DOCUMENT RESUME

ED 478 133 CE 085 069

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TITLE Apprentice and Ongoing Training Needs in the Electrical and Associated Industries.

INSTITUTION Victoria Univ. (British Columbia).

ISBN ISBN-0-6464-413473

PUB DATE 2001-03-00

NOTE 132p.; Produced by the Workplace Studies Centre. Commissioned by the Electrical Trades Union (Vic.) and the National Electrical and Communications Association (Vic.).

PUB TYPE Reports - Research (143)

EDRS PRICE EDRS Price MF01/PC06 Plus Postage.

DESCRIPTORS *Apprenticeships; Educational Trends; *Electrical Occupations; Employer Attitudes; Employment Opportunities; *Employment Patterns; Employment Practices; Foreign Countries; Industrial Training; *Job Training; *Labor Needs; *Labor Turnover; Needs Assessment; Personnel Selection; Postsecondary Education; Recruitment; Secondary Education; Self Employment; Trade and Industrial Education

ABSTRACT

A study investigated skill shortages in the electrical and associated industries in Victoria and their nature and contributing factors. Research methods were a literature review, data analysis, and qualitative and quantitative research into apprentices, employers, and practitioners. Findings indicated a decline in the number of apprentices in training in this industry, and there is no evidence of a turnaround in this trend. Shortages appeared related to globalization, the emerging new economy, move to privatization in the Victorian economy, growth in self-employment, and other alternatives to traditional forms of work organization. Two plausible explanations of skills shortages were cost of apprenticeships and shortage of suitable applicants. Factors impeding firms from engaging apprentices under group schemes were employers' preference to employ apprentices directly and the commonly held view that the quality of group apprentices was inferior. Labor hire firms were discouraged from employing apprentices by the negative attitude of their clients, lack of suitable work, economic uncertainty, and greater flexibility inherent in the group training scheme. Practitioners identified specific shortages of skills, cited high wastage of people from the trade, and criticized recruiting methods. (Appendixes include 58 references, research questions, and research methodology.) (YLB)

Apprentice and Ongoing Training Needs in the Electrical and Associated Industries

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Commissioned by the Electrical Trades Union (Vic.) and the National Electrical and Communications Association (Vic.)

ISBN 0-646-41347-3

First published March 2001
Cover design by Graphic Services, Victoria University. Photographs by KTMC, & VU
Printed by Industrial Printing and Publishing
Price: $55.00 incl. GST
To purchase contact: ETU (Vic.) ph. 9347 9555 or NECA (Vic.) ph. 9645 5533

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Acknowledgements

The authors of this report would like to thank the many organisations and individuals, including apprentices, who gave generously of their time to participate in surveys, interview groups and individual interviews. They must remain anonymous, but without their contributions this project could not have been realised. Special thanks are also extended to Frances King, Office of Post-Compulsory Education, Training and Employment, for her invaluable assistance in accessing apprenticeship data; Jo Pyke, Access Training and Employment Centre for her advice and support; Dave Kerin (Victorian Electrical Trades Union Apprentice Welfare Officer); Frances Regan, Helen Petkov and Rebecca Fraser (National Electrical and Communications Association) and other members of the project steering committee for their on-going enthusiasm and support; Alex Fraser (Victec Group Training) for assistance with competency standards; and Genevieve Sinclair at the Workplace Studies Centre for additional research and editorial assistance. Thanks are also due to Jill Carter, Tony Kelleher, Christopher Lefler and Anne O'Casey for their research contributions. NECA and the ETU (Victoria), of course, deserve special thanks for initiating and organising funding for the project. Barry Mitchell, National Workforce and the Labour Hire Group are also thanked for their financial support and facilitation assistance during the research phase of the project. The authors hope that this report will be a useful contribution to the ongoing discussion of trade training and will justify the support of those acknowledged above.

Abbreviations

ABS	Australian Bureau of Statistics
ANTA	Australian National Training Authority
ASCO	Australian Standard Classification of Occupations
ATEC	Access Training and Employment Centre
ATSI	Aborigines and Torres Strait Islanders
AVC	Australian Vocational Certificate
CAD	Computer aided design
CBT	Competency based training
EBA	Enterprise Bargaining Agreement
ETU	Electrical Trades Union (Victorian branch)
GBE	Government business enterprise (public enterprise)
GTC	Group training company
ITAB	Industry Training Advisory Board
NA	Not available or not applicable
NCVER	National Centre for Vocational Educational Research
NEC	Not elsewhere classified
NECA	National Electrical and Communications Association
NTRA	National Training Reform Agenda
OPCETE	Office of Post Compulsory Education, Training and Employment (Victorian Government)
OTFE	Office of Training and Further Education (now OPCETE)
PLC	Programmable logic control
SVS	Skilled Vacancy Survey (of DEWRSB)
TAFE	Technical and further education
VET	Vocational education and training
VUT	Victoria University (of Technology)
WSC	Workplace Studies Centre

Executive summary

The key focus of this study is apprenticeship and on-going training in the electrical and associated industries in Victoria. Official data show clearly that there is a shortage of apprentices in the electrical and aligned fields in Victoria, and the position is worsening. There are a number of reasons for this, including the withdrawal of traditional providers, especially public sector employers, and reluctance by the new types of employers, such as labour hire firms, to engage in training activity at any level. In addition, too many apprentices are dropping out before completing their indentures. A change in the attitude of young people towards apprenticeships has also occurred, and this has not been countered either by the school system or within the community at large.

At the heart of the research is the general notion of whether the training culture in the electrical and associated industries is adequate. Specifically, the research seeks to:

- investigate the skills shortage in these industries and the significance of apprenticeship training to them;
- define the parameters of the skills shortage;
- determine the nature of the training culture within the self-employed and labour hire elements of these industries;
- assess the quality implications and outcomes of traditional forms of apprenticeship training against new industry training arrangements; and
- assess the policy implications of these developments.

The study is informed by the views of industry participants, including traditional employers of electrical workers, labour hire firms, apprentices, group training companies, unions and employer associations and industry training bodies.

Declining electrical apprenticeships

A commonly held community view about the apprentice population is that there are too few apprentices and that the number of apprentices in training has declined over time. While the aggregate data show the number of apprentices and trainees to be growing, the major part of this growth is occurring in the hospitality and food sectors. Growth is not occurring in the traditional areas of electrical, electronic and communications in Victoria, and the decline in the number of apprentices in these industries is not being arrested. In the electrical field the ratio of apprentices to tradespersons has nearly halved over the last decade.

A major factor in this decline has been the changes to industry organisation, including privatisation. The public sector in Victoria produces less than one per cent of apprentices whereas the national figure is 6.6 per cent. Simultaneously, rapid growth has occurred in the use of labour hire firms as a source of labour, and these firms are reluctant to become involved in industry training of any kind. Further, the data reveal considerable equity concerns. From a very small base number, the number of women apprentices has declined.

The perceptions of skills shortages are shared by industry participants, employers and labour hire firms alike, although among the employer group the shortages were felt more strongly by the labour hire firms and by those employers who employ apprentices. Labour hire firms are driven more by immediate market type symptoms than those of a long-term nature. Industry participants see the overwhelming causes of the skills shortage to be the lack of training of apprentices and the loss of people to the trade through industry reorganisation.

Barriers to employing more apprentices

On the level of participation in training, the divide between labour hire firms and traditional employers is very sharp indeed. Labour hire firms that are involved purely in labour placement activities do not employ apprentices. Traditional employers, on the other hand, make a significant contribution to apprenticeship training with apprentices dispersed throughout firms of all sizes. Both traditional employers and labour hire firms see encouraging signs for the likely future growth of apprentice numbers, but the estimates provided by respondents should be treated with caution.

Although the methods of recruitment vary between employers, there is little reliance on advertising apprenticeship vacancies. Employers do not guarantee apprentices tenure in their job on the completion of their training. Continued employment depends on the quality of the individual and the labour needs of the firm at the time. Economic uncertainty and the flexibility of the group training alternative are cited as important deterrents to employing apprentices directly. The supply of good quality applicants, costs, productivity questions and supervision are seen as important in only a minority of firms.

The factors impeding firms from engaging apprentices under group schemes are clearly the preference of employers to employ apprentices directly, together with a commonly held view that the quality of group apprentices is inferior. However, these impressions carried with them the bias of employers' preferences for either direct employment or group training. For employers who engage apprentices, three-quarters prefer one type of engagement above the other, and of those, 71 per cent prefer the direct employment method principally because of control related factors.

Labour hire firms are discouraged from employing apprentices by the negative attitude of their clients, lack of suitable work, economic uncertainty and the greater flexibility inherent in the group-training scheme. These factors also impede the engagement of apprentices under a group scheme. The group training companies identified impediments as being the scarcity of suitable applicants, poor quality of applicants and the difficulty of placing apprentices in the early years of their trade because of their lower productivity during this period.

Post-trade training and quality

Traditional employers are more committed to post trade training than are labour hire firms. They are more likely to be involved in skill intensification training, whereas labour hire firms are more likely to support training that results in workers being able to perform an additional task in the workplace, such as to drive a forklift vehicle.

A number of key 'quality of training' issues are addressed in the study. Changes to the structure, organisation and focus of apprenticeship training are challenging many of the traditional values of the apprenticeship system, and the entry of group training and a focus on competency training are two very significant recent developments. Quality issues were given particular meaning through the analysis of a data set of 343 completed and returned surveys by apprentices themselves. This data number represents more than 10 per cent of the 3,387 apprentices in the electrical and associated trades in Victoria at the end of February 2000. Significant results were:

- more than 10 per cent of apprentices were unemployed at some time during their indentures;
- more than 17 per cent of the apprentices expressed an opinion that their apprenticeship had not lived up to their expectations;
- their apparent dissatisfaction was caused by factors that included inadequate skills development, problems of supervision, lack of work variety and being used as cheap labour; and
- a significant minority of third and fourth year electrical apprentices do not believe that they are practicing all of the required skills of their trade in the workplace.

Views of training practitioners

Finally, the study assembled responses from a range of industry training professionals to round out 'practitioner' viewpoints on the quantity and quality of training. In the main, this group reiterated what others had said about the skills shortages. They identified specific shortages of skills, especially in branches of the industry such as refrigeration, and the high rate of wastage of people from the trade. The image of the trade and a failure to promote the trade among those who make decisions about careers is a major factor inhibiting recruitment.

Practitioners also underlined the move away from classroom experience of the trade at secondary school level. Specific areas of the trade are experiencing major shortages of new people, and it leads the professionals in the industry to wonder whether there might be a better way of doing training than is achieved under the current model and its trajectory. They criticised the recruiting ground used and the recruitment methods, and expressed concern that assessment methods outlined under new industry training packages may be unmanageable.

Conclusion

The study verifies a shortage of skills in the Victorian electrical and associated industries. A major contributor to this shortage has been the decline in apprenticeship training in these fields. What is of particular concern is that the Victorian experience is not replicated in other States. This suggests, at least, that part of the explanation rests with factors peculiar to Victoria, especially the privatisation of public sector employment.

While the shortage in apprentices could have provided an opportunity to tap sources of apprentices traditionally overlooked, there is no evidence of a change in heart towards increasing the employment of women and other minority groups. Neither has the training culture within the self-employed and labour hire sectors

of the industry contributed to ameliorating the skills shortage. Not only have the labour hire firms had less of a presence in apprentice training than traditional employers, they also have not been active in skilling their workforce in an ongoing sense.

There have been major reforms to the training arrangements in Victoria. Within the apprenticeship system these have included the adoption of group training schemes, consolidation of competency based training outcomes and a move towards on-site assessment of skills (in terms of competencies) by a registered training organisation. The reforms have challenged some of the conventional wisdom of the traditional system. While group training has now been in operation for some years, and is making a significant contribution to apprenticeship training, it is still not totally accepted within the industry, and there remain a number of operational problems with it. It has not, to this stage, made inroads into the labour hire sector.

A majority of employers welcome the direction of change in the training paradigm towards a competency-based system. However, a considerable number of them were apprehensive about its effectiveness and expressed serious concerns about the ability of the system to sustain changes in the assessment of skills proposed under the new 'training packages'. In this they echoed the views of training practitioners and participants from registered training organisations, who also expressed fears that the new assessment system would falter. It is clear from the research that this problem should be addressed urgently.

Chapter 1

The nature of this study

Introduction

A major change in the organisation of work in Australian industry has occurred in the past two decades. It is now less likely that a worker in industry will be a wages employee in a permanent full time job. More are now casual, self-employed, or work for a labour hire organisation. These newer forms of work organisation are more commonly found in certain types of industries. Parts of the construction and electrical and associated industries are of this kind.

Policy makers face the demanding question: what impact are such changes having on industry training? Put more bluntly: are we, as a society, skilling for the future? The answer must have two dimensions. The first is the straightforward concern of raw numbers. Are enough tradespeople being trained or will there be a skills shortage? The second concerns the quality of training. Are the skills being imparted to those in training sufficient to equip tradespeople in a fast changing work and technological environment? In other words, will there also be a skills shortage in the form of a skills deficit?

A recent study of self-employed workers in the Victorian building industry (Underhill et al. 1997, p. 94) concluded that growing reliance on self-employment was likely to impede both apprenticeship and post-apprenticeship training. The self-employed seemed reluctant to be involved in the training loop. Given that the electrical and associated industries also rely on self-employment and other forms of alternative work arrangements, the question arose as to whether these industries could expect a similar training outcome. Research sponsored by the National Electrical and Communications Association had indeed produced evidence of such a decline. It suggested that the fall in the number of apprentices under training is so serious already that it is producing a shortage of skilled electrical, electronic and communications tradespersons (NECA 1998).

An earlier study of barriers to apprenticeships in the building, electrical and engineering industries identified a number of possible causes. These included the size of the applicant pool, the image and status of trades, the impact of restructuring and outsourcing and changes in contractual cycles, the growth in group training, the role of government and the cost of apprenticeship (Marshman and Associates 1996). In addition voices within the electrical and associated industries and the training sector have been heard to argue that the quality of training has also deteriorated.

These and other issues, such as the shift to competency based training and 'training packages', are tackled in this research by the Workplace Studies Centre at Victoria University. It was commissioned by the Electrical Trades Union (Victorian Branch) (ETU) and the National Electrical and Communications Association (NECA), reflecting their joint desire to seek greater understanding of this aspect of their industries and to influence appropriate policy development.

Background

Since the later 1980s the industry training system in Australia has been fundamentally reshaped. First we saw the movement towards the development of broadly based training and competency standards to define skills and measure skill levels. This accompanied far-reaching attempts to restructure industrial awards, a process that itself now has been challenged for many years by the shift to impose narrower enterprise based and individual employment relations. Next was the alignment and reworking of curriculum to meet the new competency standards.

The traditional apprenticeship system of 'time served and lock step' was superseded by the new system that reduced classroom time and replaced it by new notions of achieved competence. Pre-apprenticeship training as part of new apprenticeship entrance requirements also developed. So too did adult apprenticeships. With broad acceptance by industry parties, awards were altered accordingly. The third stage we are now in: the erasure of curriculum itself and the imposition of 'training packages', whereby the focus is shifting entirely to achieved outcomes demonstrated at work and in the classroom. With this the debate has arisen over whether the focus has become too narrow, creating a task focused training culture rather than one that is placed in context and has educational depth.

All of this has occurred in a highly competitive global economic environment in which businesses have 'downsized', 'outsourced', and 'rationalised'. The public sector's role as employer and trainer has diminished dramatically. Alternative forms of working status have eroded the more traditional full time employment relationship. Moreover, while proportionately more of the workforce is now self-employed, casual or involved in labour hire and agency work, the formerly dominant manufacturing sector of the economy has declined in importance. Meanwhile the pace of technological change has accelerated. No sooner have new processes and computerised systems become embedded in industry than they are replaced. None of these continuously changing forces has acted in isolation. Rather they have combined to create the current training outcomes in the electrical and associated industries. More importantly perhaps they are acting to shape the training culture of the future. This is the environmental background to this research.

Its practical background followed the earlier Workplace Studies Centre (WSC) project on self-employment in the building industry (Underhill et al. 1997), which was funded by the building industry redundancy fund, Incolink. For the present project the WSC approached the electrical, electronic and communications industry and training representative bodies with the germ of an idea for a research project. The ETU, NECA and other industry players, such as the group training organisations, Electrotechnology, Printing Information Technology and Communications Industry Training Board and the representative organisation of labour hire companies, in turn gave information, clarified concepts and, most importantly, spelled out the questions they needed answered. The project was refined, approved and funded in July and August 1999, and the research itself began soon after.

Research focus, aims and questions

At the heart of the research was the general notion of whether the training culture in the electrical and associated industries was adequate today. Our initial hypothesis was that these industries have special problems in developing a training culture because of the significant presence of small employers, the self-employed and labour hire companies. However, aims need to be concrete to focus and direct practical research activity. Hence its was agreed that this research should seek to:

- establish and verify a shortage of skills in the Victorian electrical and associated industries in Victoria and the significance of apprenticeship training to this;
- define the parameters of the skills shortages;
- determine the nature of the training culture within the self-employed and labour hire elements of these industries through an examination of the industries participants' perceptions of training culture;
- assess the quality implications and outcomes of traditional forms of apprenticeship training against new industry training arrangements; and
- assess the policy implications of these developments and make recommendations that will result in a change in the training paradigm.

To address these aims; an extensive and detailed series of specific research questions emerged. These are presented in full in appendix 1 'Detailed specific research questions'. It should be noted that these questions provided a guide for the research. Hence they help to structure the information to emerge in the report to follow. They are also reflected in the questionnaires and interview schedules reproduced in subsequent appendices (see section on 'Research methods' below). However, given the exhaustive nature of the questions, it was not possible to provide equally exhaustive answers to all.

Where appropriate, the questions were examined in the context of apprenticeship training and on-going training or development. Further, the research explored these two aspects of training within different work arrangements within the electrical and associated industries: i.e., for workers and employers who work under traditional work arrangements as well as workers who are self-employed and workers who work for labour hire companies and their employers. (See also the section on 'Research methods' and chapter 2 'Survey of the issues' below.)

At this point it is important to note that the study was consciously limited in various ways. Significantly it is a Victorian study. National issues are introduced only for comparison and clarification. It also should be noted that the 'communications' aspect of the research was limited for a number of reasons. The first and most important was that, while a formal communications apprenticeship qualification is now offered, the take up rate is very low at present. The second was that we had limited access to the communications section of the industry. Third, more preliminary research would have been needed into the relationships between the communications and electrical sectors, especially regarding licensing arrangements and complex issues of technological convergence. This was beyond the scope of the research team's brief.

Research methods

Diverse research methods were necessary to obtain information appropriate to the above aims, i.e. to:

- consider both *quantitative* and *qualitative* aspects of skills shortages;
- present and analyse *perceptions* of research culture throughout the industries;
- examine *opinions* and *objective* indicators of training quality; and
- analyse *documentary* evidence and develop *policy* options

Thus the study contained three interrelated components: a literature review; analysis of relevant data; and direct qualitative and quantitative research into industry participants' perceptions of training patterns and the analysis of such perceptions in terms of objective referents (in this case training standards). Appendix 2 presents in tabular form the broad methods used. The methods also had to be tailored to the needs of different categories of employers and apprentices: larger business, small business, self-employed and labour hire companies; group training companies; and electrical, refrigeration, and lineworker apprentices.

The review of the literature was an important first stage. It included reviews of Australian and overseas studies of the demand and supply of apprentices in the electrical and associated industries, the determinants of training needs and the shape of the training culture. It also involved thoroughly analysing the detailed documentation of competency standards and related curriculum materials. The literature and documentary survey fed directly into developing the primary instruments for gathering original data on participants' perceptions of training and its quality (see below).

Quantitative data collection and analysis proceeded throughout the project. First the official data on apprentice and tradesperson numbers in the industries were examined to detect relevant overall trends and those at the level of Victoria. Here data were obtained directly from the Victorian Office of Post Compulsory Education, Training and Employment (OPCETE) Apprenticeship Administration Branch and from the National Centre for Vocational Educational Research (NCVER) and the Australian Bureau of Statistics (ABS). We also examined other sources, but the above were clearly the most valuable at the aggregate level.

Original quantitative and qualitative data were also gathered on participants' perceptions of training and its quality. Four separate confidential questionnaires were used: three for different categories of apprentice (general electrical in Melbourne and regional locations, refrigeration, and lineworker) and one for employer categories (general employers and labour hire). Ethics committee approval was sought and obtained from Victoria University, and all research data were handled according to the strict protocols adopted. This applied to qualitative data also. Further details of the quantitative data collection, including methods of administration, are:

Apprentice surveys

Survey tools were developed by the research team and then tested in a supervised session with 11 electrical apprentices. The main survey tool was then modified using responses from the pilot survey group. Surveys completed in the pilot

session were not included in the research database. Table 1.1 summarises the process:

Table 1.1 Apprentice survey details

E1: electrical apprentices (electrical fitters and mechanics) Melbourne	
General electrical apprentice surveys (E1) were completed in supervised sessions at participating TAFE colleges or distributed by mail and completed in the apprentice's own time.	TAFE 221 surveys Mail 300 surveys
• Total surveys distributed	521
• Total completed and returned surveys	239
• Returned from mail out address unknown	7
• Surveys with printing errors not used	5
• Mailed surveys returned	15
Participating TAFE colleges were Swinburne, Northern Melbourne Institute of TAFE, Kangan, Box Hill, RMIT, Energy and Telecommunications Training Australia (Gippsland TAFE, Chadstone) and Victoria University.	7
E1: electrical apprentices (electrical fitters and mechanics) regional (Gippsland)	
General electrical apprentice surveys (E1) were mailed to the participating TAFE college. 44 completed surveys were returned. The survey was conducted in a supervised session by TAFE personnel.	TAFE 105 surveys
• Total surveys distributed	105
• Total completed and returned surveys	44
• Blank surveys returned	60
• Surveys not returned	1
The participating TAFE college was the Gippsland College of TAFE, Newborough.	1
E2: refrigeration mechanics	
The refrigeration mechanics apprentice survey (E2) was undertaken in a supervised environment by the research team and staff of the participating TAFE college.	TAFE 50 surveys
• Total surveys distributed	50
• Total completed and returned surveys	47
• Blank surveys returned	0
• Surveys not returned	3
The participating TAFE college was the RMIT.	1
E3: lineworker apprentices	
The lineworker apprentice survey (E3) was undertaken in a supervised environment by staff of the participating TAFE college.	TAFE surveys 20
• Total surveys distributed	20
• Total completed and returned surveys	13
• Surveys not returned	7
The participating TAFE college was the Electro-Technology Training Australia (Gippsland TAFE Chadstone).	1

Employer surveys

A survey tool was developed by the research team and tested in a supervised session with 15-20 employers. The survey tool was then modified using responses

from the pilot survey group. Surveys completed in the pilot session were not included in the research database. Employers, who were drawn from the National Electrical and Communications Association database, were grouped according to the categories presented in Table 1.2. A postal survey method was used in the first instance for general employers. This was followed by a targeted telephone survey. Employers surveyed by telephone were encouraged to either complete the survey with the telephone surveyor, or complete and return the survey previously mailed to them. There was approximately one month between the mail out and follow up by telephone surveyors. Labour hire employers were interviewed face to face with the same instrument.

Table 1.2 Employer survey details

E4: general employers

General electrical employers were grouped into categories as follows. Their industry sector component is also shown in the right hand column.

• Sole traders	electrical/commercial/communications
• Sole traders	electrical/communications
• 1-10 employees	electrical
• 1-10 employees	commercial
• 1-10 employees	commercial/communications
• 11-30 employees	commercial/communications
• more than 30 employees	electrical
• more than 30 employees	commercial/communications

A limited telephone survey (E4) of employers was conducted. A sample of 241 employers was selected at random from the main database of employers in an effort to increase the representation of sectors underrepresented in the postal response. The sample details are shown below, with the method of selection given in parentheses.

