage relating to safe working conditions. Young people are concerned about safety issues.
- University is still seen as the preferred post-school outcome with apprenticeships considered to be the “fall-back” option.
- Students are concerned by job insecurity in the manufacturing sector. Threats of plant closures and off shore take overs.
- Lack of awareness of the scope of careers available in the manufacturing sector.

Key points that emerged through the research:

- Students listen to advice from parents, family, careers teachers and the media but ultimately the decision is their own.
- Students are stressing the need for work experience or some type of industry exposure as part of their school curriculum.
- The perceived “poor image” is held not only by young people toward industry, but just as much by industry toward young people.
- Young people are more aware of the technological advancement within industry than parents/career counsellors.
- Young people consider that there is a lack of relevant information pertaining to careers available in the manufacturing sector.
- Students indicated that jobs requiring “hands-on” experience such as technicians and plant operators were preferred over managerial/office type work.

(Manufacturing Learning Victoria, 2002)

8.7 Employer survey tool

Section 1: The nature of your business and the structure of your existing workforce

Name: _____

Position: _____

Company: _____

State: _____

1.1 What industry are you in?

☐ Chemical ☐ Plastics

1.2 What do you manufacture?

_____

1.3 What is the structure of your current workforce?

Occupation	Full-time		Part-time		Casual/Contract	
	Males	Females	Males	Females	Males	Females
Management						
Finance/Clerical/ Administration						
Professional e.g. chemists, engineers						
Supervisors/Team Leaders						
Tradespeople						
Trade Apprentices						
Technicians/ Advanced Operators						
Process Workers/ Plant Operators						

1.4 What is the age profile of your current workforce?

Occupation	15-25	26-35	36-45	46-55	55+
Management					
Finance/Clerical/ Administration					
Professional e.g. chemists, engineers					
Supervisors/Team Leaders					
Tradespeople					
Trade Apprentices					
Technicians/ Advanced Operators					
Process Workers/ Plant Operators					

Section 2: Your current and future skills needs

2.1 How important is skills enhancement to your business competitiveness?

☐ Very important ☐ Important ☐ Neither ☐ Unimportant

2.2 Is your business experiencing difficulties in recruiting skilled employees?

☐ Yes ☐ No ☐ Don't know

2.3 If YES, for each vacancy at your company/site, specify the number of people you are seeking but cannot find anyone suitable and the problem you encountered

1 = No applicants

2 = Applicants but they do not have the qualifications

3 = Applicants with qualifications but not skills required by the business

4 = Applicants with the skills but not employable

Occupation	Number sought	Problem
		1 2 3 4
		1 2 3 4
		1 2 3 4
		1 2 3 4
		1 2 3 4
		1 2 3 4
		1 2 3 4
		1 2 3 4
		1 2 3 4
		1 2 3 4

2.4 What action is your business likely to take to overcome problems obtaining skilled employees?

☐ No action ☐ Invest in plant/equipment ☐ Retrain existing staff

☐ Outsource the work ☐ Recruit from training providers

☐ Other (please specify): _____

2.5 When recruiting **process workers**, what skills are you looking for?

☐ Presentation ☐ Qualifications ☐ Experience

☐ Generic skills (such as)_____

☐ Specialised skills (such as) _____

☐ Attitude _____

☐ Other (please specify):_____

2.6 Do you employ any student work placements (from schools)? If yes, how many?

☐ No ☐ Yes, number of student placements _____

Area of workplace activity (e.g. admin, tooling, production)_____

2.7 Have you identified any areas where existing workers need development e.g. additional skills?

☐ Yes ☐ No ☐ Don't know

If yes, are they:

☐ Generic skills e.g._____
☐ Attitude
☐ Specialised skills e.g. _____
☐ Other

Section 3: Training as a solution

3.1 Please TICK which of the following will assist your business to overcome your skills needs:

- ☐ Govt retraining unemployed
- ☐ Govt pre-employment training
- ☐ Workforce training/mentoring internally
- ☐ Workplace training by external providers
- ☐ External recruitment assistance
- ☐ Use of labour hire companies
- ☐ Skilled migration
- ☐ Marketing to change perceptions of industry
- ☐ Improved training incentives/funding
- ☐ Better links with schools
- ☐ Gap training
- ☐ Qualifications
- ☐ Other (Please specify):_____

3.2 How important are external training providers to meeting your skills needs?

☐ Very important ☐ Important ☐ Neither ☐ Unimportant

3.3 How many of your **process workers** currently have relevant industry qualifications in their field (e.g. Certificate III in Process Manufacturing)? How many of your workers are likely to undergo training to achieve qualifications in the next 3 years?

	Current qualifications	In 3 years time
No formal qualification		
Certificate I		
Certificate II		
Certificate III		
Certificate IV		
Not sure		

3.4 How important is the achievement of formal industry based qualifications to your labour productivity improvements?

☐ Very important ☐ Important ☐ Neither ☐ Unimportant

3.5 How much did you spend on staff training in the last 12 months?

$_____

3.6 What Government funded training incentives have you accessed in the last 2 years?

☐ New Apprenticeships /Traineeships ☐ The WELL Programme

☐ Other (Please specify):_____

3.7 Are there any other comments you would like to make?

_____
_____
_____
_____

Thank you for your cooperation and support – Individual company data will not be published and remains confidential

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