• Sole traders	60 electrical/commercial/communications (1 in 4)
• Sole traders	4 electrical/communications (1 in 12)
• 1-10 employees	90 electrical (1 in 4)
• 1-10 employees	40 commercial (1 in 3)
• 1-10 employees	29 commercial/communications (1 in 6)
• 11-30 employees	13 commercial/communications (1 in 10)
• more than 30 employees	3 electrical (1 in 20)
• more than 30 employees	2 commercial/communications (1 in 15)

Overall results of the employer postal and telephone survey (E4) are as follows. Percentages of the total distributed (excluding those returned address unknown) are also given. 49 employers completed and returned surveys as a result of telephone contact from the research team.

• Total surveys distributed	1056
• Total completed and returned surveys	157 (14.9%)
• Surveys returned address unknown	4
• Surveys not returned	895 (85.1%)

E4: labour hire employers

Labour hire employers were surveyed using the main employer survey tool (E4). The relevance of the survey tool to labour hire companies was checked via a pilot session with personnel from a labour hire company. The survey was then administered via individual interview with managers of 21 labour hire companies.

• Total surveys administered	21
• Total useable results obtained	21

Original quantitative data were systematically entered into Microsoft Access and Excel databases and converted to SPSS for analysis. Appendix 3 contains the questionnaires used. Note that we referred to the relevant competency standards extensively (see chapter 5).

Qualitative data collection: interviews with practitioners

Qualitative data collection was essential for two purposes: to obtain a deeper understanding of participants' perceptions of apprentice training and to illuminate changes in the training culture and inform policy development. Each of the survey instruments also contained some open questions that allowed for deeper responses from respondents. Individual and group interviews were conducted with an extensive range of vocational education and training professionals specialising in the electrical and electronics industry, and representatives of organisations with a major interest in training in the electrical/electronics area.

Those interviewed included representatives of the following categories:

- TAFE teachers, heads of department and administrative personnel
- Private training providers
- Group Training Companies: field officers, management/administrators
- Industry Training Board personnel
- Union representatives
- VET system policy officers drawn from a range of organisations
- VET system researchers

In total, 19 people were interviewed. Interviews were conducted on the basis of participant and organisational anonymity. The basic employer survey was used as the schedule of interviews (see appendix 3). A modified version of the survey/interview tool was developed for the TAFE cohort. All interviews were taped and later transcribed with information grouped into key areas of interest. Interviews ranged in duration from 1 – 2.5 hours.

Project team and steering committee

Three of the four core members of the project team were from the Workplace Studies Centre of the Faculty of Business and Law, Victoria University. They were Dr James Doughney, the Centre's Senior Researcher, who was project manager; Professor David Worland, currently Honorary Professor in the School of Management at Victoria University and the former Academic Director of the Centre; and Cheryl Wragg, the Centre's Training Development Officer. Jenny Howes, the Research and Policy Officer of the Access Training and Employment Centre (ATEC), was the fourth team member. The core project team members are co-authors of this report.

Each team member brought particular experiences and skills to the project. Jenny Howes, as well as having been involved for ATEC in a number of projects on equity in training, has completed an electrical apprenticeship herself and is a registered A-Grade electrician. Cheryl Wragg worked extensively in the training field for both the trade union movement and Victorian and Federal governments before joining the WSC. She was instrumentally involved in developing the first entry level training programme for power line clearance workers and has many years of experience in training systems and arrangements in the engineering

industry. Cheryl and Jenny administered and analysed the apprentice surveys and qualitative interviews. Each entered data, transcribed interviews and contributed large sections of the report in these areas. David Worland co-authored the WSC report on self-employment in the building industry (Underhill et al. 1997) and has had a long interest in industry skills development. He administered and analysed the employer surveys, including undertaking the face to face interviews with labour hire employers, and contributed the corresponding sections of the report. David also wrote the literature review. James Doughney has long experience in research, has taught in the TAFE sector, and has an academic background in labour economics. He undertook database management and analysis, prepared charts and tables, wrote corresponding sections and was editorial co-ordinator for the final report.

Other members of the project team were Jill Carter, Tony Kelleher, Christopher Lefler, Anne O'Casey, and Usha Sukumaran. Usha Sukumaran facilitated the telephone interviews with employers that were conducted by the others mentioned above. She also administered various aspects of the project, including survey mail outs and returns. Maryanne Davies entered apprentice questionnaire results into what became a very large database. Genevieve Sinclair assisted with aggregate data collection and its entry.

The project was overseen by a steering committee known as the Training Needs Project Steering Committee. The Committee represented the funding agencies and collaborators and the WSC as project administrator. At the start, the Training Needs Project Steering Committee was (in alphabetical order):

- Dr James Doughney, Workplace Studies Centre, Faculty of Business and Law, Victoria University
- Maurice Graham, Victech Group Training Limited
- Philip Green, National Electrical and Communications Association
- Dave Kerin, Electrical Trades Union of Australia
- Sean McCormick, Electrotechnology, Printing Information Technology and Communications Industry Training Board
- Dean Mighell, Electrical Trades Union of Australia
- Barry Mitchell, National Workforce Pty. Ltd., representing the Labour Hire Group of Victoria
- Professor David Worland, Workplace Studies Centre, Faculty of Business and Law, Victoria University

Rebecca Fraser and Helen Petkov represented Philip Green and Dave Kerin represented Dean Mighell on the steering committee. Cheryl Wragg and Jenny Howes represented James Doughney for most meetings. The committee was provided with progress reports and various drafts of research materials and outcomes. The committee met five times formally, while many more informal meetings and discussions were held with the ETU and NECA committee representatives.

Chapter 2

Survey of the issues

Introduction

Major changes in the training regimes of the electrical, electronics and communications industries have occurred within Victoria in the last decade. Large year on year variations have occurred in the number of apprentices in training during this period. There were major changes to the way in which training was conducted, and the focus of training has changed with competency becoming the overriding goal. This study is directed to gaining an understanding of the major changes that have occurred and their impact on the overall delivery of training in these industries in Victoria.

A raft of economic and social changes has accentuated the changes. The last two decades have seen major adjustments in the organisation of work in Australian industry. It is now less likely that a worker in industry will be a wages employee in a permanent full-time job and more likely that they will be either a casual employee, a worker who is self-employed, or one who works for a labour hire organisation. These newer forms of work organisation are more commonly found in certain types of industries, and the electrical, electronic and communications industry and the construction industry are of this kind.

A recent study of self-employed workers in the Victorian building industry (Underhill et al. 1997, p. 94) concluded that the growing reliance of that industry on self-employment as a form of work organisation was likely to impede both apprenticeship training and post-apprenticeship training. The evidence provided in that study showed the self-employed to be somewhat reluctant to be involved in the training loop. Given that the electrical and associated industries also rely on self-employment and other forms of alternative work arrangements, the question arises as to whether these industries can expect a similar training outcome to the building industry. Are these new forms of work organisation responsible for a decline in the number of apprentices in training and what impact might they have had on industry training per se?

Other factors that affect the industry and, therefore, its training requirements have been identified by OTFE (1999) as the rate of technological change, the convergence of technology, competition and deregulation, quality issues, skills shortages and support for small business. The increasing competition has led to increased pressure on workers for 'multi-skilling' and 'up-skilling' in a technical sense and for them to broaden their skills base to encompass marketing and customer service skills as well as technical skills. With increased flexibility there will be some merging of industries in areas such as cabling. OTFE has suggested that these changes will impact upon apprenticeship training both qualitatively and quantitatively (1999, p. 119). Moreover, social changes, such as the expectation of greater equality of opportunity in the workplace, mean that women will be given the same opportunity to enter a trade as their male counterparts and that there will be a change in the ethnic mix within the electrical trades to reflect the population as a whole.

This research will examine the experiences of employers, apprentices and training organisations to establish why the changes have occurred and to discover

the implications of such changes for policy formulation and response. It will focus particularly on how these questions relate to apprenticeship training in the electrical, electronic and communications sector in Victoria. Note, however, as we explained in chapter 1, that there will be far less emphasis on communications than on the electrical and electronic sectors. There are a number of relevant themes to be followed, and each of these is addressed in the review of the literature conducted below.

Numbers of apprentices

A commonly held community view about the apprentice population is that there are too few apprentices and that the number of apprentices in training is declining over time. Gospel (1994) when analysing apprentice data for the period 1970-1992 raised the possibility of a period of long term decline in Australian apprentice numbers. Is this an accurate statement for the electrical and associated industries in Victoria?

According to data provided by DEETYA (1997, p. 3), the number of new apprentices in training during the first half of the 1990s declined. However, while evidence has been presented to suggest that this decline has been arrested in the last couple of years, the figures contributing to this change in trend are somewhat misleading. The recent major areas of growth in the number of apprenticeships and traineeships have been the service sector occupations of hospitality and retailing and not the areas of traditional apprenticeships (Kemp 2000). It is also clear that more traineeship places/positions have been created than apprenticeship places/positions (see NCVER 1999 and chapter 3). Data from the National Centre for Vocational Educational Research (NCVER) for the number of electrical apprentices and trainees nationally for the period 1985-98 gives the relevant commencements, completions and numbers in training (NCVER 1999). These are discussed in detail in chapter 3, as are problems in categorisation and data consistency. In short they show a marked decline from a high point in 1990 of 23,000 in training to a low in 1995 of 15,900. After then a modest increase to about 17,900 in training has occurred.

One set of findings producing evidence of a decline within the electrical and associated industries (particularly during the early part of the 1990s) came from a study sponsored by the National Electrical and Communications Association (NECA, 1998). The results of this study showed that the fall in the number of apprentices under training is so serious as to be producing a shortage of skilled tradespersons. Statistics reveal that during the 10 years to 1995-96, apprenticeship commencements fell by 13 per cent, and the fall was greater in some of the traditional trades such as electrical/electronics. (DEETYA 1997).

The NECA study also showed which industry sectors were responsible for the decline in the number of apprentices in the electrical mechanic trade group within Victoria. The number of commencements in government employment had all but evaporated and the number of group training commencements had also fallen by more than 50 per cent over the period 1994-97. The commencements within the private sector had also fallen, but by 18.9 per cent (NECA 1998).

In another study directed at establishing possible barriers to apprenticeships in the building, electrical and engineering industries, Marshman and Associates (1996) identified a number of factors as possible causes of the reduction in the number of apprentices in those industries. These included the size of the applicant

pool, the image and status of trades, the impact of restructuring and outsourcing and changes in contractual cycles, the growth in group training, the role of government and the cost of apprenticeship. There has also been a reduction in the ability of employers to employ apprentices in an economic environment characterised by shorter and less predictable contract cycles as a result of restructuring (Marshman 1996, p. 24). One plausible explanation of the decline is a lack of suitable applicants for apprenticeships. A study of the experiences of employers and group training companies in recruiting apprentices in 1997 revealed differences in the ratios of suitable applicants between regions, specific occupation groups and size of organisation (DEWRSB 1998). For example, Victorian employers had lower ratios of suitable applicants compared to most other states, large firms had higher ratios of suitable applicants and, in Victoria, the group training companies had a higher rate of suitable applicants compared to traditional employers.

The Victorian Office of Training and Further Education (OTFE), in a paper titled 'Planning guide for providers of training and further education in Victoria 2000-2002 (OTFE 1999), provided an industry perspective of training needs and their regional distribution, identifying the key variables expected to influence the market for electrical workers during the period 2000-2002. They saw significant demand for electrical workers coming from big projects in progress in Victoria and the work in NSW linked to the forthcoming Olympic games. The main area of growth beyond this time is likely to be in the boom industries of telecommunications and information technology (OTFE 1999, p. 51). A recent report by the Electrotechnology Working Group of the National Skills Forum (Catelotti 2000) highlights the skills shortages in these fields. Another important change in the labour market will occur through the continued contracting out of electricity supply and generation in Victoria, although the decrease in employment here will be offset in part by increased employment opportunities within the contracting companies that do the work. However initially, the privatisation of public utilities has led to a reduction in the number of apprentices in this field, as predicted by Gospel (1994, p.53) see also 1995. This study will assess the extent to which these initiatives have been felt within the electrical and associated industries.

Small and large firms

Previous research in Australia and overseas has shown that the incidence of training is lower in small firms than large firms. Aggregate data for Australia showed that, in 1995, two-thirds of all Australian workplaces provided formal training programmes for their non-managerial workforces, whereas for smaller workplaces (those with fewer than 20 employees) only one in two workplaces provided such training (Morehead 1997, p. 308). For very small firms, such as companies classified as self-employed, the incidence is likely to be lower still.

Research carried out by Stella Axarlis, and reported in a paper presented to the Australian National Training Authority annual conference (ANTA 1998), suggested a connection between size of organisation and commitment to training. Axarlis referred to earlier findings about the low level of training within the small business sector. Similarly, Matlay, in a UK study, reported on a number of literature surveys that suggested the training of employees has been largely neglected within small business (1997: 578). Referring to Australian experience,

Fraser, in an evaluation of the Training Guarantee Scheme, argued that the amount of formal training being conducted in some industries at the end of the scheme was less than at its beginning (1996, p. 116). He showed this to be the case in the construction industry, with the lack of training here mainly concentrated among the smaller employers. So there is a body of evidence showing a different training culture within small business.

The industries that are the subject of this study, namely the electrical and associated industries, have a preponderance of small firms. It is asserted by industry leaders that 90 per cent of workers in the industry work for firms with fewer than five employees. So we might expect a lower level of workplace training to result in these industries.

Labour hire firms

There is evidence of a difference in the training culture between workplaces where a direct employment relationship exists and those where the employment relationship is of a non-conventional type, such as in a labour hire arrangement. The amount of labour supplied through labour hire firms has grown enormously in recent years, and at least one study (ANTA 1998) has shown labour hire firms do not tend to become involved in the training of apprentices.

Therefore, although the precise impact of an increase in the incidence of self-employment, casualisation and labour hire arrangements on the number of apprentices in training is not known, the evidence suggests that these new forms of work organisation have contributed to the decline (ANTA 1998a). As a recent report by the OTFE said:

> 'Increased contracting out of services and growth in labour hire companies will result in a reduced level of training, as labour hire companies are currently not strongly represented in TAFE training programmes.' (1999a, p. 110)

The ANTA study conducted by KPMG attributed this lack of involvement by labour hire firms in the training loop to a number of factors not the least being that they do not see the development of a future skills pool as a first order issue (1998a, p.1). Other factors included the ease of obtaining skilled persons from the labour market, the short term and temporary nature of the labour requirements, the high turnover of employees and the cost barriers associated with apprenticeship training (ANTA 1998a, p. 31). The study argued that the demand for labour services provided by labour hire organisations was generally driven by short-term changes in demand or cyclical labour requirements rather than a steady growth in the demand for labour (ANTA 1998a, p. 1). However, the report also argued that the decline in apprenticeship numbers was linked to structural changes in the demand and supply of apprenticeships.

The NECA study (1998), while identifying many of the factors contributing to a decline in apprentice numbers, did not attempt to verify a connection between the kind of work organisation and the number of apprentices being trained within specific industries. It concentrated on identifying the choice factors facing young people when they decide on their career paths. Certainly the propensity for labour hire firms to engage apprentices is quite low.

Ongoing training

The issue of post-trade training is also an important one in considering the future skill requirements of industry. Furthermore the issue of lifelong learning has received considerable attention in the literature. Scollay (1999), in raising the importance of lifelong learning as a goal, introduced questions of the kinds of learning that might be targeted in the new work environment. She argued:

> 'In an environment with rising numbers of non-traditional workers, for example self-employed or casual workers, a new mix of competencies (such as marketing and finance skills) may also take on increasing importance.' (Scollay 1999, p. 16)

In practice, though, new forms of work arrangements are likely to inhibit the amount of ongoing training or post-apprenticeship training within industry.

The evidence from a survey of labour hire companies (ANTA 1998a) is that those firms did not see post trade training as part of their bailiwick. The majority of labour hire companies saw the funding of such training as the responsibility of the employee rather than of the labour hire firm.

ANTA (1999) presents a summary of research of community and employer attitudes to lifelong learning. This research was undertaken for the purpose of identifying 'key factors influencing Australian attitudes, values and behaviours relevant to skills acquisition and lifelong learning' (1999, p. 3). With respect to the likelihood of firms offering training within the next twelve months, the results showed that 'the larger organisation and the longer it had been in business the more likely it was to offer training to employees in the next 12 months' (1999, p. 47). As to the kind of training required, new technology and computer skills are seen both by business and the general community as at the top of the list of priorities (1999, p. 47).

Cost of apprenticeship

One of the impediments to apprenticeships is their cost. There are a number of elements to this. The first of these is the costs to the employer. Marshman stressed two aspects of cost as a deterrent. First, the costs of apprentices in the first year are high compared with their productivity. Secondly, sub-contracting is said by a number of employers to be more cost effective than employing final year apprentices. Gospel (1994) raised the issue of the relative cost of apprentices and skilled labour in the external labour market as a possible barrier to apprenticeships (p.53). A survey of employers, the Catalyst Survey (1998), found that apprenticeships were not considered cost effective by employers. Employers favoured a wage rate based on a proportion of the adult rate of pay, but lower than it is at present.

The Centre for Labour Market Research, in a research study concluded in 1997, estimated that the cost to the employer of training an apprentice over the four years to be $21,787 (1997, p. 1). The major elements of this cost are the wages and supervision. The spread of net costs are skewed towards the early years of training, with the benefits to the employer outweighing the costs during the latter years. Apart from the variation in net cost that is said to occur over the life of an apprenticeship, the evidence also supports the existence of a wide variation in costs between employers. The CLMR study shows a variation in cost from

$24,000 to $38,000, although individual firms recorded figures well outside this range. Their net cost figure for an electrical apprentice is $37,819 (Dockery et al. 1997, p. 264). D'arcy uses a more thorough list of costs and benefits to calculate the net costs of employing fitter apprentices in Melbourne during 1997, estimating the net cost of employing an apprentice as $71,025 (D'arcy 1998).

On the issue of wage costs as a component of the net costs, Sweet (1995) draws attention to the relatively high proportion of the skilled tradesperson's wage paid to apprentices at the various stages of apprentice training in Australia. Caution is needed in interpreting this result since international comparisons based upon percentages can be somewhat misleading unless the computation makes a thorough evaluation of wage rates and earnings. Based on the findings of these and other studies there is an a priori argument that cost is an inhibiting factor to the apprenticeship process, especially as the significant cost impact is said to occur during the early phase of the indenture.

A second dimension to cost is the cost to the apprentice. Marshman argued that the career prospects and potential earnings from a trade are relatively unattractive to the prospective apprentice, and this could act as a negative factor in the decision by an individual to become an apprentice. Dockery and Norris, in a study of the return to apprentices from their training, show that in a number of industries apprentices might not expect higher life-time earnings than were they not to have undertaken that training (1996, p. 125). The questions might well be asked why do people undertake such training and will people continue to be persuaded to undertake apprenticeship training if this situation persists? This issue is broached in the next section of the literature review.

Thirdly, there are costs to the community associated with an apprenticeship scheme. The training of apprentices involves a significant community contribution through the provision of education facilities and human resources.

Fourthly, there is an issue of cost in an overall competitive sense. The environment in which contractors/sub-contractors operate is one that is predicated on price and consequently, is extremely cost sensitive. So a contractor, by reducing labour costs, is enhancing their competitive position. In this context, apprentices might be avoided as part of a cost saving strategy or alternatively, they might be engaged because employers perceive them as a source of cheap labour. In these circumstances the standard of apprenticeship training is being compromised.

Finally, there is an opportunity cost of training. This is especially evident among self-employed and labour hire firms and appears to influence their decisions about training of any kind including apprenticeships.

Skill shortages and supply and suitability of apprentices

Another reason for fewer apprenticeships could be a shortage of suitably qualified applicants. It is plausible that there are fewer good applicants. Several studies have broached this question.

A study of the labour market for apprentices by the Department of Employment, Workplace Relations and Small Business (DEWRSB) Skills Analysis and Research Branch, in conjunction with the Labour Economics Office, presents data on the number of applicants and their suitability (DEWRSB 1998). The survey of employers presented a mixed picture about the number of applicants for apprenticeships. With an average of 22 applicants for each vacancy

(on average seven were considered suitable for each vacancy), almost all employers appeared to be satisfied with the apprentices they recruited (1998, p. 5). At the time of interview one in 10 places were vacant. This means that a significant number of apprentices in training were dropping out along the way. The ratio of suitable apprentices varies between trades, and there is a higher ratio of suitable apprentices for large firms compared to small firms (1998, p. 2).

The NECA study (NECA 1998) refers to the lack of future in apprenticeships as being an important factor in putting people off entering the trade. These perceptions are framed by a plethora of community attitudes, including those conveyed by parents and personal contacts of potential apprentices (1998, p. 10). Marshman, in referring to the applicant pool, states that there 'has been a major drop in applicant interest in engineering and electrical apprenticeships despite widespread skill shortages' (1996, p. 24). As the study by the VACC into skills shortages within the retail motor industry demonstrates (Curmi, 2000) the image problem is also a concern within other industries. Interestingly, similar experiences have been documented by Gospel in a United Kingdom study (1995). In particular he refers to young people being less willing to take up apprenticeships because they stayed longer at school and developed broader horizons. They were less willing to enter traditional apprenticeships because of the perceived long period of training, low wage and uncertain career prospects associated with apprenticeships.

DEWRSB (1998, p. 16) suggests that, although there was an adequate supply of applicants, the quality could be improved by raising the image of the trades among students, teachers and the wider community. An interesting question is to discover whether the electrical industry suffers from this image problem and whether the solution is for stronger linkages between employers and schools and the methods by which this could be achieved.

Equity in apprenticeships

There is considerable community concern about access to apprenticeships among specific cohorts of the population. As Maglen asserts, the training sector has an important social role to fulfil in meeting the training needs of disadvantaged groups (1995, p. 136). Specifically, the evidence shows that there is inequality of opportunity on the grounds of gender, ethnicity, disability and age, and little progress is being made to redress this. Between 1995 and 1998 there was a decline in female commencements as a proportion of the total intake (2.2 to 1.7 per cent). During this time there was a small increase in the proportion of commencements in the age group 20 plus, from 33 to 34.4 per cent (NCVER 1999). There has been a slight increase in the proportion of indigenous workers in apprenticeships, from 0.6 per cent in 1994 to 0.78 per cent in 1998 (OTFE 1999, p. 9).

The dearth of apprenticeships and training opportunities, particularly in those occupations that have not traditionally hosted apprenticeships, has produced a government policy response in the form of the New Apprenticeship system ANTA (1998). A stated aim of this policy initiative is to produce significant improvements in the level of equity within the system by giving greater access to traineeships and apprenticeships to those who were poorly served by the traditional apprenticeships in the past.

Direct employment or group training?

There are a number of issues surrounding the choice of method of apprenticeship training. One question of interest is the amount of information employers have about the group training option. A Standing Committee of the House of Representatives reported that many enterprises did not know of the existence of group training companies let alone the benefits that group training could bring to their enterprises (1995, p. 29). Is this still the case today? Many employers believe direct employment of apprentices is superior to their employment through the group scheme.

Another issue relates to the employers' overall assessment of the quality of apprentices. Assessing the quality of apprentices is difficult, since quality is a rather vague concept. The DEWRSB (1998) study of employer and group training company experiences in recruiting apprentices probed employers on their perceptions of apprenticeship quality and concluded that employers believed the quality of apprentices was high. However, the group training companies (GTCs) believed that the quality had declined somewhat and had responded to this by tightening their selection procedures. GTCs reported rejection of apprentices by host employers on few occasions, although they noticed an increase in employer expectations over time. Personality conflicts, poor attitude and skills levels were seen as the causes of apprentices being rejected by host employers, and this usually occurred after they had been on the job (DEWRSB 1998, p. 14).

Apart from a comprehensive study of work based training conducted by Misko (1996), which reports on the measures of attitude, skill and productivity as ingredients of quality, the question of the quality of apprentices does not appear to receive systematic attention in the literature. Employers' perceptions of quality would appear to be a fruitful line of inquiry. Another aspect of the quality issue is the classroom education component of apprenticeship. The linkages between the classroom and the workplace, the relevance of the competency standards and curricula, pre-assessment and recognition of prior learning (RPL) processes, suitability of training staff and existence or otherwise of training plans for apprentices are important issues here. So, too, is the impact of reforms to the system on these variables. Schofield (2000), in a report on quality within the apprenticeship and traineeship system in Victoria, addresses a number of these issues.

Method of recruitment

It is plausible that the quality of apprentices could be affected by market imperfections, such as the failure of the best quality apprentices to find their way into the available apprenticeship vacancies. This could be the result of lack of information about those vacancies due to the employers not being able to inform the market adequately about existing opportunities. Little is known about the extent to which various techniques are used.

The aforementioned DEWRSB (1998) study of employers found that newspaper advertisements were the most common recruitment vehicle. Approximately two-thirds of employers used this technique, and it was more likely to be used by large companies. The then Commonwealth Employment Service was used by approximately 20 per cent of employers, and there was a bias among small employers for this avenue of recruitment. Informal or word of mouth was used by around 25 per cent of employers, while 'gatecalling' was used by less

than 10 per cent. GTCs were used by six per cent of companies (DEWRSB 1998, p. 13). This study, while providing information about the extent to which various methods are used, is biased, since the sample was selected from newspaper advertisements.

National Training Reform Agenda

The implementation of the National Training Reform Agenda (NTRA) in 1995 has seen a number of changes to apprenticeship training in Australia. These changes are in common with those introduced in some other western countries at about this time (Elias 1995, p. 111). One issue is to establish how these changes might have impacted on the nature and level of training within industry and, in particular the electrical, electronics and communications industries in Victoria.

It is of specific interest to discover whether the goals set for the training reform agenda (Hall 1995, p. 88) have been satisfied in those industries. This requires an assessment of whether the new system is satisfying a range of community goals. Included in these are the improved quality of vocational education and training, increased opportunities and outcomes for individuals and, especially, disadvantaged groups, response to the needs of industry and increased public awareness of the value of vocational education and training.

Specifically, it is of interest to discover how the players in the new system are responding to the challenges that it is producing for them. How do employers and trainers perceive the new competency based training regime? Are there sufficient resources available within the apprenticeship training regime to facilitate such a major change in its direction? How well are the apprentices being trained and to what extent do they see their skills development enhanced under the new system? What threats and challenges does it present and what new opportunities does it provide? The Schofield (2000) study addresses some of these questions for Victoria as a whole and as they relate to the electrical and associated industries. Answers to these questions are sought in this study.

Chapter 3

Trends in apprenticeship numbers and ratios

Introduction

A sketch of the global apprenticeship and training situation in Australia is needed to set the position of the electrical trades in Victoria into context. Such a sketch will also enable us to comment more meaningfully on the crucial question of skills shortages. First, this chapter will begin by presenting national training data to answer some of the questions regarding trends that were posed in chapter 2 'Survey of the issues'. It will also look at the national electrical training data and their trends.

Secondly, the aggregate Victorian electrical apprentice training figures will be presented in considerable detail. This, too, is necessary both to answer some of the broader research questions posed and to provide grounding for the primary quantitative and qualitative research source data collected in the course of this study that will be presented and analysed in subsequent chapters. Equity concerns, namely regarding women apprentices, will be raised. Thirdly, this chapter will make general comments about the complex issue of skills shortage. It will introduce additional information and data from the Department of Employment, Workplace Relations and Small Business (DEWRSB) as part of this discussion. All data in this chapter are from one or more of four sources:

(1) Australian Bureau of Statistics (ABS) – for all aggregate occupational data for tradespeople, etc., according to the Australian Standard Classification of Occupations (ASCO) (Cat. no. 1220.0).

(2) National Centre for Vocational Educational Research (NCVER) – for all national apprenticeship data by ASCO code.

(3) Victorian Office of Post Compulsory Education, Training and Employment (OPCETE) Apprenticeship Administration Branch – for all Victorian apprenticeship data.

(4) Department of Employment, Workplace Relations and Small Business (DEWRSB) Skills Analysis and Research Branch – for additional data on skills shortages.

To simplify the following tables and charts the above numbers will be used to identify particular sources. Emphasis throughout will be on the numbers of apprentices and trainees 'in training' at any time. Figures for 'commencements' and 'completions' in a given period will not be used except to illustrate shifts.

Readers should also note that it is difficult to patch together consistent State by State and national figures for apprentice and trainee numbers. Reasons include different definitions and collection categories used between States, changes in definitions and classifications of occupations (i.e., from the former Classification and Classified List of Occupations (CCLO) to ASCO in May 1986), and blurring between 'apprentice' and 'trainee' categories after 1997. Moreover, not all of the

published and other tables available are compatible. It will be clear below that such considerations have affected the shape of the data displayed. Note, too, that when we refer to 'electrical' we mean the broader trade grouping encompassing:

- Electricians
- Refrigeration and airconditioning mechanics
- Electrical distribution tradespersons (linespersons)
- Electronic instrument tradespersons
- Electronic and office equipment tradespersons
- Communications tradespersons.

National apprentice and trainee figures

National totals for the numbers of apprentices and trainees in training are subject to various influences: economic conditions, structural shifts in labour markets, technological change, new training schemes and frameworks, government budgetary allocations, and other, including data collection, influences. These should be borne in mind in the following discussion. Table 3.1 presents aggregates of the number of apprentices and trainees in training in Australia from 1984-85 to 1996-97. Clearly, the numbers of apprentices have fallen, as a proportion and in raw terms.

Table 3.1 Apprentices and trainees in training, Australia 1984-85 to 1996-97

June 30 of the year shown	Apprentices in training	Trainees in training	Total apprentices and trainees in training	Apprentices in training	Trainees in training	Total apprentices and trainees in training
	No.	No.	No.	%	%	%
1984-85	128,600	0	128,600	100.0	0.0	100.0
1985-86	130,400	1,000	131,400	99.2	0.8	100.0
1986-87	138,900	6,400	145,300	95.6	4.4	100.0
1987-88	147,100	9,200	156,300	94.1	5.9	100.0
1988-89	151,700	12,200	163,900	92.6	7.4	100.0
1989-90	161,000	11,800	172,800	93.2	6.8	100.0
1990-91	151,000	9,200	160,200	94.3	5.7	100.0
1991-92	142,900	9,000	151,900	94.1	5.9	100.0
1992-93	122,700	14,900	137,600	89.2	10.8	100.0
1993-94	123,300	7,800	131,100	94.1	5.9	100.0
1994-95	122,900	12,000	134,900	91.1	8.9	100.0
1995-96	124,400	29,700	154,100	80.7	19.3	100.0
1996-97	123,100	47,800	170,900	72.0	28.0	100.0

Tables 3.2 to 3.4 break down the total number of apprentices and trainees into occupational categories according to ASCO code. The NCVER (1999) discusses the distinction between apprentice and trainee numbers in the following terms:

> 'Until 1996/97 trainees can generally be identified as appearing in occupational groups 1,2,3,5,6,7 and 8, while apprentices are

generally found in the groups prefixed with 4. When first introduced in 1985, traineeships were offered mainly in clerical and retail occupations and were generally of one year in duration. Apprenticeships at that time were generally four years in duration and were offered in traditional trade based occupations. Since 1985, the number of trainees in training have grown rapidly as a variety of new traineeships have been developed in industry areas such as horticulture, agriculture, manufacturing, utilities and transport and storage. The years from 1995 to 1997 have seen massive increases in both the number of trainees in training and the occupational types of traineeships offered. Trainees in Clerical occupations rose by 124% between 30 June 1995 and 30 June 1997, while for the same period trainees in training in Sales and Personal Service rose by 323%, Plant Operators rose by 306% and Labourers and Related Workers increased by over 770%. Though traineeships can now be found across a number of different occupational groups, the huge increase in Labourers and Related Workers is of particular significance as most of the traineeships appearing in this group are trade based. Some examples of trade based traineeships include automotive painting, fitting, telecommunications installing, slaughtering, printing, meat processing, carpet laying, panel beating and engineering.'

This description helps also to explain why the aggregate published 'apprentices and trainees' numbers have increased at the same time as apprentice numbers have generally fallen. Table 3.2 presents the raw numbers. Table 3.3 presents the data as percentages of total apprentices and trainees in training. Table 3.4, focuses on the traditional trade grouping (those with an ASCO code number starting with 4, as explained in the quotation above). More than 80 per cent within this grouping are apprentices. Table 3.4 indicates that the proportions of the automotive, building, food, horticulture and miscellaneous have increased on average from 1984-85, while other trades (including electrical) have declined proportionately to a small degree. Note, however, that these are proportions. The raw numbers in table 3.2 depict absolute falls in all traditional trades other than food.

Table 3.2 Apprentices and trainees in training at June 30 according to occupational grouping (ASCO), Australia 1985-99 (No.)

	Managers & administrators	Professionals	Para-professionals	Metal fitters & machinists	Other metal	Electrical	Building	Printing	Auto	Food	Horticulture	Misc	Hair	Other	Clerks	Sales & personal	Plant & mach operators & drivers	Labourers & related workers	APPRENTICE TOTAL	TRAINEE TOTAL	TRAINEE TOTAL IN TRADITIONAL GROUP	TOTAL APPRENTICES & TRAINEES
	(1)	(2)	(3)	(41)	(41)	(43)	(44)	(4#)	(42)	(45)	(46)	(49)	(4931)	(4900)	(5/6)	(8)	(7)	(9)				
1984-85	0	0	0	n.a.	44,500	18,300	21,900	3,400	6,000	11,000	n.a.	23,600	n.a.	n.a.	0	0	0	0	128,600	100	100	128,700
1985-86	0	0	0	n.a.	42,100	18,000	22,800	3,800	6,500	12,000	n.a.	25,200	n.a.	n.a.	900	0	0	100	130,400	1,000	0	131,400
1986-87	0	0	0	n.a.	43,400	17,900	25,200	4,300	7,300	13,200	n.a.	27,600	14,500	13,000	4,700	800	100	700	138,900	33,800	27,500	172,700
1987-88	0	0	100	15,200	11,600	20,900	27,700	4,700	23,800	13,900	3,200	26,000	14,000	12,000	7,100	700	400	900	147,100	35,100	25,900	182,200
1988-89	0	0	100	15,500	12,200	21,900	30,300	3,400	25,300	13,800	3,400	26,000	13,600	12,400	7,900	800	900	2,500	151,700	38,300	26,100	190,000
1989-90	100	0	100	16,200	13,400	23,300	32,700	4,500	27,100	14,300	3,500	25,900	13,200	12,800	7,400	2,800	600	900	161,000	37,800	25,900	198,800
1990-91	100	0	100	15,100	12,300	22,400	30,600	4,000	25,300	13,900	3,500	23,800	12,500	11,300	5,400	2,500	500	600	151,000	32,900	23,700	183,900
1991-92	100	0	100	14,400	11,600	20,900	28,800	3,600	23,400	13,900	3,400	23,000	12,200	10,800	5,100	2,600	500	600	142,900	32,100	23,100	175,000
1992-93	100	0	200	12,400	9,800	17,800	23,800	2,000	19,600	13,500	3,400	20,400	11,300	9,200	8,400	4,700	600	900	122,700	35,400	20,500	158,100
1993-94	100	0	100	11,200	9,500	16,500	25,500	2,000	18,900	15,200	3,500	20,800	11,200	9,600	3,700	2,800	500	700	123,300	28,500	20,600	151,800
1994-95	1,600	0	800	10,400	9,300	15,900	26,400	3,100	19,800	15,100	3,400	17,800	10,100	7,700	6,200	4,000	600	1,500	122,900	30,800	16,100	153,700
1995-96	1,800	100	2,200	11,300	9,900	16,700	25,900	3,300	21,100	16,300	3,400	17,700	10,000	7,700	9,900	11,700	1,400	5,300	124,400	51,300	18,900	175,700
1996-97	1,800	200	3,200	11,700	9,700	16,800	24,300	3,200	21,200	17,100	3,200	17,300	9,700	7,600	13,900	16,800	2,200	12,900	123,100	69,700	18,700	192,800
31 Dec 1998	2,240	1,380	6,540	20,350		17,030	25,220	n.a.	22,760	19,550	3,450	n.a.	9,740	n.a.	60,790		4,330	17,470	n.a.	n.a.	n.a.	219,040

Table 3.3 Apprentices and trainees in training at June 30 according to occupational grouping (ASCO), Australia 1985-99 % to total (No.)

	Managers & administrators	Professionals	Paraprofessionals	Metal fitters & machinists	Other metal	Electrical	Building	Printing	Auto	Food	Horticulture	Misc	Hair	Other	Clerks	Sales & personal	Plant & mach operators & drivers	Labourers & related workers	APPRENTICE TOTAL	TRAINEE TOTAL	TRAINEE TOTAL IN TRADITIONAL GROUP	TOTAL APPRENTICES & TRAINEES
	(1)	(2)	(3)	(41)	(41)	(43)	(44)	(4#)	(42)	(45)	(46)	(49)	(4931)	(4900)	(5/6)	(8)	(7)	(9)				
1984-85	0.00	0.00	0.00	n.a.	34.58	14.22	17.02	2.64	4.66	8.55	n.a.	18.34	n.a.	n.a.	0.00	0.00	0.00	0.00	99.92	0.08	0.08	100.00
1985-86	0.00	0.00	0.00	n.a.	32.04	13.70	17.35	2.89	4.95	9.13	n.a.	19.18	n.a.	n.a.	0.68	0.00	0.00	0.08	99.24	0.76	0.00	100.00
1986-87	0.00	0.00	0.00	n.a.	25.13	10.36	14.59	2.49	4.23	7.64	n.a.	15.98	8.40	7.53	2.72	0.46	0.06	0.41	80.43	19.57	15.92	100.00
1987-88	0.00	0.00	0.05	8.34	6.37	11.47	15.20	2.58	13.06	7.63	1.76	14.27	7.68	6.59	3.90	0.38	0.22	0.49	80.74	19.26	14.22	100.00
1988-89	0.00	0.00	0.05	8.16	6.42	11.53	15.95	1.79	13.32	7.26	1.79	13.68	7.16	6.53	4.16	0.42	0.47	1.32	79.84	20.16	13.74	100.00
1989-90	0.05	0.00	0.05	8.15	6.74	11.72	16.45	2.26	13.63	7.19	1.76	13.03	6.64	6.44	3.72	1.41	0.30	0.45	80.99	19.01	13.03	100.00
1990-91	0.05	0.00	0.05	8.21	6.69	12.18	16.64	2.18	13.76	7.56	1.90	12.94	6.80	6.14	2.94	1.36	0.27	0.33	82.11	17.89	12.89	100.00
1991-92	0.06	0.00	0.06	8.23	6.63	11.94	16.46	2.06	13.37	7.94	1.94	13.14	6.97	6.17	2.91	1.49	0.29	0.34	81.66	18.34	13.20	100.00
1992-93	0.06	0.00	0.13	7.84	6.20	11.26	15.05	1.27	12.40	8.54	2.15	12.90	7.15	5.82	5.31	2.97	0.38	0.57	77.61	22.39	12.97	100.00
1993-94	0.07	0.00	0.07	7.38	6.26	10.87	16.80	1.32	12.45	10.01	2.31	13.70	7.38	6.32	2.44	1.84	0.33	0.46	81.23	18.77	13.57	100.00
1994-95	1.04	0.00	0.52	6.77	6.05	10.34	17.18	2.02	12.88	9.82	2.21	11.58	6.57	5.01	4.03	2.60	0.39	0.98	79.96	20.04	10.47	100.00
1995-96	1.02	0.06	1.25	6.43	5.63	9.50	14.74	1.88	12.01	9.28	1.94	10.07	5.69	4.38	5.63	6.66	0.80	3.02	70.80	29.20	10.76	100.00
1996-97	0.93	0.10	1.66	6.07	5.03	8.71	12.60	1.66	11.00	8.87	1.66	8.97	5.03	3.94	7.21	8.71	1.14	6.69	63.85	36.15	9.70	100.00
31 Dec 1998	1.02	0.63	2.99	9.29		7.77	11.51	n.a.	10.39	8.93	1.58	n.a.	4.45	n.a.	27.75		1.98	7.98	n.a.	n.a.	n.a.	100.00
Average	*0.31*	*0.06*	*0.49*	*7.72*	*5.64*	*11.11*	*15.54*	*2.08*	*12.57*	*8.45*	*1.91*	*13.68*	*6.66*	*5.90*	*5.24*	*2.02*	*0.47*	*1.65*	*81.41*	*18.59*	*10.81*	*100.00*

Table 3.4 Apprentices and trainees in training at June 30 according to traditional trade occupational grouping (ASCO), Australia 1985-97 % to total

	Metal fitters & machinists	Other metal	Electrical	Building	Printing	Auto	Food	Horticulture	Misc	Hair	Other	APPRENTICE TOTAL	TRAINEE TOTAL IN TRADITIONAL GROUP
	(41)	(41)	(43)	(44)	(4#)	(42)	(45)	(46)	(49)	(4931)	(4900)		
1984-85	n.a.	34.60	14.23	17.03	2.64	4.67	8.55	n.a.	18.35	n.a.	n.a.	100.00	0.08
1985-86	n.a.	32.29	13.80	17.48	2.91	4.98	9.20	n.a.	19.33	n.a.	n.a.	100.00	0.00
1986-87	n.a.	31.25	12.89	18.14	3.10	5.26	9.50	n.a.	19.87	10.44	9.36	100.00	19.80
1987-88	10.33	7.89	14.21	18.83	3.20	16.18	9.45	2.18	17.68	9.52	8.16	100.00	17.61
1988-89	10.22	8.04	14.44	19.97	2.24	16.68	9.10	2.24	17.14	8.97	8.17	100.00	17.21
1989-90	10.06	8.32	14.47	20.31	2.80	16.83	8.88	2.17	16.09	8.20	7.95	100.00	16.09
1990-91	10.00	8.15	14.83	20.26	2.65	16.75	9.21	2.32	15.76	8.28	7.48	100.00	15.70
1991-92	10.08	8.12	14.63	20.15	2.52	16.38	9.73	2.38	16.10	8.54	7.56	100.00	16.17
1992-93	10.11	7.99	14.51	19.40	1.63	15.97	11.00	2.77	16.63	9.21	7.50	100.00	16.71
1993-94	9.08	7.70	13.38	20.68	1.62	15.33	12.33	2.84	16.87	9.08	7.79	100.00	16.71
1994-95	8.46	7.57	12.94	21.48	2.52	16.11	12.29	2.77	14.48	8.22	6.27	100.00	13.10
1995-96	9.08	7.96	13.42	20.82	2.65	16.96	13.10	2.73	14.23	8.04	6.19	100.00	15.19
1996-97	9.50	7.88	13.65	19.74	2.60	17.22	13.89	2.60	14.05	7.88	6.17	100.00	15.19
AVERAGE	*9.69*	*7.96*	*13.95*	*19.56*	*2.54*	*16.44*	*10.48*	*2.50*	*16.66*	*8.76*	*7.51*	*100.00*	*13.81*

Table 3.5 illustrates the trends suggested in table 3.2 by showing the average annual percentage changes for apprentices and trainees in training across the years 1988-97 (estimated using an exponential growth trend). The starting date was chosen to avoid problems of changes in definitions of categories in table 3.2. Also shown are the percentage changes from 30 June 1997 to 31 December 1998 and from the first relevant year in the table to either 31 December 1998 or 30 June 1997. The 'relevant year' is the first year in table 3.2 following definitional change (see underlined data for the metal and automotive trades). The choice between 31 December 1998 or 30 June 1997 is governed by availability of data. It is abundantly clear that the increases have been in trainee numbers in non-traditional areas. In particular, the most recent increases hailed by the Federal government are overwhelmingly for shorter term traineeships in non-trades areas.

Table 3.5 Apprentices and trainees in training at June 30 according to occupational grouping (ASCO), Australia 1985-97 annual % change

ASCO occupational grouping	Average annual per cent change 1988-97	Per cent change 30 June 1997 to 31 December 1998	Per cent change to 31 December 1998 or 30 June 1997
	%	%	%
Managers & administrators	*	24.44	*
Professionals	*	590.00	*
Para-professionals	47.31	104.38	*
Metal fitters & machinists	-4.63	-4.91	-24.07
Other metal trades	-3.48		
Electrical	-4.07	1.37	-6.94
Building	-2.45	3.79	15.16
Printing	-4.85	n.a.	-5.88
Automotive	-2.95	7.36	-4.37
Food	2.17	14.33	77.73
Horticulture	-0.09	7.81	7.81
Miscellaneous	-5.17	n.a.	-26.69
Hairdressing	-4.27	0.41	-33.10
Other trades	-6.24	n.a.	-45.54
Clerks	3.77	98.01	1005.00
Sales & personal service	35.48		
Plant & machine operators & drivers	11.94	96.82	2625.00
Labourers & related workers	21.88	35.43	
APPRENTICE TOTAL	-3.05	n.a.	-4.28
TRAINEE TOTAL	4.25	n.a.	*
TRAINEES IN TRADITIONAL TRADE GROUP	-4.80	n.a.	*
TOTAL APPRENTICES AND TRAINEES	-1.21	13.61	70.19

* Early figures too small to give a meaningful percentage (see table 3.2).

National electrical apprentice training data

Chart 3.1 shows both the national electrical apprenticeship numbers from 1984-85 to 31 December 1998. No later figures are available. We believe we are justified in referring to the vast majority of the 'apprentice and trainee' numbers in the

electrical trades as apprentices. This is certainly the case in Victoria, where the trainee numbers are negligible.

At this point, however, it is important to set the data in context. As noted above, totals for the numbers of apprentices in training are subject to various influences: economic conditions, structural shifts in labour markets, technological change, new training schemes and frameworks, government budgetary allocations, and other, including data collection influences. To some extent we can eliminate one of these (structural shifts) if we consider trends in the ratio of apprentices to tradespeople. This also partly eliminates another (economic conditions) but, notwithstanding a drop in the first year intake, labour hoarding of second, third and fourth year apprentices in downturns is likely to be greater than that of tradespeople (and vice versa). Hence, for example, we would expect the ratio of apprentices to tradespeople to rise when the economy dips (e.g., the early 1990s). Chart 3.2 shows the national ratio of apprentices to electrical tradespeople. (Note that some trainees are within this group but the number, we argue, will be small. Note also that, in line with ABS collection periods, the tradespersons data are for May of the year shown. The final apprentice figure is for 31 December 1998.)

The pictures portrayed in the accompanying charts are clear. Both the absolute numbers of electrical apprentices and the ratio of apprentices to tradespeople have declined over the period, especially after the early 1990s. The data for the 1990s confirms the feeling expressed by Gospel (1994, p.54). When reporting on the data for apprentices in the metalworking section he said, this '...prompts the question whether the apprenticeship system in that industry in particular and in manufacturing in general has entered upon a period of long term decline'.

A small increase in apprentice numbers has occurred recently, but this is not really reflected in the ratio of apprentices to tradespeople. The trends are downward in both cases. How the national data compare with those in Victoria will be assessed in the next section.

Chart 3.1 Total electrical apprentices, Australia 1984-85 to 31 December 1998

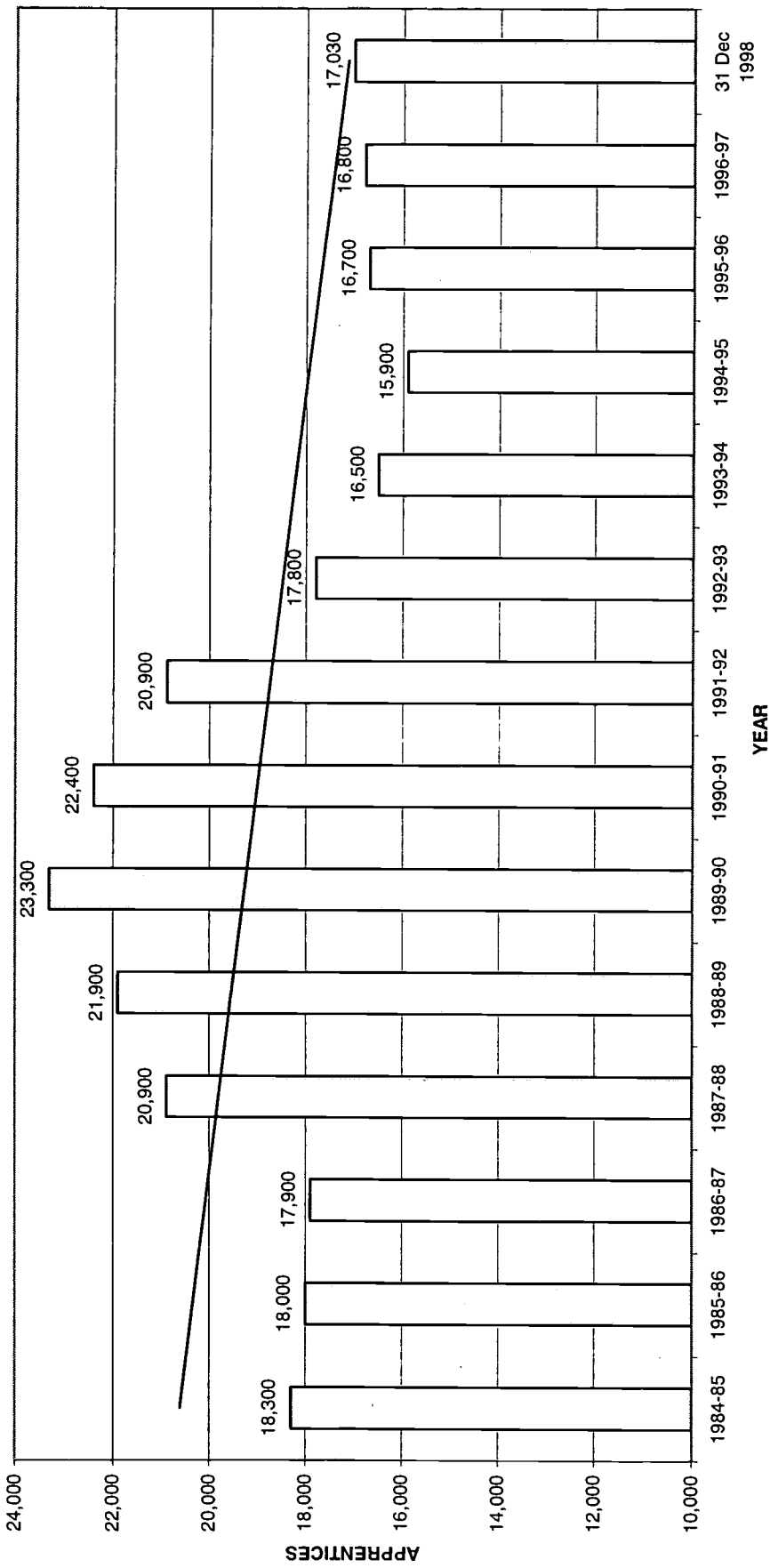
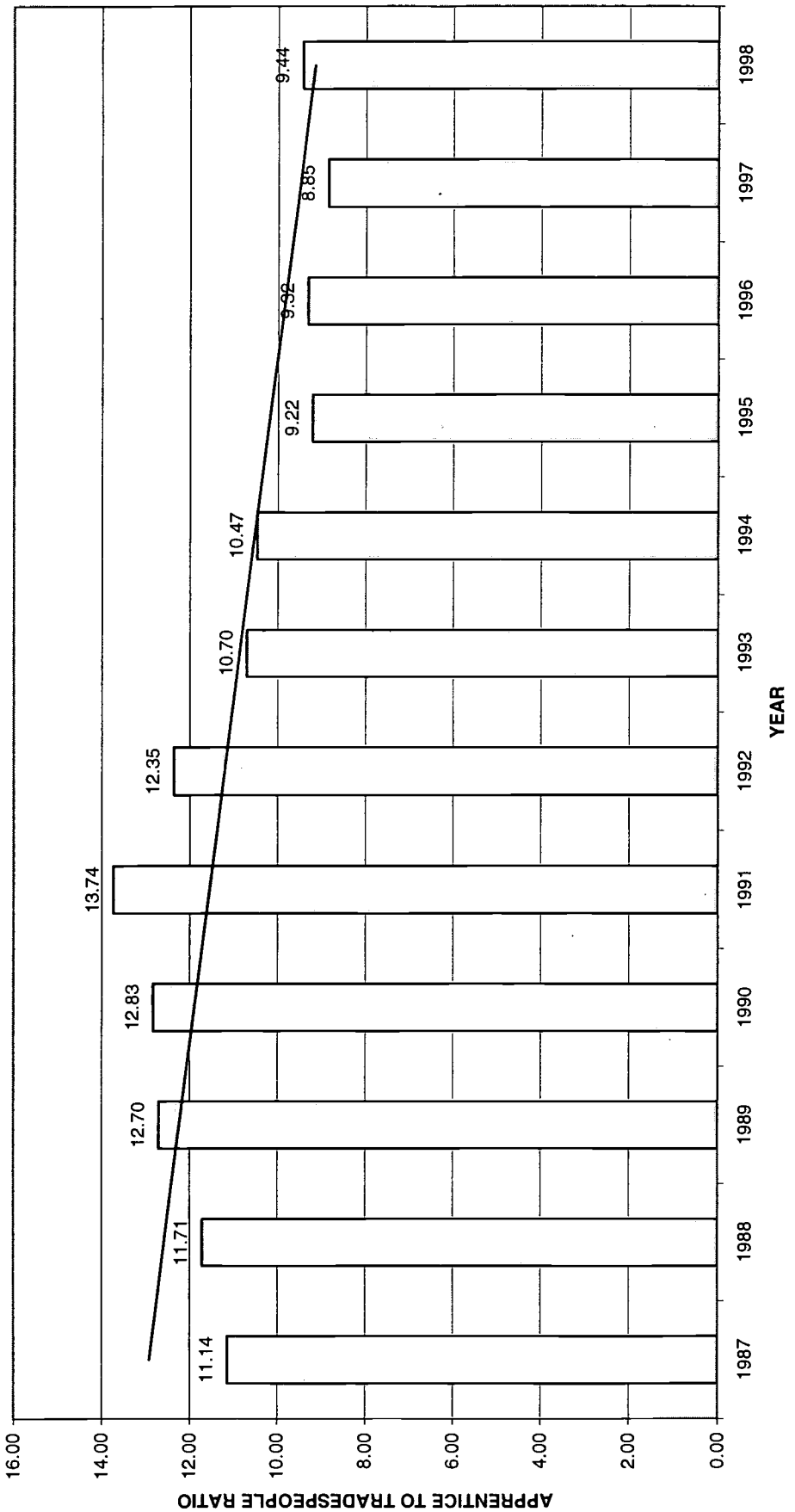


Chart 3.2 Apprentices to tradespersons ratio %, Australia 1987 to 31 December 1998



Broad Victorian electrical apprentice training data

The Victorian data are even more stark than those nationally. Charts 3.3 and 3.4 present the Victorian equivalents of the national figures presented above. They show that the Victorian absolute numbers of electrical apprentices and the ratio of apprentices to tradespeople have also declined over the period, again especially after the early 1990s. However, the decline has been steeper, with the Victorian proportion of the national electrical apprentice numbers falling from an average of about 25 per cent in the late 1980s to 21 per cent in the early 1990s to 19 per cent in the late 1990s. More of a worry is that the ratio of apprentices to tradespeople in Victoria has fallen from about the national level to a much lower level today.

Chart 3.5 sets the Victorian ratio of apprentices to tradespeople against the national ratio. The trend, and the times at which the most noticeable changes occurred, are evident. From approximate equivalence at 13 per cent in 1990 a cleavage began to open in 1991-92, and it has been maintained and even widened since. Apprentice numbers in training are affected by three factors: commencements, completions, and drop-out rates. More detailed analysis of the Victorian data in the next section will expose these factors to scrutiny. For now, it is important to explore more closely the relationship between the Victorian and Australian data. Table 3.6 does this. Particular attention should be given to the last two rows. These examine change from 30 June 1985 to 31 December 1998. Significantly, 78 per cent of the change in the national electrical apprentice total was caused by the drop in the number of Victoria's electrical apprentices. All other States combined contributed only 22 per cent of the fall.

Chart 3.3 Total electrical apprentices, Victoria 30 June 1981 to 28 February 2000

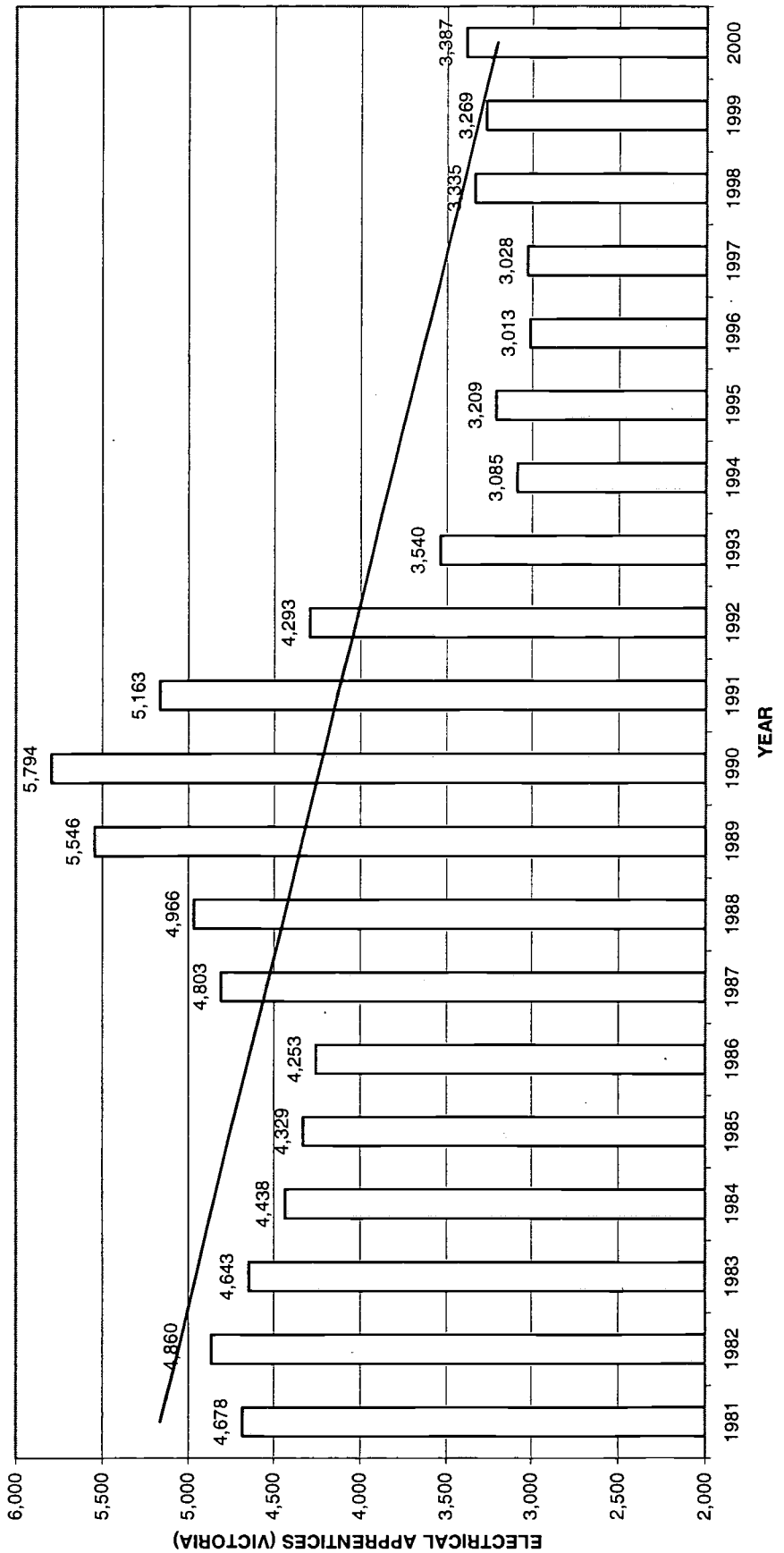


Chart 3.4 Apprentices to tradespersons ratio %, Victoria 30 June 1987 to 28 February 2000

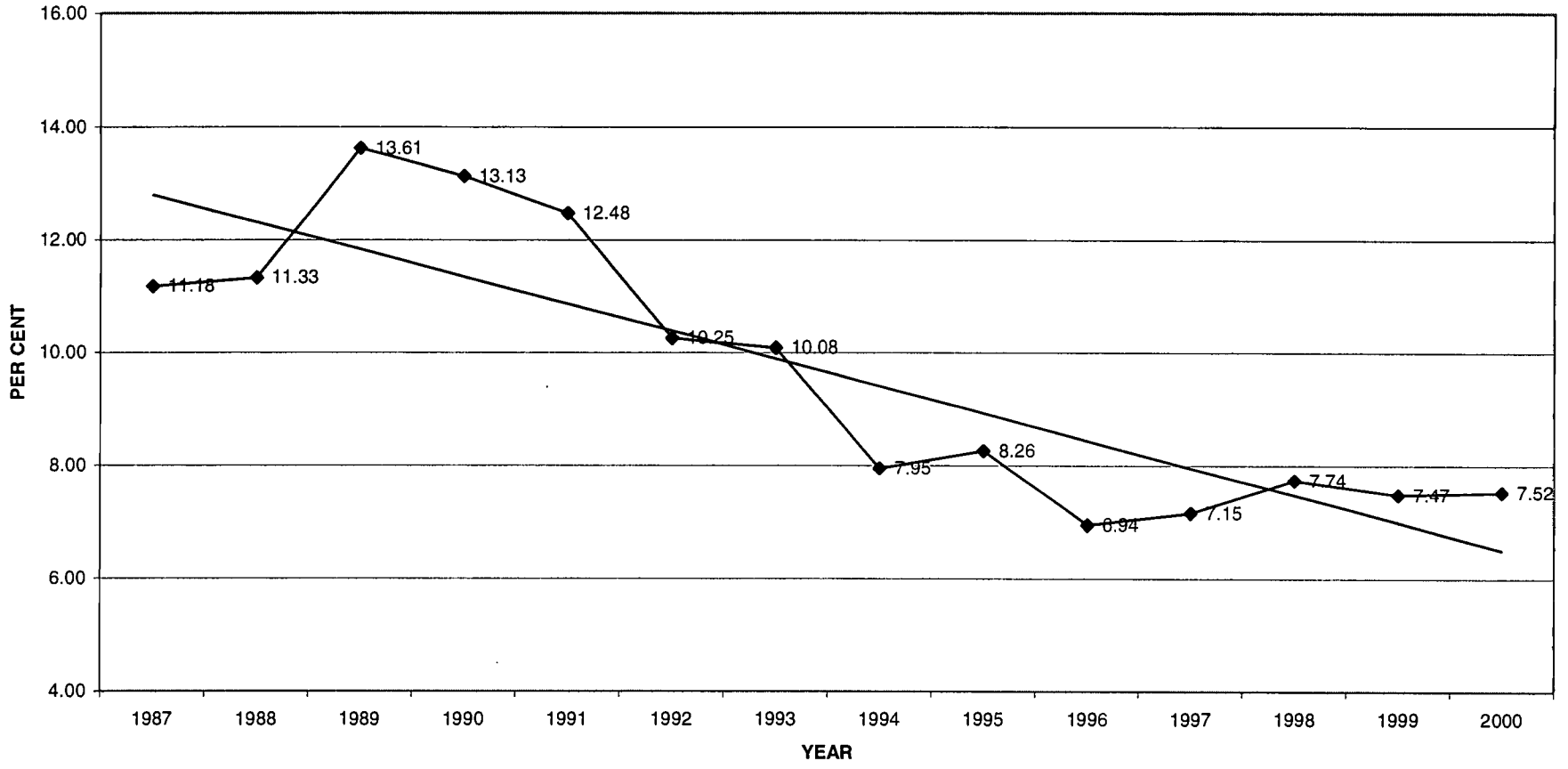


Chart 3.5 Apprentices to tradespersons ratio, Victoria vs. Australia 30 June 1987 to 31 December 1998

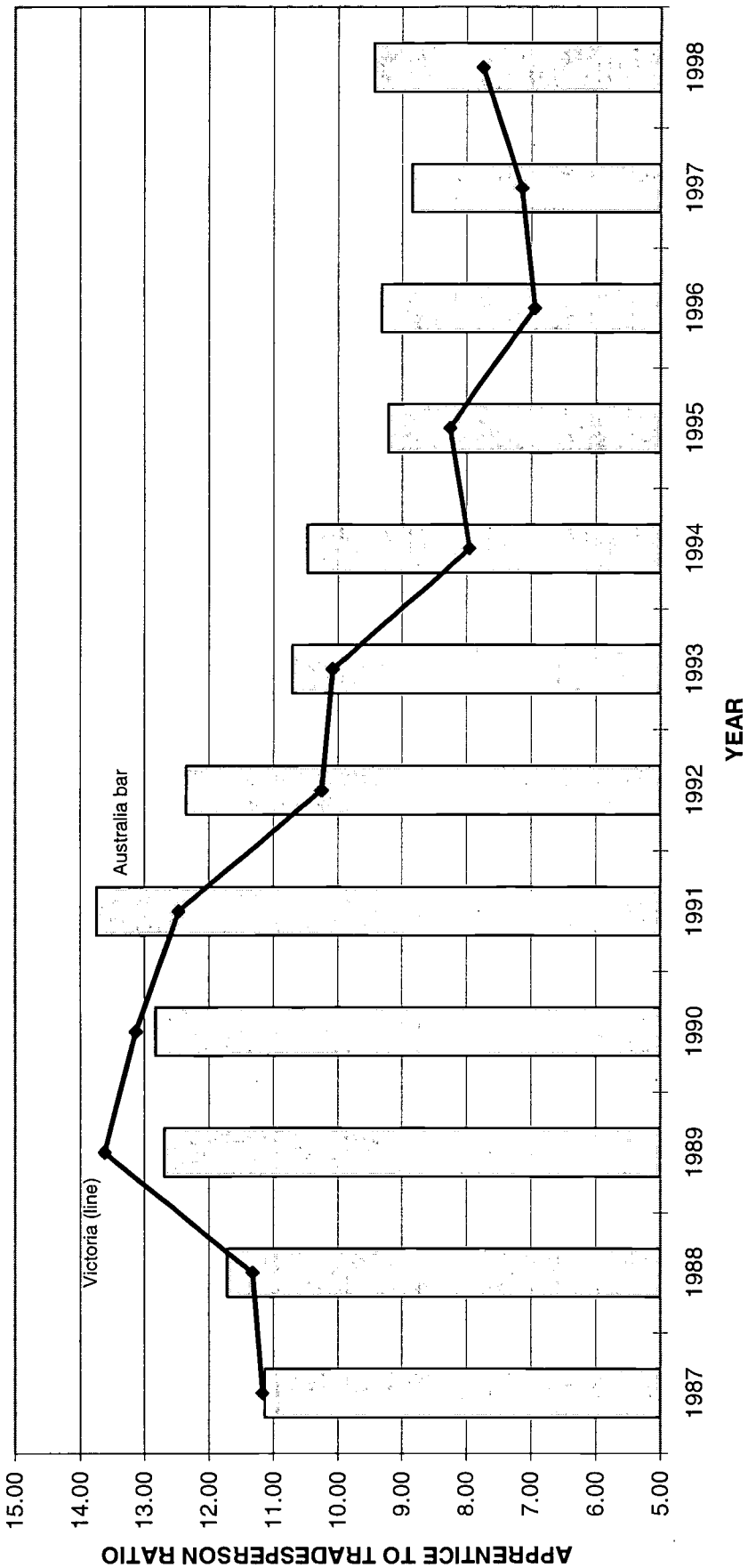


Table 3.6 Changes in electrical apprentice numbers in Victoria, other States, and Australia, 30 June 1985 to 31 December 1998

At 30 June of the year shown	Apprentices in training, Australia	Apprentices in training, Victoria	Apprentices in training, other States	Change in Victorian electrical apprentices in training	Change in other States' electrical apprentices in training
1984-85	18,300	4329	13,971	n.a.	n.a.
1985-86	18,000	4253	13,747	-76.00	-224.00
1986-87	17,900	4803	13,097	550.00	-650.00
1987-88	20,900	4966	15,934	163.00	2837.00
1988-89	21,900	5546	16,354	580.00	420.00
1989-90	23,300	5794	17,506	248.00	1152.00
1990-91	22,400	5163	17,237	-631.00	-269.00
1991-92	20,900	4293	16,607	-870.00	-630.00
1992-93	17,800	3540	14,260	-753.00	-2347.00
1993-94	16,500	3085	13,415	-455.00	-845.00
1994-95	15,900	3209	12,691	124.00	-724.00
1995-96	16,700	3013	13,687	-196.00	996.00
1996-97	16,800	3028	13,772	15.00	85.00
31 Dec 1998	17,030	3335	13,695	307.00	-77.00
Change 1985-98	*-1270*	*-994*	*-276*	*-994*	*-276*
% contribution to change 1985-98	*100.00*	*78.27*	*21.73*	*78.27*	*21.73*

This, of course, begs the question: why? Why does the ratio of apprentices to tradespeople in Victoria decline more steeply than the Australian average ratio of apprentices to tradespeople? Anecdotal evidence suggests that this may have something to do with the extensive corporatisation and privatisation of public enterprises that occurred in Victoria in the relevant years. The power industry, which was a major employer of electrical apprentices in this State, provides one such case. The rail industry is another. Further evidence will be discussed in the next section and subsequent chapters (see, e.g., chapter 6 'Skill needs and skills shortages', which presents evidence from the field).

However, it is important to consider other possible explanations as well. One of these might be that the steeper decline in the ratio is because of the relative decline in manufacturing employment. Given Victoria's historically larger manufacturing base, this decline may thus have a disproportionate effect here and cause apprentice intakes to be cut by a greater amount. This plausible answer, however, turns out not to be convincing in light of the evidence. One way to show this is to consider the ratio of Victorian electrical apprentices to Australian electrical tradespeople (A_V/T_A) as being a good indicator of Victorian trends and influences against a national benchmark (see column two of table 3.7 below). This ratio is itself the product the two key ratios. These are the ratio of Victorian electrical apprentices to Victorian electrical tradespeople (A_V/T_V) and the ratio of Victorian electrical tradespeople to Australian electrical tradespeople (T_V/T_A). That is:

$$(A_V/T_A) = (A_V/T_V) \,.\, (T_V/T_A)$$

Now the latter ratio (T_V/T_A) is important because it is a good proxy for structural shifts in the Australian labour market. If manufacturing decline in Victoria had

resulted in a reduced call for electricians compared with other States it would show up in this ratio. Moreover, it is possible to compare the trends for each ratio in terms of their average percentage changes per annum and to estimate the relative contribution of each to the change in ratio of Victorian electrical apprentices to Australian electrical tradespeople (A_V/T_A). The results are given in table 3.7.

Table 3.7 Key influences on Victorian electrical apprentice ratios and numbers, 1986-87 to 31 December 1998

At 30 June of the year shown for apprentice data; May for tradesperson data	Victorian electrical apprentices to Australian electrical tradespeople (A_V/T_A) %	Victorian electrical apprentices to Victorian electrical tradespeople (A_V/T_V) %	Victorian electrical tradespeople to Australian electrical tradespeople (T_V/T_A) %
1986-87	2.99	11.18	26.76
1987-88	2.78	11.33	24.56
1988-89	3.22	13.61	23.62
1989-90	3.19	13.13	24.30
1990-91	3.17	12.48	25.38
1991-92	2.54	10.25	24.76
1992-93	2.13	10.08	21.11
1993-94	1.96	7.95	24.61
1994-95	1.86	8.26	22.51
1995-96	1.68	6.94	24.22
1996-97	1.60	7.15	22.32
31 Dec 1998	1.85	7.74	23.88
*Average annual % change 1987-98**	*-6.48*	*-5.64*	*-0.89*
*Approximate % contribution to change 1987-98***	*100.00*	*86.20*	*13.80*

* Exponential average annual percentage growth estimate across the years shown.

** Presented as percentages of column 2, based on the approximately additive properties of exponential growth estimates.

In words, this table illustrates that the trend decline in the Victorian electrical apprentices to Victorian electrical tradespeople (A_V/T_V) ratio was by far the stronger influence. More than 86 per cent of the decline in Victorian electrical apprentice numbers against the national electrical tradesperson benchmark was attributable to the decline in the numbers of apprentices as against tradespeople in this State. Only approximately 13.20 per cent of the shift can be said to be a result of national trends in the labour market for electrical tradespeople, as captured by the ratio of the number of Victorian electricians to the national total. Note also that the effect of corporatisation and privatisation of public enterprises will also be working to reduce the tradesperson ratio, too (see, e.g., Watson 2000, as quoted in chapter 6 'Skill needs and skills shortages'). This means that the relative decline in apprentice numbers has been even more severe. It lends support to the view that declining public sector employment of electrical apprentices is the cause of the divergence from national trends.

The Victorian electrical apprentice data in detail

In this section we will present detailed Victorian apprentice training data. Included in table 3.8 below are Victorian data for apprentices in training, commencements and completions. Also estimated are the attrition (drop-out) figures, an issue of some concern to the NCVER recently (a major study having been tendered on this subject). The latter are estimated here by first calculating a notional figure for apprentices in training at the end of a given year (in training at the end of the previous year *plus* commencements *less* completions) and subtracting it from the actual figure for that year (see also DEWRSB 1999a, attachment A). At the end of this section a data appendix will be cited that identifies the broad sector or type of employing organisation that currently employs apprentices generally. Implications for Victoria will be discussed briefly.

Table 3.8 Victorian electrical apprentices in training, commencements & completions by gender, 1980-81 to 28 February 2000

	Apprentices 'in training' at June 30 of year shown			New apprentice 'commencements' for year to June 30 of year shown			Apprenticeship 'completions' for year to June 30 of year shown			Notional apprentices 'in training' (year end + 'commencements' - 'completions')			Apprenticeship attrition ('in training' actual - 'in training' notional)			Women apprentices 'in training' to total %
	Gender			Gender			Gender			Gender			Gender			
	M	F	Total	M	F	Total	M	F	Total	M	F	Total	M	F	Total	
1981			4,678			1,085			1,097							
1982			4,860			1,352			1,049			4,981			-121	
1983			4,643			1,235			1,169			4,926			-283	
1984			4,438			996			1,155			4,484			-46	
1985			4,329			999			1,203			4,234			95	
1986			4,253			1,060			1,161			4,228			25	
1987			4,803			1,565			818			5,000			-197	
1988	4,902	64	4,966			1,440			1,005			5,238			-272	1.29
1989	5,470	76	5,546			1,739			1,003			5,702			-156	1.37
1980	5,701	93	5,794			1,790			1,107			6,229			-435	1.61
1991	5,073	90	5,163			993			1,170			5,617			-454	1.74
1992	4,212	81	4,293	759	20	779	1,160	18	1,178			4,764			-471	1.89
1993	3,475	65	3,540	817	16	833	1,313	20	1,333	3,716	77	3,793	-241	-12	-253	1.84
1994	3,034	51	3,085	993	17	1,010	1,258	28	1,286	3,210	54	3,264	-176	-3	-179	1.65
1995	3,167	42	3,209	1,138	14	1,152	710	12	722	3,462	53	3,515	-295	-11	-306	1.31
1996	2,977	36	3,013	637	10	647	609	9	618	3,195	43	3,238	-218	-7	-225	1.19
1997	2,996	32	3,028	773	11	784	646	9	655	3,104	38	3,142	-108	-6	-114	1.06
1998	3,304	31	3,335	1,011	9	1,020	683	11	694	3,324	30	3,354	-20	1	-19	0.93
1999	3,233	36	3,269	1155	15	1,170	623	5	628	3,836	41	3,877	-603	-5	-608	1.10
2000	3,355	32	3,387	929	5	934	494	5	499	3,668	36	3,704	-313	-4	-317	0.94
AVG	*3,915*	*56*	*4,182*	*912*	*13*	*1,129*	*833*	*13*	*978*	*3,439*	*47*	*4,384*	*-247*	*-6*	*-228*	*1.34*

The data in table 3.8 include gender breakdowns where the figures are available. As can be seen, the numbers of women electrical apprentices are small and are falling. The commencements, completions and attrition figures, illustrated also in charts 3.6 and 3.7, are also useful to help to reflect on why electrical

apprentice numbers in Victoria have declined. Clearly the coincidence of falling commencements in the early 1990s, together with relatively higher completions and a high level of attrition, have set a trend from which it has been difficult to recover. A drop in commencements in 1996 and a rise in attrition in the later 1990s have exacerbated the problem. Note also that the charts show that both commencements and completions are on average lower in the 1990s than they were in the 1980s, but the level of attrition is on average higher. Note also that table 3.8 provides evidence that women have been affected most by declining commencement levels. Charts 3.8 and 3.9 depict clearly how the numbers of women entering the electrical trades rose until the early 1990's when they began to decline and, indeed, wither. Chart 3.8 presents the raw data and trend. Chart 3.9 presents this data in percentage terms. The reduction in the incidence of women apprentices clearly is a contributing factor to the overall decline in the ratio of electrical apprentices to tradespeople in Victoria. There are also considerable concerns regarding equity revealed by this data.

Appendix 4 'National Centre for Vocational Educational Research data on employer type' breaks down the Australian totals for apprentices and trainees by state and employer type. While the figures are aggregated and include trainees, some useful comments can be made about the 'in training' numbers at 31 December 1998. Readers can refer to the appendix for all of the data or to table 3.9 for a relevant summary. This table contains some conclusions relevant to Victoria. These, in turn, address some of the detailed research questions outlined in appendix 2.

Chart 3.6 Electrical apprentice commencements & completions, Victoria 1980-81 to 28 February 2000

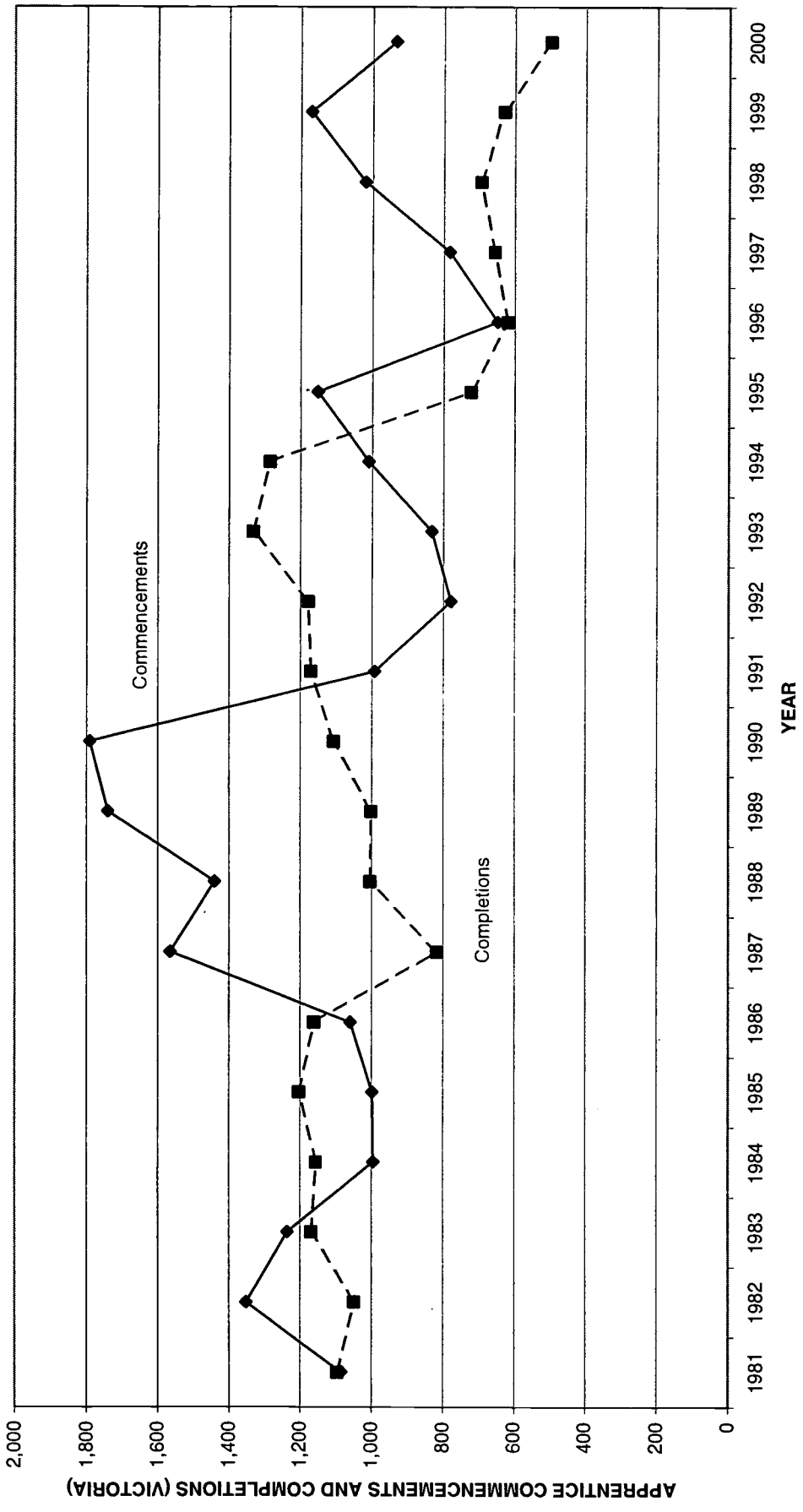


Chart 3.7 Electrical apprentice attrition, Victoria 1980-81 to 28 February 2000

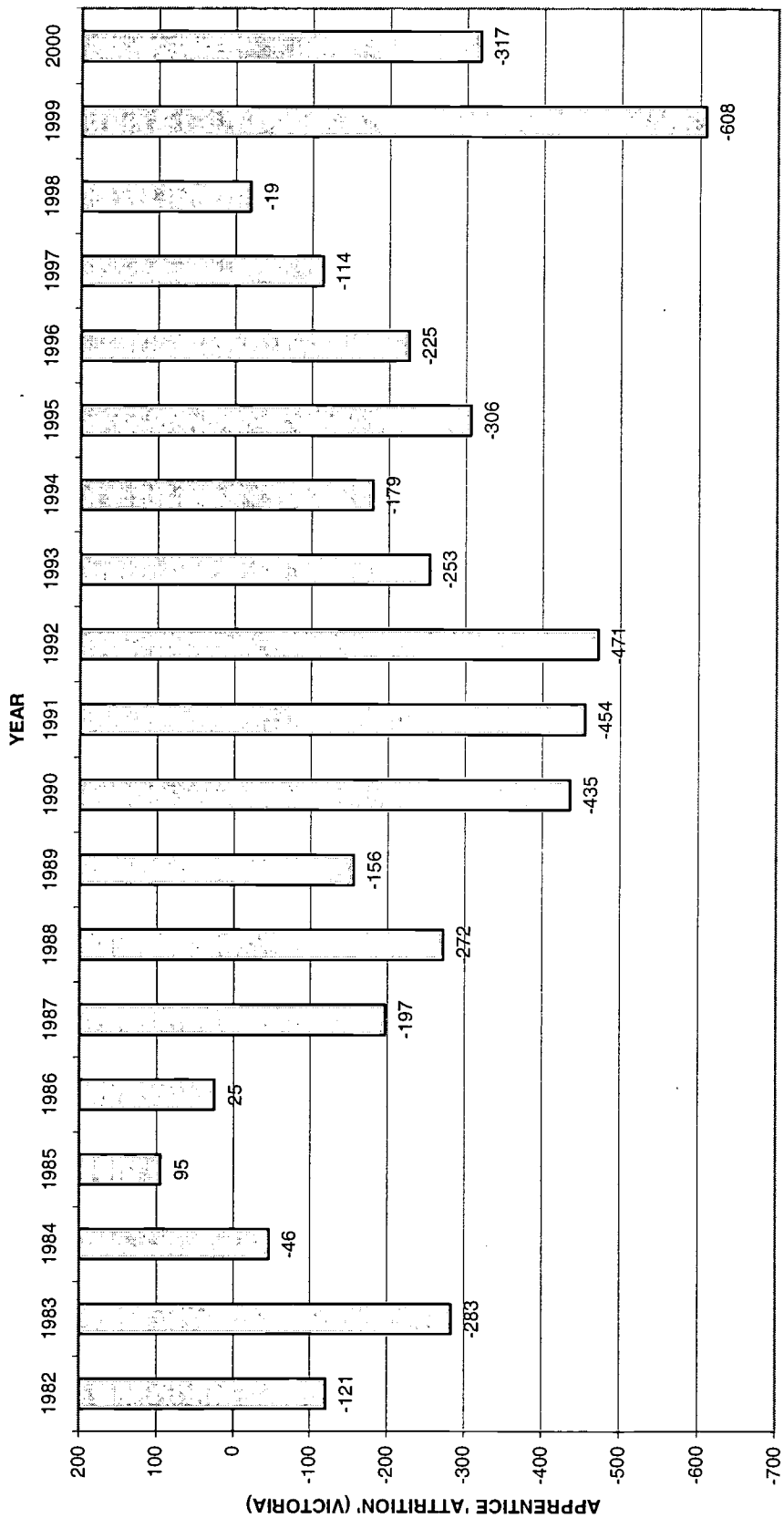


Chart 3.8 Women electrical apprentices, Victoria 1980-81 to 28 February 2000

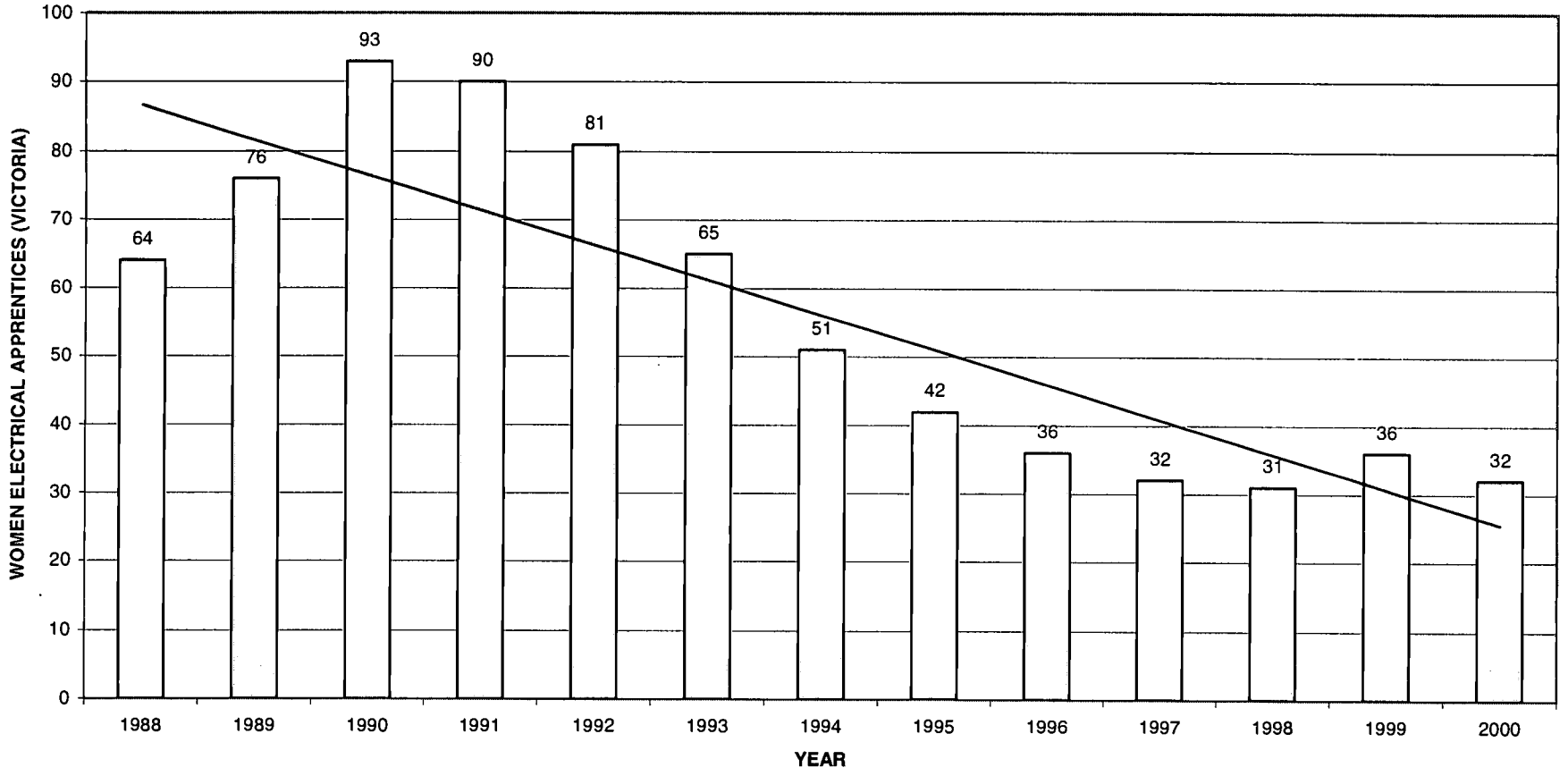


Chart 3.9 Women electrical apprentices % to total, Victoria 1980-81 to 28 February 2000

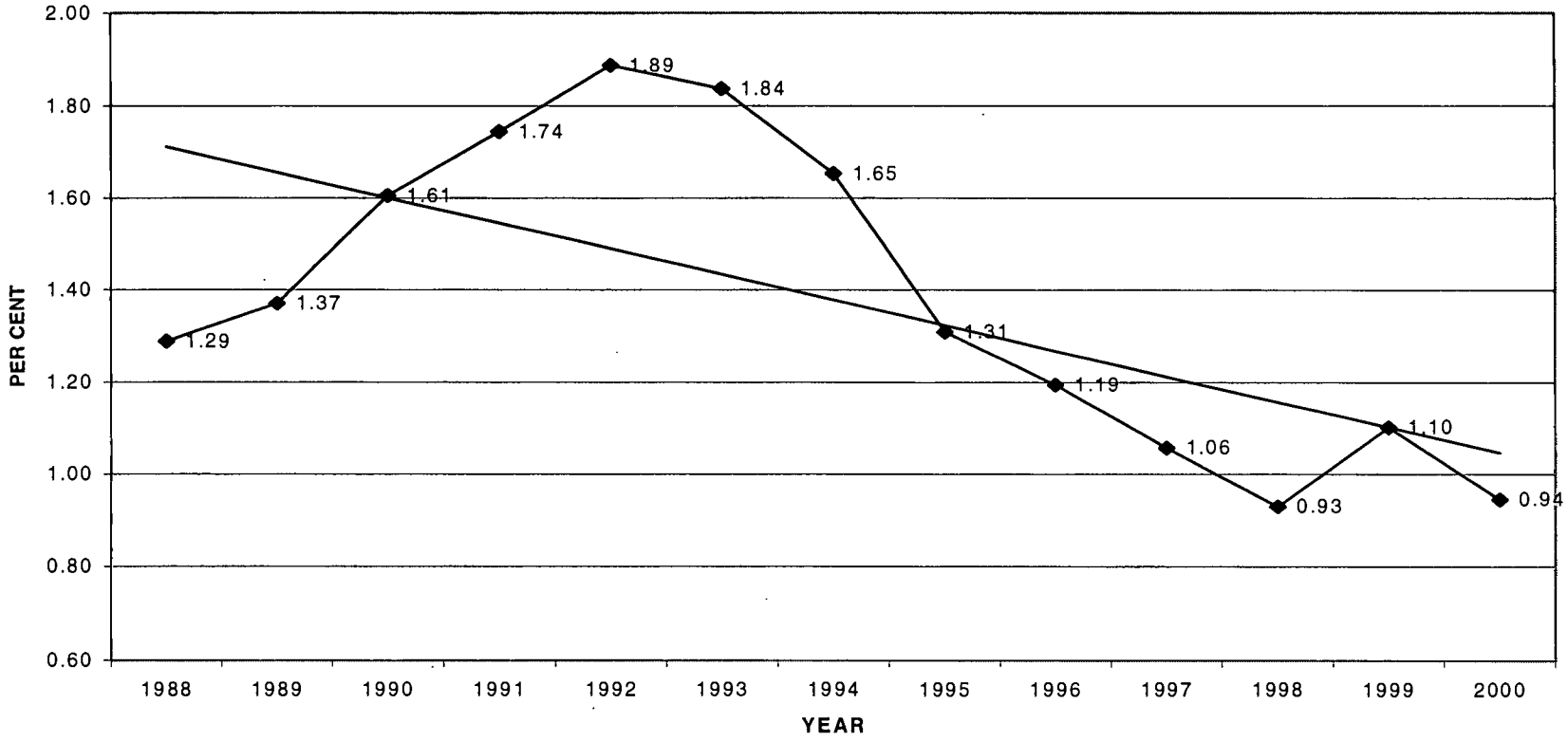


Table 3.9 Apprentices & trainees by employer type, Victoria, NSW & Australia 31 December 1998

	NSW	Victoria	Australia	NSW % to total	Victoria % to total	Australia % to total
Private sector	40,810	50,850	175,720	78.88	86.64	80.22
Group training scheme (GTS)	5,910	7,430	28,760	11.42	12.66	13.13
Total private & GTS	*46,720*	*58,280*	*204,480*	*90.30*	*99.30*	*93.35*
Government business enterprise	2,650	0	3,290	5.12	0.00	1.50
Local government	690	220	2,780	1.33	0.37	1.27
State government	910	50	6,790	1.76	0.09	3.10
Commonwealth government	660	140	1,580	1.28	0.24	0.72
Total public sector	*4,910*	*410*	*14,440*	*9.49*	*0.70*	*6.59*
n.e.c.	110	0	120	0.21	0.00	0.05
TOTAL APPRENTICES & TRAINEES	*51,740*	*58,690*	*219,040*	*100.00*	*100.00*	*100.00*

The most striking comparison is the proportionately miniscule role played in Victoria by the public sector in the employment of apprentices and trainees (less than 1 per cent of the total). In NSW the proportion is about 9.5 per cent, while nationally the figure is about 6.6 per cent. Of course, this reflects the aggressive privatisation of public enterprises in Victoria and the correspondingly higher percentage for private sector employment. However, this does not account for the relatively poor showing by State and local government sectors. If nothing else, this is grist for the argumentative mill over whether the cause of lower electrical apprentice rates in Victoria are due in significant part to the decline in the role of the public sector in providing apprenticeship opportunities. (Note, too that the absolute figures here must be treated carefully because of the influx of short-term traineeships into the mix.)

Inferences about skills shortages

This section will discuss in broad terms the problem of skill shortages in the electrical trades in the light of the evidence and analysis presented in this chapter. It will canvass some of the findings of government agencies that are used for planning of vocational education and training and labour market programmes. It will also provide a perspective from which to consider the views of industry practitioners on this subject that will arise throughout later chapters. To begin, it will also be necessary to reiterate the definitional issues posed in the introduction to chapter 1.

A full analysis of skills shortages should have two dimensions. The first is provided by the raw numbers and concerns whether enough tradespeople are being trained. The second concerns the quality of training. Are the skills being imparted to those in training sufficient to equip tradespeople in a fast changing work and technological environment? In other words, will there also be a skills shortage in the form of a skills deficit? This quality dimension also has two aspects. One is the quantity of training imparted. Are apprentices learning enough? Are the trade skills being delivered? The other is the quality of delivery

and content. Are the skills being imparted well, with sufficient depth, and so that apprentices emerge as tradespeople with rounded problem-solving capacities? Is the content keeping pace with technological and other changes, including improvements in educational method?

The second dimension is explored fully in following chapters. This section will look solely at the issue of 'raw numbers'. Note also that it will take up only whether a shortage exists or is likely. Possible causes, including employment practices and the possibility that has been raised of a shortage of suitably qualified applicants have been raised elsewhere (see chapter 2 'Numbers of apprentices' and 'Skills shortages the supply and suitability of apprentices', chapter 4 'Skills shortages: symptoms, causes and possible solutions' and this chapter *passim*; see also DEWRSB 1999).

According to the federal Labour Market Policy Group of the Department of Employment Workplace Relations and Small Business (DEWRSB) skill shortages 'exist when employers have difficulty filling, or unable to fill, vacancies in recognised occupations or specialisations (at reasonable levels of pay, conditions and location'. However, they add that these 'are typically for specialised and experienced workers, and can coexist with relatively high unemployment... The labour market can change ... [partly due to] training lead times'. Moreover, shortages 'may be numerically small, or in specific locations' (DEWRSB 1999, p. 6). Nonetheless, some measure of skills shortage is possible. One index produced is the Skilled Vacancy Survey (SVS):

> '...[It] is based on a count of skilled vacancies in the main newspaper of each State and Darwin. Around 130 occupations are grouped into 19 occupational groups and three broad groupings: Professionals, Associate Professionals and Trades. The figures are expressed as an Index (November 1997 = 100).' (DEWRSB 1999b, p. 8)

The index allows easy calculation of percentage increases in vacancies. Thus, according to an earlier index base, the 'SVS Index for the Trades rose by 43 per cent over the five years to February 1999', but 'the strongest rises were for *Hairdressers* and *Electrical and Electronic* Trades. Construction Trades also recorded a strong rise over the five years.' (DEWRSB 1999b, p. 8) In fact, the rise for electrical and electronic trades was about 118 per cent over the five years from February 1995, meaning that, if we take February 1994 = 100, the index rose to 218. This is a significant national increase in vacancies indicating some level of skills shortage.

Based on the current SVS index, vacancies in the electrical and electronic trades rose by 20.6 per cent (to 120.6) between November 1997 and May 2000 (DEWRSB 2000). Splicing the two indices gives a percentage increase of about 122.5 per cent in vacancies in the electrical and electronic trades in the past six-and-a-quarter years. This clearly suggests, from the labour demand or employer side of the labour market, that a skills shortage as defined exists at the aggregate Australian level. What do the figures we have presented elsewhere in this chapter say about the issue from the supply or apprentice-tradesperson side?

Here the most important figure is clearly the ratio of apprentices in training to tradespeople, of which much has been made in the previous sections of this chapter. If this ratio falls over time, as it has, then the number of new tradespeople entering the trade to offset retirements and departures (wastage and emigration) of

tradespeople will decline, other things being equal. Note that the electrical trades have the equal highest rate of wastage among the trades as a whole (43 per cent do not work in their trade) but that net immigration of tradespeople to Australia, if not necessarily between the States, is likely to be positive in any given year (see, e.g., Beaton et al. 1999).

A simple calculation will illustrate how significant the declining electrical apprentices in training to tradespeople ratio can be. In the five years May 1987 to May 1991 the ratio averaged 12.35 per cent. In the most recent five years to February 2000 it averages 7.36 per cent, a fall of more than 40 per cent. Assuming that each year about one-quarter of the apprentices in training graduate per annum, and using the May 1987 starting figure of 42,975 Victorian electrical tradespersons, we can estimate the addition from graduating apprentices to tradesperson numbers after a number of years. The estimate first uses the 12.35 per cent figure and compares the results with those using 7.36 per cent. The calculation demonstrates roughly that 7,500 fewer new tradespeople will have entered the trade after 10 years and about 10,000 fewer after 15 years.

Meanwhile it also means that the average age of electrical tradespeople will increase and retirement will become even more a problem. That is, the skills shortage on the supply side will be exacerbated at both ends of the age spectrum if remedial action is not taken to arrest the decline in the electrical apprentices to tradespeople ratio. (See also Catelotti 2000, which confirms the existence of the skills shortage.)

Chapter 4

Employer perspectives

Introduction

A range of employers from firms of different sizes and industry segments drawn from the National Electrical and Communications Association (NECA) database were surveyed using a modified questionnaire tested on a pilot group. Their views were sought on the key research aims (see chapter 1 'Research methods') and the detailed research questions (see appendix 1 'Specific research questions). A postal method of administration was used first for general employers, followed by a targeted telephone survey. Labour hire employers were interviewed face to face with the same instrument. The results of both processes are included in this chapter. The chapter will follow a structure set by both the research aims and specific questions. For convenience we will refer to general employers as 'employers' and the labour hire employers using the 'labour hire' designation. Both, of course, are employers. Appendix 5 'Definition and nature of "labour hire"' discusses the latter in greater depth.

First the chapter will explore employer and labour hire perceptions of skills shortages in the electrical and electronics industries. Chapter 3 concluded with an overview and broad inferences. It is important to stress, however, that the perceptions of those issuing the demand for apprentices ('doing the hiring', as it were) must not be discounted. Opinions obtained directly from employers and labour hire firms thus are a valuable contribution to our understanding of the question. Secondly, it will consider employment of apprentices, including the nature of firms undertaking training, the recruitment process, impediments to recruitment and the effect of group training. Thirdly, it will look at issues of quality.

Readers are advised to refer to chapter 1, especially table 1.2, to obtain a clear view of the breadth of employer and labour hire experience drawn upon below. Note in the tables in this chapter that the total number of employer responses was 157 but that not all responses to all questions were valid. Hence the totals often do not add to the n = 157 total. For simplicity in presentation this has not been acknowledged on each table. Note also that many of the issues here will be touched on again in the next chapter, which presents apprentices' perspectives, and in chapter 6. The latter presents the views of training and other industry practitioners. It therefore rounds out the employer and labour hire views presented here. Together these chapters help to inform a considered assessment of apprentice training developments and practices in the electrical and electronics industries.

Evidence of skills shortages

Perceptions of skills shortages in the various occupational market segments were sought from employers and labour hire firms. The responses provided by employers are shown in table 4.1 and labour hire firms' perceptions are shown in table 4.3. It was thought possible that perceptions of the availability of skilled workers could be related to decisions about apprenticeship training. Clear

evidence emerged that those on the demand side of the market for apprentices and tradespeople perceive that a labour shortage exists.

Table 4.1 Employer perceptions of skills shortages

Is there a skills shortage among the following?	Yes no. (%)	No no. (%)	Don't know no. (%)	Total no. (%)
Electricians	106 (71.6%)	26 (17.6%)	16 (10.8%)	147 (100%)
Refrigeration mechanics	29 (30.8%)	7 (7.4%)	58 (61.7%)	94 (100%)
Electronics or instrument mechanics	29 (30.2%)	9 (9.4%)	58 (60.4%)	96 (100%)
Communication workers	28 (28.9%)	14 (14.4%)	55 (56.7%)	97 (100%)

Table 4.1 demonstrates that there was an overwhelming feeling among employers of a shortage of electricians. Nearly 72 per cent of employers felt there was a shortage of electricians. A smaller proportion of employers believed there were shortages in the other allied trades.

Table 4.1a Employer perceptions of skills shortages by employment of those types of labour skills shortages

Is there a skills shortage among the following?		Yes no.	No or Don't know no.
Electricians employed			
	Yes	103	37
	No	3	5
Communication workers			
	Yes	9	9
	No	20	58
Electronic workers employed			
	Yes	7	4
	No	22	63

Table 4.1a shows the perceptions of skill shortages by those employers who actually engaged the type of labour in question compared to those who did not engage that type of labour. Here, the evidence shows that employers who engaged the specific types of labour were more likely to perceive a shortage of that kind of labour than those who didn't. For example, employers with electricians were more likely to say there was a shortage of electricians than those who did not employ electricians. The same was true for employers of communication workers and electronic workers although in the case of communication workers the relationship was not statistically significant.

Separating the employers of electricians into those with apprentices and those without apprentices, we find the perception of skills shortages much weaker among the employers who did not employ apprentices (see table 4.2). This difference is statistically significant and consistent with the proposition that employers are motivated to become involved in training because of market conditions. It is also consistent with the proposition that those who do not train are inclined not to recognise a skill shortage.

Table 4.2 Employer perceptions of skills shortages by employment of electrical apprentices

	Employers with apprentices no.	Employers without apprentices no.	Total no.
Number who said there was a skills shortage	81	25	106
Number who said there was not a skills shortage or that they did not know	18	24	42

From the responses we were also able to determine whether the skills shortages were felt more among those employers located in metropolitan Melbourne than in other centres or vice versa. The difference between the two cohorts of employers was not statistically significant, thus indicating that this is a State-wide problem.

What was the perception of those employers about the shortages in the other market sectors, namely the refrigeration, electronic and communications sectors? The data collected from employers about the market for refrigeration, electronic and communications workers were less informative than the data relating to electrical workers. First there is a much less clear understanding by employers of the market for these workers, with more than half of the employers signalling a response of 'don't know'. Secondly the numbers are relatively small and cannot support detailed analysis. So from the questionnaire survey responses we are unable to offer meaningful conclusions on this question.

Do labour hire firms believe there are shortages of skilled personnel? Table 4.3 presents a summary of the responses to the question on skill shortages by the 14 labour hire firms that engaged electrical and communications workers.

Table 4.3 Perceptions of skills shortages among labour hire firms

Is there a skills shortage amongst the following?	Yes no. (%)	No no. (%)	Don't Know no. (%)
Electricians	11 (78.6%)	2 (14.3%)	1 (7.1%)
Electronics or instrument mechanics	9 (64.3%)	2 (14.3%)	3 (21.4%)
Communication workers	4 (28.6%)	1 (7.1%)	9 (64.3%)

The evidence shows that labour hire firms experience shortages in at least two of the categories listed, namely the electricians and instrument workers. As was the case for the employer group, labour hire firms were unable to say whether a shortage of communications workers existed. This can probably be attributed to their lack of familiarity with this segment of the market. Only six companies employed these kinds of workers. One of these did so through a major training initiative, responding to the shortage that they were experiencing. So, to the extent that firms have a familiarity with the communications sector, they have expressed the view that skill shortages exist.

The conclusion is that a clear majority of labour hire firms believe that skill shortages exist for electricians and electronics workers, and a majority of those who employ communications workers also see a skills shortage in that occupation.

Labour hire firms that were not involved in the specific fields of electrical and electronic workers also reported shortages of skilled workers in the skills areas where they were actively recruiting labour. The main additional areas in question were the metal trades.

The conclusion we therefore reach is that employers and labour hire firms do perceive that a skills shortage exists. The evidence presented in tables 4.1 and 4.3 also shows that the perceptions of skills shortages among employers and labour hire firms are remarkably similar. This impression of a skills shortage confirms what has been found in the Catelotti (2000) study.

Skills shortages: symptoms, causes and possible solutions

Both the employer group and labour hire firms were presented with a list of plausible symptoms and were asked whether they perceived these factors as important. Tables 4.4 (employers) and 4.5 (labour hire firms) rank the responses. Note that more than one symptom could be identified. The respondents could also provide additional symptoms to those listed.

Table 4.4 Employers' perceptions of the symptoms of skills shortages

Symptoms of a skills shortage	Yes	No	Don't Know
There is a shortage of good quality skilled tradespersons	119	2	6
Difficulty in meeting peak demand	79	18	18
It is difficult to attract and retain people who have the right attitude to work	77	29	9
Difficulty in attracting and retaining skilled tradespersons because of market conditions	76	16	16
It is difficult to retain reliable people	57	49	9
Active poaching of employees by competitors	53	44	20

Table 4.5 Labour hire firms' perceptions of the symptoms of skills shortages

Symptoms of a skills shortage	Yes	No	Don't Know
Difficulty in meeting peak demand	12	2	0
There is a shortage of good quality skilled tradespersons	11	1	1
Active poaching of employees by competitors	11	0	1
Difficulty in attracting and retaining skilled tradespersons because of market conditions	10	3	0
It is difficult to attract and retain people who have the right attitude to work	6	5	2
It is difficult to retain reliable people	5	6	2

In the main, the firms (both direct employers and those from the labour hire sector) have been experiencing difficulty in meeting peak demand because of market conditions. This is probably a comment about the immediate shortage of labour facing the individual respondents during the current boom phase of the business cycle.

Labour hire firms made a much stronger statement about the shortages and, while there are similarities in the symptoms expressed by the two groups, there were differences in the ranking of two of the factors. The first of these was poaching. This was identified as a more commonly experienced symptom for labour hire firms. Competitors, who were identified as being either labour hire companies or client companies, poached employees. Circumstances where poaching occurred included situations where clients kept good workers who had been on hire to them or where workers were lured to other labour hire firms.

The second factor ranked differently by the two cohorts was the difficulty of attracting people with the right attitude to work. This was held to be more widely experienced among direct employers than labour hire firms. Both of these differences are consistent with firms from the labour hire sector being more influenced by immediate labour market influences and less affected by factors that emphasise internal labour market principles. Loyalty and continuity of a relationship with an employer are two such issues.

Other symptoms of skill shortages identified by the respondents related to the level of response to recruiting, the shrinkage in the list of reserve labour and the difficulty of attracting and retaining good workers. Some employers and labour hire firms identified additional symptoms that had been evident to them. For the labour hire firms these included a lack of response to advertising (four respondents), the tight labour market revealed in the feedback from exit interviews and the unusually low number of tradespersons on the books. For the employer category they included the higher level of work being done, the lower quality of apprentices and the higher rates of pay on site.

Within the 12 suggestions by employers, opportunity was taken by some to raise potential causes rather than symptoms. As with the symptoms the question of the causes of the skill shortage is examined from the perspective of both the employers and labour hire firms. Employers and labour hire firms were asked to indicate whether they agreed with a list of causes and were invited to extend the list by including other factors that could have contributed to the shortage. Both groups were able to identify with the suggested list of causes of the labour shortages. The extent of similarity or differences in the factors causing the shortages are observed from the data ranked in tables 4.6 (employers) and 4.7 (labour hire firms).

Table 4.6 Employer perceptions of the causes of skill shortages

Causes of a skill shortage	Yes no. (%)	No no. (%)	Don't know no. (%)
Too few apprentices being recruited in the private sector	111 (89%)	6 (5%)	8 (6%)
Too few apprentices being recruited in the public sector	77 (64%)	18 (15%)	25 (21%)
An explosion in demand for tradespersons	67 (58%)	26 (23%)	22 (19%)
Restructuring in the economy and its associated downsizing	62 (53%)	30 (26%)	25 (21%)
People leaving the trade post apprenticeship	43 (36%)	32 (27%)	43 (36%)
Apprentices not completing their apprenticeship	37 (31%)	34 (29%)	47 (40%)
Apprentices not completing their apprenticeship on time	31 (27%)	40 (35%)	44 (38%)

Employers saw the problem as being determined by both supply and demand factors. The strongest feeling of support came for the supply driven factor of too few numbers of apprentices being trained. When coupled with the related supply factor of downsizing and its impact on the supply and the strong demand for trades-persons evident at the time of the survey, much of the story seems to have been captured. Industry downsizing and the withdrawal from apprenticeship training of public sector employers because of restructuring of this sector seems to be an important factor. This is backed up by the official statistics that clearly show the public sector withdrawal from apprenticeship training (see also chapter 3 'Broad Victorian electrical apprentice training data' and 'The Victorian electrical apprentice data in detail').

Approximately one-quarter to one-third of employers saw the various loss variables, such as wastage during apprenticeships and workers leaving the trade, as relevant. However, agreement with these as possible explanators was much weaker than for the others. Circumstances leading to these outcomes include workers who are declared redundant due to downsizing leaving the trade to take on new careers, as well as others leaving the trade for a variety of reasons. Finally, the current strong labour market for electrical workers resulting from a cyclical upturn in demand seems also to have contributed to the labour shortage.

Eleven employers indicated additional causes, some of which were extensions to the factors listed in table 4.6. Most of the suggestions gave reasons for the shortage of good apprentice stock. They related to the change in focus of the education goals pursued by young people and the failure of the authorities adequately to promote the trade as an attractive career option.

Table 4.7 Labour hire firms' perceptions of the causes of skill shortages

Causes of a skills shortage	Yes no. (%)	No no. (%)	Don't know no. (%)
Too few apprentices being recruited in the private sector.	13 (100%)	-	-
Too few apprentices being recruited in the public sector.	12 (92%)	-	1 (8%)
An explosion in demand for trades-persons.	9 (69%)	3 (23%)	1 (8%)
Restructuring in the economy and its associated downsizing	8 (61%)	1 (8%)	4 (31%)
People leaving the trade post apprenticeship.	6 (46%)	4 (31%)	3 (23%)
Apprentices not completing their apprenticeship.	3 (23%)	5 (38%)	5 (38%)
Apprentices not completing their apprenticeship on time.	2 (16%)	5 (38%)	6 (46%)

The labour hire firms identified very strongly with the proposition that the shortage was related to the dearth of apprentices in training in both the private and public sectors. As well, the industry-wide practice of downsizing and its associated out-sourcing resulted in firms not picking up on training. The completion rate of apprenticeships was identified as a factor by only a small percentage of respondents, but there were other supply factors that received repeated attention.

The labour hire firms also identified additional other causes of the shortage. These included the departure of people from the trades and the lack of attraction of the trades to young people. For example, a number of respondents criticised the lack of support for the trades among secondary educators and careers advisers and a common response was a criticism of the structure of the school system and the 'demise of the technical schools'. It was argued that kids were not being introduced to the trades in schools, and they were discouraged from going down the path of trade training.

What can be done to overcome the shortages? Simplistically, there are two alternative approaches to dealing with labour market shortages. One is to control the demand for labour and other is to alter its supply. The supply could be increased by training additional workers or through migration. Employers and labour hire firms were asked how the current shortage might be overcome. The responses from the employers were compiled into a list containing 108 responses. The ranked list is presented as table 4.8. What is interesting is that the list of responses is heavily biased to the supply of labour, but within the regimen of solutions the migration option was not canvassed. Indeed, most of the response categories were related to the question of apprenticeships: the need for actions that will result in more apprentices being trained.

Table 4.8 Suggestions as to how the current skills shortage might be overcome

Ranked suggestions	*Number*
Take on more apprentices	27
Promote trades among the youth	19
Subsidies, assistance, allowances for apprenticeships	19
Better training	14
TAFE schooling	5
Reduce apprentice wages	5
Keep unions out	4
Job creation	3
Less emphasis on cost	3
Promote apprenticeships to employers	3
Pay more to trades-persons	1
Poach	1
Improve training effort in the bush	1
Anti-poaching	1
Change the age of apprenticeships	1
TOTAL	108

Some discussion is in order on the meaning of each of these categories and their importance. Although the list does not include the responses from labour hire firms the first option was the only one to be seriously canvassed by them. In all cases, labour hire firms saw the need to train more people and particularly more apprentices. Two overt reasons appear to have contributed to this matter being prominent on their agendas at this time. The first related to the significance of the apprenticeship issue in enterprise bargaining discussions. Some union officials were successful in placing the issue of the quantum of apprenticeships on the bargaining agenda, and it could be argued that this influenced the perceptions of the labour hire firms. The second reason related to the part being played by some

employer associations in stimulating labour hire firms to consider taking on apprentices through group training programmes. The specific reasons for the timing of this matter needs to be further investigated.

Of the 14 labour hire firms that made suggestions about overcoming the shortage of skilled trades persons, 11 of the suggestions were centred on ideas that might lead to an increase in the number of apprentices while the other three suggestions related to bringing in skills from outside. Measures to increase the number of apprentices included making the apprenticeship route more attractive to both employers and potential apprentices, overcoming existing prejudice and using group training to facilitate a significant increase in the number of apprentices in training.

The conclusion that there are too few electrical, electronic, or communications apprentices/trainees employed by firms within the labour hire industry is consistent with the finding from the KPMG study of labour hire firms conducted in 1996 (see chapter 2). However, it appears that, in the electrical industry, the nature of the labour hire activity conducted within an individual firm is an important determinant of whether it will engage apprentices. Labour hire firms with workshop facilities and permanent staff are more likely to have apprentices than are those solely engaged in labour hire, since the existence of workshop facilities will enable those firms to engage apprentices full-time in the workshop. The continuity of work appears to be an important variable in a firm's decisions to engage apprentices.

Incidence of apprentice employment

This section will examine employment of apprentices, including the nature of firms undertaking training, the recruitment process and the effect of group training. It will do so for both employers and labour hire firms. The latter is especially important to consider for two reasons: the expansion of the labour hire sector of the industry and the commonly held viewpoint that labour hire firms do not participate in the training function. That is, it is thought that they neither engage apprentices nor contribute to the on-going training of their workers. Impediments to recruitment of apprentices will be considered in the next section.

Table 4.9 presents the evidence from 21 labour hire firms to show that they have very limited participation in apprenticeship training in the electrical and associated occupations. However, in coming to this conclusion, it is necessary to recognise that there appears to be two quite distinct cultures in the employment of apprentices by labour hire firms. Some labour hire firms operate within the traditional manufacturing or service industries as well as being involved in labour hire, and these are more likely to employ apprentices than are specialist labour hire firms. The sample of labour hire firms involved in the study included both those that operated exclusively as labour hire firms and those where labour hire formed only part of their overall operations. These two categories were distinguished by the different approach taken to apprenticeship. (Refer also to appendix 5 'Definition and nature of "labour hire"', which discusses the characteristics of this segment of employers in greater depth.)

Table 4.9 Labour hire firms and apprentice employment

	With apprentices	No apprentices	Total
Firms with workshop	5 (1 with electrical)	2 (1 used to have apprentice)	7
Firms without workshop	1 (1 with electrical)	13 (4 used to have apprentice)	14

Of the 21 firms participating in the study, six (29 per cent) employed apprentices. Of these, five had workshop facilities and apprentices were employed in each of those workshops. Five (71 per cent) of the seven firms with workshop facilities employed apprentices, and all but one of the firms with workshop facilities claimed to have employed apprentices in the past. Of the firms that were wholly engaged in labour hire, only one (seven per cent) employed apprentices. This says something important about the link between workshop facilities and employment of apprentices, especially the direct employment of apprentices by firms in the labour hire sector.

The evidence also reveals that, within this sample of labour hire firms, there are very few electrical apprentices. Within the sample there were 12 firms that employed electrical, electronic and/or communication workers. Only two of these firms employed electrical, electronic or communication apprentices/trainees, and only one of these was a specialist labour hire firm. What appears to have happened is that a number of firms have spread their activities into the labour hire area from a traditional employment base and have continued their apprenticeship programme within the workshop but have generally not included apprentices as part of the labour hire process. Conversely, firms that developed as specialist labour hire firms have not been prepared to become involved in apprenticeship training because they see apprenticeship training as incompatible with the successful conduct of the labour hire business. They also argue that the absence of workshop facilities is a factor inhibiting them from becoming involved in apprenticeship training.

The position of other employers in the industry is quite different to the labour hire sector. Currently, there are a large number of apprentices employed in the industry. They are engaged either directly by the employers or through a group training provider. Also, there are indications of an intended increase in the number of apprentices to be trained in the future. Table 4.10 shows the number of firms with apprentices under the two forms of employment arrangement, direct employment and employment through a group training company. At the time of the survey (late 1999), 97 firms surveyed employed an apprentice under either arrangement. This represented 62.6 per cent of the survey population. This is in stark contrast with the figures for labour hire companies, where fewer than 10 per cent employed an apprentice in the electrical field.

Table 4.10 General employers and apprentice employment

		Group		
		Yes	No	Total
Direct	Yes	20	52	72
	No	25	58	83
	Total	45	110	155

The more common form of employment arrangement is the direct method of employment. Seventy-two employers (46.5 per cent) used this method, nearly double the number using apprentices through the group scheme (45 or 27.7 per cent). Fifty-two firms employed apprentices exclusively under the direct method and twenty-five firms took apprentices exclusively from the group training companies. Twenty firms (12.9 per cent) employed apprentices directly as well as through a group training company.

Since the incidence of employment of apprentices in labour hire firms is so small, the remaining analysis of the data on apprenticeship numbers focuses on those employed by the employer category only. A key question is what degree of concentration is there in the employment of apprentices within individual firms? Is the training effort spread across the industry or is it concentrated in a small number of firms? The data in the following tables provide a picture of how the training effort is distributed. Table 4.11 shows the numbers of apprentices employed by numbers of firms.

4.11 Apprentices per firm by numbers of firms

Apprentices per firm	Number of firms	Number of apprentices	Cumulative %
0	55	0	0
1	39	39	11.1
2	22	44	23.8
3-4	20	66	42.7
6-7	4	20	48.4
8-9	5	42	60.5
10+	7	138	100
Total	152	349	100

There were 349 electrical apprentices working at the end of 1999 for the 152 firms with valid responses. Fifty-five firms did not employ an apprentice in 1999. Two-hundred-and-thirty-five of the apprentices (67.3 per cent) were directly employed by the firms, and the remaining 114 (32.7 per cent) were working under a group scheme arrangement. Thirty-nine firms employed one apprentice. The majority of firms (58) that employed apprentices employed more than one. Within this multi-apprentice group, there was a high degree of concentration of the apprentices. For example, 39.5 per cent of apprentices are trained by eight per cent of the firms, and more than half (51.6 per cent) are trained by 16.5 per cent of the firms. There were only four female apprentices in the firms sampled, and they were all employed under a group scheme by one firm. With so few female apprentices it is not possible to undertake further statistical analysis of this cohort (see also chapter 3 'The Victorian electrical apprentice data in detail').

Classifying employers according to the ratio of apprentices to employees reveals an enormous range between those who have a zero ratio and those with a ratio of more than 25 per cent. Cross-tabulating these with the size of firm shows something of a relationship. In other words, there was a prima facie relationship in our sample between size of the organisation and the proportion of employees that are apprentices, with smaller firms having a larger proportion of electrical tradespersons as apprentices on average. Chart 4.1 illustrates the relationship, with the trend line showing its direction. However, the scattering of data points also illustrates the significant dispersion involved, suggesting that it would be wise not to read too much into the results here. (This cautionary note is reinforced when we perform a linear regression on the ratio of electrical apprentices to electrical employees against the number of electrical employees in firms in the sample that employed apprentices. Only 12.5 per cent of the change in the proportion (ratio) of apprentices is explained by change in the number of employees. That is, 87.5 per cent is explained by other factors.)

Another relevant question is whether the concentration of apprentices in organisations differs between the direct employers and the group scheme employers. Taking a simple delineation between the single and multi-apprentice employers, there is no difference in the propensity of the groups to take on more than one apprentice. Forty-eight (67 per cent) of those that employ apprentices directly employ more than one apprentice, and 29 (67 per cent) of those who employ apprentices under the group scheme employ more than one apprentice.

Table 4.12 shows the incidence of employment of electrical apprentices by firm and by year. The number of employers who directly employed apprentices had an even spread of second and third year apprentices. However, the number of firms with fourth year apprentices is much lower, and the number with first year apprentices is much higher than for the second and third years. This suggests that there has been a recovery in the number of apprentices directly employed over at least the last three years. The number of firms involved has grown faster than the number of apprentices so that the rate of apprentices per firm is lower in the first year compared with the second and third year. This suggests a growing participation rate by firms in apprenticeship training. An alternative explanation of this could be that employers who have traditionally taken on apprentices have reduced the size of their most recent intake.

Chart 4.1 Electrical apprentice-employee ratio to number of electrical employees (firm size)

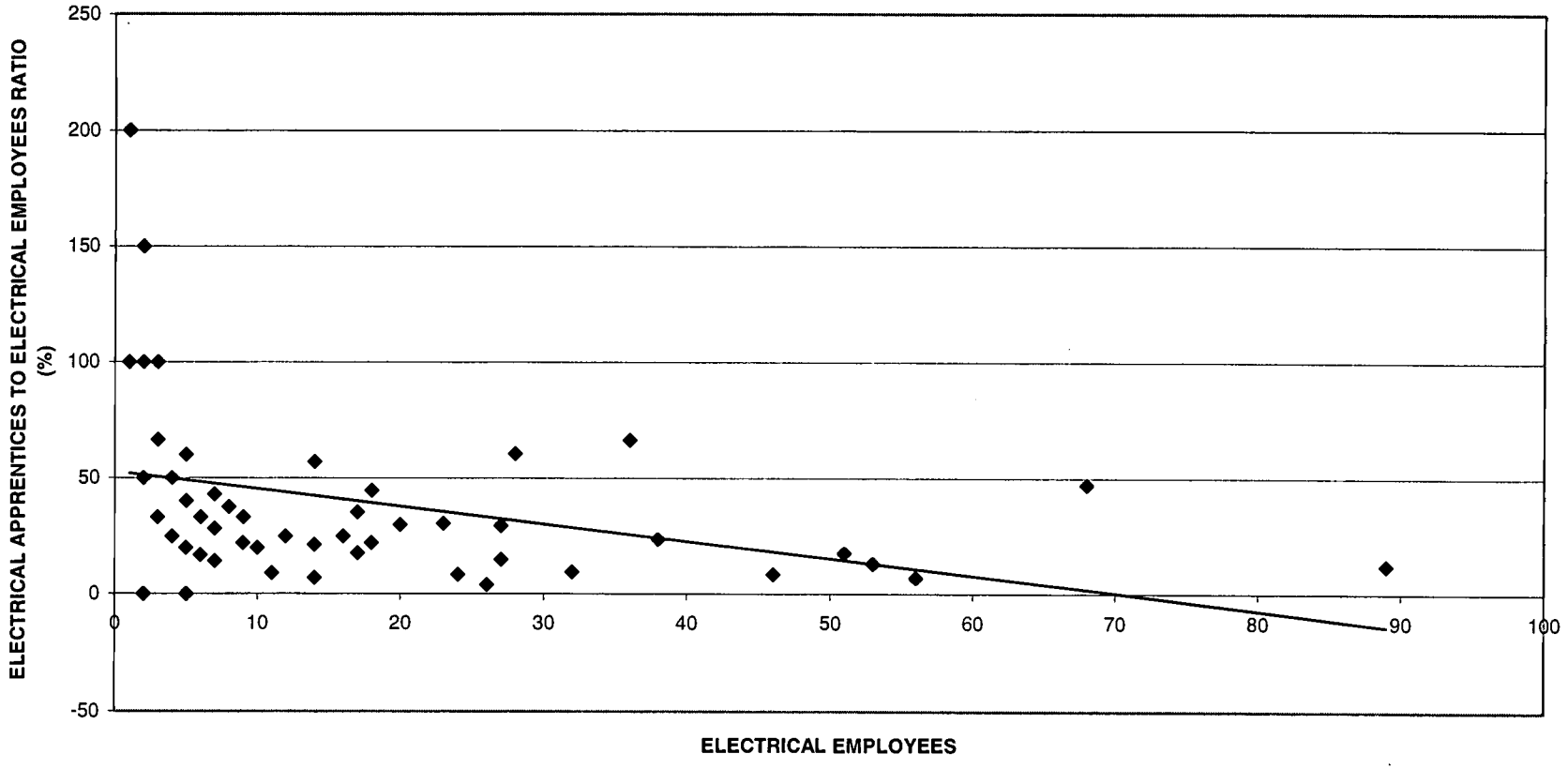


Table 4.12 Electrical apprentices per firm, by gender, year of apprenticeship and direct vs. group scheme employment, 1999

Year of apprenticeship	1		2		3		4		All years	
	M	F	M	F	M	F	M	F	M	F
Direct										
1	25		19		21		16		81	
2	8		7		6		7		28	
3	4		2		3		1		10	
4	0		1		2		0		3	
5+	2		3		1		1		7	
Totals firms	39		32		33		25			
Totals apprentices	64		69		64		38		235	
Apprentices /firm	1.64		2.15		1.94		1.52			
Group										
1	8		12	1	13		7		40	1
2	4		9		5		5		23	
3	1		0		1	3	0		2	3
4	0		0		1		1		2	
5+	1		0		0		1		2	
Totals firms	14		21	1	20	1	14			
Totals apprentices	24		30	1	30	3	26		110	4
Apprentices /firm	1.71		1.41		1.57		1.86			

The number of firms employing apprentices under the group scheme appears to have grown over the last four years, with the exception of 1999. In 1999 there was a marked reduction in the number of firms taking on apprentices from the group scheme. Also a smaller number of apprentices were employed under that scheme by the firms included in the sample in 1999. The average number of apprentices per employer increased directly with the year of apprenticeship, with the exception of the first year, where the ratio of apprentices to employer was the second highest rate.

There are two issues relating to the recruitment of apprentices. The first is to establish how many apprentices are being recruited into this field. The second relates to the methods of recruitment to be used. The first question is examined using data for employers and labour hire firms. Employers indicated that they intended to recruit 223 electrical apprentices/trainees in the year 2000. This represents an increase of more than 150 per cent on 1999. Should this eventuate, there would be a major departure from the past in the number of apprentices being trained. Are the new apprentices being taken on by firms that currently employ apprentices? There is no statistically valid relationship between the current employment of apprentices and the employment of new apprentices. Firms also indicated that they were planning to take on new apprentices/trainees in the other fields: seven electronic apprentices/trainees and 12 communications apprentices/trainees.

We decided not to survey group training companies to establish the numbers they anticipated recruiting, since it was considered most unlikely that accurate information would be provided by those companies. However, the companies who were contacted led us to believe that there would be a contraction in the numbers from their current establishment figure at the next intake.

With regard to the labour hire firms, a number (5) said that they were putting on new apprentices in the year 2000 and a further four firms said that they were thinking about putting apprentices on. An additional three firms indicated that they would be putting on at least one apprentice in the metal trades in the year 2000. Should all of these indications be confirmed with appointments, there would be a significant increase in the number of apprentices in training within labour hire firms. What is particularly significant about this is that eight of these firms currently do not have apprentices, and most of them have not had apprentices in the past. This would, therefore, represent a significant change in culture. What is less certain, however, is whether their indications of interest will be converted into actual appointments. It is clear from discussions with labour hire companies that their interest has in part been stimulated by discussions with third parties about their need to feel an obligation to become involved in apprentice training. The source of the exogenous stimulus appears to have been either an employer association(s) or a union, although it is clear that market conditions and a moral obligation towards training young workers have also featured in the decision-making process.

The second issue is the method of recruitment. What will be the main methods of recruitment of apprentices? The responses from 53 employers who had directly employed apprentices are ranked in table 4.13. The most commonly used recruitment methods appeared to be the recommendation, the receipt of personal curriculum vitae by the employer, advertising in the media or recruitment of apprentices through the NECA apprenticeship test programme. Twenty-four employers indicated more than one method of recruitment and the most common second method was the interview, which appears to have been a complementary method of recruitment.

Table 4.13 Method of recruitment by employers

Methods favoured by employers were:	
• recommendation	19
• interview	13
• cv	12
• advertisement	10
• NECA	9
• work experience/school	7
• preapprenticeship/tafe	3
• employment agency	2
• existing employees	1
• family	1
TOTAL	*77*

Given that one of the attractions to employers of training apprentices is that they are providing a future trained workforce, it might be expected that they would prefer their apprentices to stay on after completion of their apprenticeship. Surprisingly, only 22 of the firms employing apprentices declared that it was

policy to keep them on after completing their training, and five of these qualified their response by saying that it depended on the individual. Eighty-four firms indicated support for the notion that their decision about keeping on an apprentice who had completed their training would depend on that individual. Presumably, the employer is taking this decision on the basis of the individual's performance. Equally, this could also be a proxy for their labour needs at that time. Thus employers, for example, when asked to explain their stance on this question, offered five points of explanation: the two key ones being the amount of work (seven employers) and the suitability of the employee (10 employers).

Impediments to recruitment of apprentices

What are the factors inhibiting the process of apprenticeship training within the electrical, electronic and communications industry? Are these factors common to all firms? In the light of these, do firms prefer to employ apprentices directly or through group schemes? The literature suggests a range of obstacles that prevent the employment of apprentices (see chapter 2 'Cost of recruitment' and 'Method of recruitment'). These are now explored. One plausible impediment to firms hiring apprentices could be the costs associated with apprenticeship. The main cost factor is said to be the lower productivity of an apprentice during the early years of their employment. This is due to the lower skill level of apprentices during the early years of their apprenticeship. Another cost factor is said to be associated with the loss of work time due to their absence from the workplace to complete the schooling component of their apprenticeship.

Tables 4.14 and 4.15 show the perceptions of those employers surveyed regarding the major impediments to the employment of apprentices under direct employment conditions (table 4.14) and under group training arrangements (table 4.15). The overwhelming impediment to taking on apprentices as direct employees that was reported by employers surveyed was the economic uncertainty factor. Some employers see the need to have work for the period of an apprenticeship before committing themselves to taking on an apprentice. Approximately half the employers saw the superior flexibility offered by the alternative of group training arrangements as impeding their decision to take on apprentices as direct employees. Approximately one third (36.7 per cent) saw cost as a factor. It was, however, no more significant to those surveyed than the issue of the availability and suitability of applicants and only marginally more important than the availability of suitable work for applicants.

Table 4.14 Employers' perceptions of impediments to taking on apprentices as direct employees

Impediments to taking apprentices as direct employees:	Yes	No	Don't know
Economic uncertainty inhibits direct employment of apprentices	81	44	3
The group training scheme provides greater flexibility to the employer	54	42	22
Poor quality of applicants - attitude, skills, etc	49	62	8
Costs of apprenticeship	45	74	4
Scarcity of suitable applicants	45	67	9
Lack of suitable work for apprentices - especially in the high technology areas.	32	87	3
The early years of apprenticeships do not suit the employer - apprentices are not productive enough in the first years	23	93	5
Lack of suitable supervision in their place of work	15	101	1

Turning to the impediments to taking on apprentices under the group-training programme, here the impediments seem to be employers' perceptions of the direct employment method as superior and that they see the group scheme as a top-up scheme only, with nearly half of the employers expressing some doubts about the quality of the apprentices under this arrangement.

Table 4.15 Employers' perceptions of impediments to taking on apprentices under a group training arrangement

Impediments to taking apprentices from a group training programme:	Yes	No	Don't know
Prefer direct apprentices and only use Group scheme to top up	67	49	9+
Poor quality of group apprentices - attitude, skills, etc	49	49	22
Lack of suitable work for apprentices - especially in the high technology areas.	31	83	13
The early years of apprenticeships do not suit the employer: apprentices are not productive enough in the first years	30	87	5
Lack of suitable supervision in their place of work	13	104	4
Opposition from those who would be required to supervise	5	105	9

Do employers who hire apprentices under the group training arrangements see the above factors differently to those who take on apprentices as direct employees? Some of the impediments are viewed in a similar fashion by both kinds of employers. Some of them are viewed differently. In respect of the impediments affecting the direct employment of apprentices, the two groups viewed scarcity of labour and economic uncertainty differently, as did they the issues of lack of suitable work and the greater flexibility provided by group training. The differences in the responses by the two categories of employers in respect of the four factors listed above were statistically significant at the one per cent level. There was no statistical difference in the way employers viewed the factor of cost, the quality of applicants, the lack of suitable supervision and the difference in productivity of apprentices during their indentures.

In respect of the group-training scheme factors, the preference for direct apprentices and the poor quality of group apprentices were the only two factors where the differences were statistically significant. It was not surprising to find such differences, since for these two impediments the employers were being asked to verify the rationality of their choice of scheme. There was no difference in the way employers viewed the lack of suitable work, opposition from those required to supervise and the difference in productivity of apprentices during their indentures.

What are the factors inhibiting the process of apprenticeship training within labour hire firms in the electrical industry and are all firms similarly affected? Labour hire firms identified a range of obstacles preventing the employment of apprentices. Surprisingly, more than half of the labour hire firms (62 per cent) said the cost factor was not an impediment, although 43 per cent saw the lower productivity of earlier years of apprenticeship as an impediment. Labour hire firms saw a number of other work related factors) as more important obstructions to them taking on apprentices. These were the capacity to provide suitable continuous work (62 per cent), the economic uncertainty (62 per cent), the provision of adequate supervision (38 per cent) and the lack of support from clients (71 per cent).

The issue of economic uncertainty, seen as important, was usually interpreted as the 'stop-start' or short-term nature of the labour hire operation. Some firms saw themselves as supplying labour on a very short-term time horizon. Some saw their role as to 'get-in and get-out'. They argued that the staccato nature of the workflow was not conducive to hiring apprentices, as the needs of the business were not consistent with the work requirement for an apprentice in training. This feature of employment in a labour hire scenario was amplified by the response to the supervision issue: Thirty-eight per cent of firms saw the lack of suitable supervision as being an impediment. However, that the majority of firms did not see this as a problem is probably due to the delineation of labour hire firms into two distinct types: those that have a more permanent labour force that is located in a workshop setting and those without a significant core workforce.

The difficulty of guaranteeing work for apprentices in a workplace setting beset with such great ebb and flow of work proved to be a major obstacle in businesses driven by bottom line cost factors. Firms saw the direct employment of apprentices as anathema to their culture of total flexibility in being able to answer their clients' calls effectively on demand. The option of taking apprentices from a group training scheme was more consistent with this philosophy, and 62 per cent of the respondents saw the availability of this option as inhibiting them from directly employing apprentices themselves. Another impediment claimed by labour hire firms was the attitude of clients. They argued that clients were driven by cost factors, and hiring apprentices was not seen as a cost-effective exercise. In a number of cases, the clients of labour hire companies withdrew from training apprentices when they contracted out their maintenance function to labour hire companies and were not likely to be sympathetic to the notion of again becoming involved in apprentice training.

Some of the anecdotal responses to this question included:

I don't know any client that would want to take on an apprentice.
The client wants someone who can do the job.

There is a lack of suitable work – work varies so much and the level of work required is so high.

The quick and sharp deployment of labour does not allow conditions for the employment of apprentices.

It is difficult to establish who has responsibility for the apprentice – labour hire or the client. Dealing with this question of responsibility is a problem.

It is hard to hire out an apprentice short-term and much of our work is short-term covering. We would want the initiative to have an apprentice to come from the client.

Occupational health and safety factors would prevent apprentices from being used.

However, the lack of support for apprentices being involved in labour hire was a contested point. Some labour hire firms were not convinced that clients were opposed to having apprentices, and others argued that clients needed to be convinced about the importance of them becoming involved in apprentice training. So, although 71 per cent of firms' saw lack of client support as an impediment, there was a view among the others that this view was phoney. Were it to be held by the client firms, they argued, it should be vigorously debated with those clients. The need for education of clients about the merits of apprenticeship training was mentioned by a number of respondents.

There was no real strength in the support for the notion that there was a scarcity of applicants for apprenticeships. However, in the discussion about the causes of the skills shortage, this issue was raised by a number of respondents. The issue of the productivity of apprentices over their training lives was also tested as a variable. Here, the response from the labour hire firms was mixed, although a majority of the firms felt this to be an impediment. Tables 4.16 and 4.17 contain summaries of the responses by labour hire firms regarding impediments (direct employment table 4.16 and group scheme table 4.17).

Table 4.16 Labour hire firms' perceptions of impediments to taking on apprentices as direct employees

Impediments to taking apprentices as direct employees:	Yes	No	Don't know
Attitude of labour hire client	15	2	4
Economic uncertainty inhibits direct employment of apprentices	13	6	2
The group training scheme provides greater flexibility to the employer	13	6	2
Lack of suitable work for apprentices - especially in the high technology areas.	13	7	1
The early years of apprenticeships do not suit the employer - apprentices are not productive enough in the first years	9	9	3
Lack of suitable supervision in their place of work	8	10	3
Costs of apprenticeship	8	13	-
Scarcity of suitable applicants	5	13	3
Poor quality of applicants - attitude, skills, etc	4	14	3

The responses regarding group training schemes were similar to the impediments identified by labour hire firms to taking on direct apprentices. The single most important factor to gain support from the data in table 4.17 is the commonly held view that group training is seen by a number of employers as offering an opportunity to top up their workforces. Nearly half of the firms said that they preferred direct employment of apprentices and would use the group scheme as a topping-up mechanism. As might be expected, the remaining impediments mirrored those for direct employment.

Table 4.17 Labour hire firms' perceptions of impediments to taking on apprentices under a group training arrangement

Impediments to taking apprentices from a group training programme:	Yes	No	Don't know
Attitude of labour hire client	13	4	4
Lack of suitable work for apprentices: especially in the high technology areas	11	8	2
Prefer direct apprentices and only use group scheme to top up	9	9	2
The early years of apprenticeships do not suit the employer: apprentices are not productive enough in the first years	8	10	3
Lack of suitable supervision in their place of work	8	9	3
Poor quality of group apprentices: attitude, skills, etc.	5	7	8

Some of the anecdotal responses to the group training approach included:

Don't know whom you are going to get.

They don't know your work.

Timing might not suit.

Lack of continuity is a problem for the client.

Employers are unlikely to want apprentices in their early years. (The issue of whether apprentices from one year might be preferred over others was raised by four firms).

Do employers exhibit a preference for one kind of training over the other? It would be plausible for employers to prefer to engage apprentices under either a direct employment arrangement or through a group training company. The survey attempted to obtain feedback about their preference and what factors might have contributed to that preference. Eighty employers (77%) indicated that they had a preference and 57 of those (71%) preferred the direct employment of apprentices. Their reasons are classified into categories, in table 4.18.

Table 4.18 Reasons employers prefer either the direct or group training form of engagement

Reasons for preferring either the direct or group method of employment:	Number	%
• flexibility	25	26.3
• discipline/control	25	26.3
• suit our needs	12	12.6
• loyalty	10	10.5
• cost	8	8.4
• better training	6	6.3
• preference for long term	6	6.3
• group employer recommendation is helpful	3	3.1
TOTAL	95	100

In the reasons given by employers for their preference for either scheme two factors stand out: flexibility and discipline/control. Flexibility is interpreted here as the degree of freedom that an employer might have over the use of an apprentice, particularly the freedom for the employer to engage or to disengage an apprentice. It is understood that the group scheme provides the employer with greater flexibility. Here they can decide whether to take on an apprentice and, if so, for how long. The decision to employ an apprentice directly represents a longer-term commitment by the employer, and it is argued that this reduces their flexibility. Flexibility was the dominant factor in the preference by the employers of group apprentices for that scheme. Twenty-one of the twenty-three employers who use the group training scheme put flexibility as the factor influencing their preference.

The issue of control relates to the amount of influence that an employer will have over the way in which the apprentice develops. It extends to the level of discipline that develops from this lasting or long-term relationship that would be absent under a group training arrangement. Another related variable is the perception by employers that direct employment ensures an apprentice will develop in the company style, adopting the cultural traits fostered by the employer. Loyalty can also be seen as a product of the control variable. The discipline/control factor was the advantage most frequently mentioned by

supporters of the direct employment relationship. Twelve indicated the importance of training the apprentice in the company way and 10 identified the loyalty factor as important. These factors were not seen as relevant by any of the companies with a preference for group training.

Finally, cost was identified as a factor by a small number of employers, as was the quality of training. However, it is interesting that, in both of these cases, employers who supported either scheme were able to identify cost and quality as an advantage of the particular scheme for which they had expressed a preference.

Labour hire firms were also questioned about their preference for either scheme. Of labour hire firms that had some involvement with apprentices, 82 per cent expressed a preference. However, the preferences were evenly divided between both schemes. Nonetheless the issues dividing the choice were consistent with those given by employers. Like the employers, those favouring direct employment did so because they believed direct employment gave them greater control over the apprentice than did the group scheme. Individual responses gave the flavour of this attitude:

> *Directly employed apprentices can be trained to your type of business. Group apprentices will move on.*
>
> *Direct apprenticeship gives greater control over training and development of the employee, e.g., breadth of knowledge.*
>
> *Direct apprentices enable you to place people with specific contracts.*
>
> *There is greater control through more discipline. In the group scheme you spend less time on them and they pick up bad habits. They turn out half a union man. They are often bush lawyers. I believe they should stay separate from politics till they get their trade.*

There was a theme coming from those favouring the group scheme that they were better served by the flexibility that it delivered. Group apprenticeship is consistent with greater flexibility in allowing an employer the option of having an apprentice or not.

> *Continuity is difficult to provide because we do not have a factory.*
>
> *We can't guarantee work.*
>
> *Inconsistency of work makes group more attractive. But we will always have 1 or 2 permanents and go to the group for extras.*
>
> *We don't have to have people when we don't need them.*
>
> *It depends on the workload. If we obtained a long-term contract then we would consider someone for a direct apprenticeship.*

The quality of apprentice and post-apprentice training

Apprenticeship quality is often raised as an issue. A DEWRSB study (1997a) reported on employers' perceptions of quality. Two issues relating to quality of the training process are considered. The first is industry's expectations of apprentices. Here, the study investigates employers' and labour hire firms' perceptions about the attributes of 'a good apprentice'. The second is directed towards establishing employers' and labour hire firms' perceptions about the schooling element of apprenticeship training and views about proposed changes. This area was discussed with all employers and labour hire firms who employed apprentices or who had employed apprentices in the recent past.

On the issue of the industry's expectations of apprentices, employers and labour hire firms with apprentices were presented with a list of qualities and were asked whether those qualities were essential, important, not important or irrelevant. The results are presented in table 4.19.

Table 4.19 The attributes of 'a good apprentice', employer and labour hire perspectives

	Essential	Important	Not important	Irrelevant
Positive attitude to learning	13	5	-	-
Ability to work in a team	11	3	4	-
Develop an ability to use initiative to solve problems	9	9	-	-
Pride in their trade	8	10	-	-
Have a good set of general skills – reading, writing, arithmetic and relationships.	7	11	-	-
Ability to solve problems in a variety of work situations	5	12	1	-
Be cost efficient: i.e., pay their way	4	8	5	-
Emphasise continuous learning as a desirable outcome	4	14	-	-
Good communication skills	4	12	2	-

A number of factors were postulated as explanatory variables. They were the level of apprenticeship, the group training company, the type of apprenticeship and the age of the apprentice. There was no clear consensus that any of these would singularly differentiate the quality of apprentices, although their perceptions coincided in as much as they believed the specific trade was not a valid determinant of apprenticeship quality. Some employers preferred junior apprentices and others preferred older apprentices. Some preferred young apprentices and some preferred older ones. Some employers preferred apprentices from a specific group training company while others did not see the specific company as a cause of differentiation.

The almost universal response to the skill shortage question was to suggest the need for an increase in the commitment to training. Being part of apprenticeship training is one of the expressions of commitment. Contributing to post trade training of their workforce is another. Eighty-five employers (54 per cent) and thirteen (62 per cent) of the labour hire firms provided post trade

training for their employees. What is the nature of the training done by employees? Table 4.20 shows a classification of the training undertaken.

Table 4.20 The kind of post trade training supported by employers and labour hire firms

Type of training	Number of employers	Number of labour hire firms
General support for training	27	-
PLC, motor control, fault-finding and testing	20	1
Cabling and communications and data	17	1
Electronics/advanced electrical	9	2
Occupational health and safety/first aid	9	1
General support for training that suited the company	8	2
Austel/Telecom licence	5	-
Equipment training	5	-
Supervision and business training	5	-
Plans, drawing, estimating	4	-
Drivers/forklift	2	5
Basic computer	2	-
Air conditioning/engineering	2	2

The evidence contained in table 4.20 suggests the following patterns of post-trade training. Seventy-four employers (87 per cent of those indicating the provision of further training) indicated the type of additional training undertaken by their workers. A substantial proportion of these responses were general in nature. Thirty-five employers supported additional training but were no more specific about that training than to say that it should have suited the company before gaining their support. The remaining 50 employers provided more specific details about the kind of training supported. Clearly the additional training is concentrated in the areas of more sophisticated electrical, electronic, communications and data training. There is also considerable emphasis on occupational health and safety training and on training required for licensing to operate machinery. What is surprising is the small number of employers who said they supported training in supervision and business training.

Of the 21 labour hire firms surveyed, 13 indicated that they encouraged employees to undertake further training to enhance their skills. There was a clear dichotomy between those with workshop facilities and those who were solely engaged in labour placement activities. The firms with employees in their workshops were supportive of training, as were those who had employees placed with clients on contracts. The labour placement firms who did not become involved in training saw it as an unnecessary cost and an activity that weakened their competitive position. Training their workers was seen as an act that encouraged the movement of workers to client companies or to competitors. Some saw clients as preferring to train their own staff or having a requirement for trained staff. 'We are not a training company', said a representative of one of the labour hire firms.

What became obvious when comparing the employers' responses with those from the labour hire firms is that there is a different thrust to the training support between the two groups. The labour hire firms are more inclined to support

training that will provide workers with a broader range of skills and enable them immediately to do an additional specific workplace task, such as drive a fork lift. It is apparent that the training supported by the employer group is more of the skill intensification kind and it is likely to be undertaken over a longer period of time.

The range of courses taken by the workers were work related and either skill broadening or skill intensification programmes, occupational health and safety training or specific training programmes arranged by the firm through a TAFE institution. Outcomes such as PLC, S permits, rigging tickets, fork lift tickets, welding tickets, scissor lift tickets and cable jointing were mentioned.

A level of support by employers for ongoing training could be gauged from their preparedness to pay for training either by meeting the fees and/or providing it in-house. Although accurate information on the funding of training was not collected, a number of firms offered information about their attitude to support of and willingness to pay for training. In particular, nearly all of the 35 responses that indicated support for training either specifically referred to a material level of support or implied that a company subsidy was available. When the assistance provided for the specific training initiatives is added to this, it is likely that nearly all the employers who responded to this question would provide assistance of some kind for training. Likewise, all 13 labour hire firms encouraging training, suggested that they either facilitated the training or would consider subsidising it in some manner.

The schooling element of training

This part of the analysis deals with employer feedback on the schooling element of apprenticeship training. Labour hire firms are not included in this part of the study because of their very low rate of participation in apprenticeship training. The analysis is conducted in four parts. The first relates to the role of employers in the training process. Given that apprenticeship training integrates classroom study with workplace training there is a necessary interface between employers and educational institutions and an intervention by the education process to what would otherwise be a normal employer-employee relationship. This raises a question about how such an intervention might affect the employer's control over their employee (the apprentice) during this training process. The second seeks feedback about employers' perceptions of the relevance of classroom teaching to the workplace. The third relies on employer feedback to evaluate the contemporary shift in direction of apprenticeship training towards a competency based system, and the fourth marshals suggestions by employers for improvements to the system.

Employer control over the progress of an apprentice

If employers are to embrace a system of training enthusiastically, they are likely to want to have some say in how it operates and to exercise some control over those who are directly participating in the training process. The study attempted to gauge the degree of control exercised by employers by asking them a question about their perceptions of control. Eighty-three employers responded to this question. The majority (53) indicated that they had a high degree of control. Some indicated they had total control, while others referred to a percentage level of control. There was a distinct impression that employers exercise a higher degree

of control over their apprentices in the workplace setting than at school. A minority of employers (30) believed that they have little or insufficient control over the progress of their apprentice(s). A separate cohort (12) existed within this group. They referred specifically to the absence of control over their apprentices in the school setting only. They mentioned a lack of communication and information about school progress as two factors contributing to this.

The comments provided by the respondents were informative in that they revealed a number of ways in which control could be exercised, both in the workplace and school setting. For example, some employers said that they were able to participate in decisions about the timing and format of the school training. Others spoke about the implicit control that comes from thorough supervision of the apprentice. Mention was made about the importance of the way the training was conducted: the variety of work provided, the role of the supervisors, the commitment and attitude of both parties to the process and the creation of a positive learning environment within the workplace. The feedback indicates that many employers would like to have more communication with the schools. Only one specific reference was made to a lack of control within a group apprentice setting.

Relevance of teaching

The quality of apprenticeship training is likely to be influenced by the relevance of the curriculum content to the apprentice's workplace. Employers and apprentices alike were asked to comment on the relevance of classroom training to the needs of the apprentice in the workplace. The overwhelming majority of employers with apprentices indicated that the training was relevant or highly relevant (90 out of 110). Thirty-five employers provided comments on this issue. They were directed to five main areas. A number (7) recognised the importance of theory to the overall apprenticeship training and the place of the classroom in delivering this theoretical training. They also saw the need to dichotomise the theory and practice.

On the issue of the effectiveness of the classroom component, 21 comments were directed towards one of a number of perceived deficiencies in the classroom. These included the relevance and linkage of the curriculum, its level and breadth and the quality of the learning environment. Two employers specifically mentioned the quality of teaching and the level of communication between the TAFE institutions and employers, respectively.

The new assessment system

The paradigm of apprenticeship training is currently undergoing a significant change, principally through the consolidation of competency-based training. One consequence of this will be a move away from the traditional system of assessment, with the corollary that employers will have a different role to play. Employers were asked to reveal their feelings towards the new assessment system. Table 4.21 shows their responses.

Table 4.21 Employer preferences regarding assessment changes

	Yes	No	Total valid responses
The development of detailed skill profiles recording apprentice skill development, throughout their apprenticeship, at both the workplace and school. Skill profile development would require active participation of workplace personnel and schools	69	15	84
School testing, and logbooks for work, signed off by work supervisor	62	18	80
Independent workplace assessors, assessing the apprentice periodically at the workplace, and testing conducted at school	54	27	81
The assessment of competencies to be carried out at the workplace, under the direction of registered training organisations (e.g., TAFE), using a competency based training package (i.e., the new system proposed)	52	30	82
The current system of apprentice assessment (i.e., in the school system)	41	39	80

The responses showed mixed feelings about various aspects of the training arrangements. They also showed a significant degree of uncertainty. This is not surprising as, at the time employers were surveyed, the proposed new arrangements were still being formulated. Indeed this is still the case at the time of writing. Hence it is clear that the analysis and evaluation of changes to assessment arrangements must be regarded as an important area of ongoing research.

Overall, however, a majority appeared to prefer the general notion of a competency based system, with 63 per cent in favour of the change. However, the nine sets of comments about the competency-based system were directed towards concerns surrounding such a plan, including their preference for school-based assessment and the cost factor associated with the new arrangements. Thus the comments were useful in fleshing out some of the misgivings held by some employers.

The comments about the current system were split evenly between those who wanted change and those who wanted the existing assessment process to remain. The proposal to develop skills profiles was supported by 82 per cent of respondents. This issue drew the most comment, with 13 employers offering feedback. Again, most of the comments were negative, with cost and doubts about its effectiveness being the most common threads to the responses. Support centred on the benefits of feedback, the merit of employer involvement and the standardisation of quality that could arise from such a plan.

The notion of independent workplace assessors was also supported by a strong majority of employers surveyed. The comments about this item brought qualified support from four of the eight who responded. More than three-quarters of respondents supported the introduction of logbooks. Again the invitation to comment teased out more concerns, with only three of the eight who commented indicating that the experiment was worth a try. We emphasise the point made earlier: the final shape of the new system was not really available to the employers when they made their remarks, and this is reflected in the answers they gave.

Suggestions for improvements

Finally employers were given an open-ended question seeking suggestions for improving apprenticeship training. Fifty-three responses were provided. These have been categorised into three main groups. One set of suggestions focused on the school aspect of the training. Another set was specifically directed towards the workplace training part of apprenticeship, and the third group related to the apprenticeship system per se.

The suggestions for improvements to the schooling were about increasing communication between employers, group training companies and the schools, better reporting about progress of the apprentice, more relevant curriculum and improved quality of teaching. Comments about workplace training were made in relation to improving the performance of employers in the training process, more effective training portfolios for apprentices, with greater flexibility in the way they develop, and an increase in the on-the-job focus of apprenticeship training.

What is clear from this feedback is that a number of employers would be interested in improving the apprenticeship system. They also may be prepared to provide input into a process that was directed to making such improvements.

Chapter 5

Apprentice perspectives

Introduction

Chapter 1 explained that apprentice views were sought on the questions governing this research. These views were considered by the research team to be essential. While apprentices could not be expected to provide an overview of the system, nor of such central concerns to this research as skills shortages in general, their perspectives on their day-to-day work are an invaluable data resource. Thus apprentices' answers about whether they are being trained in this or that skill can help us to see whether a 'skills deficit', one of the dimensions of a skills shortage, is beginning to develop. Similar inferences can be drawn from other responses.

To capture apprentices' views, an extensive and detailed series of specific research questions were developed by the research team and then tested in a supervised session with 11 electrical apprentices (see appendix 1 'Detailed specific research questions'). The main survey tool was then modified using responses from the pilot survey group. It should be noted that about 400 separate pieces of information in total were requested from each apprentice. In particular they were asked to comment on each of the core, tool and material-handling and additional skills in which they are required to become competent to obtain their trade qualification. These 'competencies' were derived directly from the competency standards documents for the trade.

Table 1.1 summarised the process whereby 343 completed and returned surveys were obtained. This represents more than 10 per cent of the 3,387 apprentices in the electrical trades in Victoria at the end of February 1999. This is clearly a substantial number, and the survey is probably the largest attempt to obtain such an extensive set of views from electrical apprentices ever conducted in this State. The data were analysed using SPSS. A full reproduction of the descriptive statistics for the apprentice data set is presented in an accompanying volume 'Apprentice and ongoing training needs in the electrical and associated industries: apprentice data set'. Table 5.1 summarises the information presented in Table 1.1 for convenient reference.

Table 5.1 Apprentice survey details (summary of table 1.1)

E1: electrical apprentices (electrical fitters and mechanics) Melbourne	
General electrical apprentice surveys (E1) were completed in supervised sessions at participating TAFE colleges or distributed by mail and completed in the apprentice's own time.	TAFE 221 surveys Mail 300 surveys
• Total completed and returned surveys	239
Participating TAFE colleges were Swinburne, Northern Melbourne Institute of TAFE, Kangan, Box Hill, RMIT, Energy and Telecommunications Training Australia (Gippsland TAFE, Chadstone) and Victoria University.	7
E1: electrical apprentices (electrical fitters and mechanics) regional (Gippsland)	
General electrical apprentice surveys (E1) were mailed to the participating TAFE college. 44 completed surveys were returned. The survey was conducted in a supervised session by TAFE personnel.	TAFE 105 surveys
• Total completed and returned surveys	44
The participating TAFE college was the Gippsland College of TAFE.	1
E2: refrigeration mechanics	
The refrigeration mechanics apprentice survey (E2) was undertaken in a supervised environment by the research team and staff of the participating TAFE college.	TAFE 50 surveys
• Total completed and returned surveys	47
The participating TAFE college was the RMIT.	1
E3: lineworker apprentices	
The lineworker apprentice survey (E3) was undertaken in a supervised environment by staff of the participating TAFE college.	TAFE surveys 20
• Total completed and returned surveys	13
The participating TAFE college was the Electro-Technology Training Australia (Gippsland TAFE Chadstone).	1

Table 5.2 presents additional general data about the apprentices who were interviewed: e.g., age range, year of apprenticeship, gender, Aboriginal and Torres Strait Island and NESB background, sector in which employed. Clearly the data set overall is substantial. Therefore it will be a useful asset for future research in a number of related domains. This chapter, however, will discuss only the information specifically relevant to the aims of the current research. In particular it will, as noted above, present apprentices' perceptions of the quality of training. This has two aspects. One refers to the quantity of training imparted. Are apprentices learning enough? Are the trade skills being delivered? The other is the quality of delivery and content. Are the skills being imparted well, with sufficient depth, and so that apprentices emerge as tradespeople with rounded problem-solving capacities?

Table 5.2 Apprentice survey respondents

	General electrical (Melbourne) n = 234	General electrical (Latrobe Valley) n = 44	Refrigerat -ion mechanics n = 47	Line-workers n = 13	TOTAL n = 338
	Figures in parentheses are percentages to valid total or total				
Year of apprenticeship					
First	44 (18.8)	6 (13.6)	9 (20.5)	0 (0.0)	59 (17.9)
Second	104 (44.4)	27 (61.4)	24 (54.5)	10 (83.3)	165 (50.0)
Third	67 (28.6)	11 (25.0)	9 (20.5)	2 (16.7)	89 (27.0)
Fourth	15 (6.4)	0 (0.0)	2 (4.5)	0 (0.0)	17 (5.2)
TOTAL VALID	230 (100)	44 (100)	44 (100)	12 (100)	330 (100)
Gender					
Female	2 (0.9)	1 (2.3)	0 (0.0)	0 (0.0)	3 (0.9)
Male	232 (99.1)	43 (97.7)	47 (100.0)	12 (100.0)	334 (99.1)
TOTAL VALID	234 (100)	44 (100)	47 (100)	12 (100)	337 (100)
Age					
15-20	132 (56.7)	21 (47.7)	26 (56.5)	3 (25.0)	182 (54.3)
21-25	68 (29.2)	16 (36.4)	13 (28.3)	3 (25.0)	100 (29.9)
26-30	19 (8.2)	4 (9.1)	3 (6.5)	0 (0.0)	26 (7.8)
30+	14 (6.0)	3 (6.8)	4 (8.7)	6 (50.0)	27 (8.1)
TOTAL VALID	233 (100)	44 (100)	46 (100)	12 (100)	335 (100)
Aboriginal & Torres Strait Is.	3 (1.3)	1 (2.3)	2 (4.3)	1 (7.7)	7 (2.1)
English as Second Language	48 (20.5)	16 (36.4)	10 (21.3)	2 (15.4)	76 (22.5)
Industry sector					
Commercial	114 (48.7)	28 (63.6)	30 (63.8)	1 (7.7)	173 (51.2)
Industrial	163 (69.7)	29 (65.9)	20 (42.6)	2 (15.4)	214 (63.3)
Domestic	101 (43.2)	22 (50.0)	13 (27.7)	1 (7.7)	137 (40.5)
Construction	80 (34.2)	13 (29.5)	6 (12.8)	8 (61.5)	107 (31.7)
Other	7 (3.0)	3 (6.8)	1 (2.1)	5 (38.5)	16 (4.7)
NB. Some work across sectors					
Mode of employment/training					
Direct employment	188 (79.7)	38 (90.5)	43 (93.5)	9 (75.0)	278 (82.7)
of which, with same employer	*154 (81.9)*	*30 (78.9)*	*35 (81.4)*	*9 (100.0)*	*228 (82.0)*
Group scheme employment	48 (20.3)	4 (9.5)	3 (6.5)	3 (25.0)	58 (17.3)
TOTAL	236*(100)	42 (100)	46 (100)	12 (100)	336 (100)
* Possible error in some answers					
Number of host employers for group scheme apprentices					
1	17	2	1	3	23 (41.1)
2	6	2			8 (14.3)
3	9	2			11 (19.6)
4	2				2 (3.6)
5	3				3 (5.4)
6-10	3				3 (5.4)
10+	6				6 (10.7)
TOTAL VALID	46	6*	1	3	56 (100)
* Possible error in some answers					
No. who have been unemployed during apprenticeship	26 (11.1)	8 (18.2)	2 (4.3)	0 (0)	36 (10.7)
No. who have other apprentices working with them	174 (74.4)	27 (61.4)	33 (70.2)	10 (77.0)	244 (72.2)
No. for whom apprenticeship has 'lived up to expectations'	179 (76.5)	36 (81.8)	35 (74.5)	9 (69.2)	259 (76.6)
No. for whom apprenticeship has *not* 'lived up to expectations'	40 (17.1)	8 (18.2)	8 (17.0)	3 (23.1)	59 (17.5)

A number of interesting facts emerge from Table 5.1. Not least of these is the apparent under-representation of women, reflecting the aggregate data given in

chapter 3. The number of indigenous electrical apprentices is larger than the figures for apprentices overall (see chapter 2 'Equity in apprenticeships'). However, the absolute numbers are too small to draw reliable conclusions. One caveat about the data in this chapter, which arises from the table, must be stated. It is that second year apprentices are over-represented in the sample. Hence it will be noted below where this is relevant, and more disaggregated or targeted data will be used (e.g., highlighting the third and fourth year apprentices' views and experiences when it is clear that these might carry more weight). Two other significant pieces of information also arise from this table:

- More than 10 per cent of electrical apprentices sampled have been unemployed for some time during their apprenticeships. A cross-tabulation of the data shows apprentices from all sectors have been unemployed, with construction generally having the lowest proportion who have been out of work. That one in ten apprentices experience a break in training through unemployment must be of concern, both for the quality of the training experience and the apprentice's sense of job security. In turn, this may affect their willingness to see their indentures through to the end (see the discussion of 'attrition' in chapters 2 and 3).
- More than 17 per cent of electrical apprentices sampled expressed an opinion that their apprenticeship had not lived up to their expectations. This feeling was not overly concentrated in particular years, though it seems to be more evident among fourth year apprentices. The apprentices surveyed gave a range of reasons for their apparent dissatisfaction, including inadequate skills development, problems of supervision, lack of work variety and being used as cheap labour. Again it is worrying for both 'attrition' and training quality that such a large proportion (almost one in five) feel this way.

Skill development

About 400 separate pieces of information were requested from each apprentice who participated in the survey, with 350 of these concerning the core, tool and material-handling and additional skills of their trade qualification. Apprentices were asked: 'Do you believe you are getting an opportunity to learn and practice the skills of your trade *at work*?' The particular skills were then listed. For example, core skill 2 reads:

> 'CS2. Obtain and correctly interpret documents to guide work procedures and the correct ordering of equipment and materials. Documents include architectural drawings, block, wiring and schematic diagrams, technical manuals, manufacturers' specifications.'

An example of a tool and material-handling skill, from the category 'Tools to install, maintain or decommission ... electrical equipment/wiring systems', is:

> 'Combination/multigrip/long nose pliers, sidecutters, knife, spanners, crimpers, wire strippers, wrenches, T-wrench.'

Other tool and material-handling categories are test and measurement instruments, materials, lifting equipment and work platforms and electrical equipment and wiring systems. An additional skill, in the category of 'Installation of wiring systems', is:

> 'AS6. A visual inspection is made to ensure that all wiring is free from cuts, nicks, or undue stress and to ensure that all wiring enclosures/support systems are free from damage and completed with a minimum of waste and re-work.' (Appendix 3: Form 1D: E1)

This section will examine issues arising from the apprentices' answers. To keep the analysis manageable it will present cross-tabulated answers only by apprenticeship year and group training scheme employment for each of the four survey categories and the total (i.e., general electrical, city and Latrobe Valley, refrigeration mechanics and line workers).

First, however, it will examine how apprentices answered 'How effective has your training at the workplace been in assisting the development of your skills in Reading ... Writing ... Maths?' Tables 5.3 to 5.5 present the totals and percentages for those who consider that their workplace training has been effective in assisting their reading, writing and maths skills to develop (i.e., those who answered 'very effective' or 'effective'). The answers are cross-tabulated by apprenticeship year and group training scheme employment for each of the four survey categories. In each category and in aggregate the proportion of apprentices who consider that their workplace training has been effective in helping them to advance their reading, writing, and mathematical skills is below 50 per cent. The total proportions are highest in general for writing skills (48.8) and lowest for mathematical skills (31.8), with the reading skills proportion being 45.5 per cent. In one case only, second year apprentice writing skills, is the proportion who think their skills are being helped at the workplace greater than50 per cent. So the majority of apprentices surveyed do not believe that their basic skills in reading, writing, and mathematics are being assisted by their workplace training.

5.3 Workplace training *has been effective* in assisting reading skills

	General electrical (Melbourne) n = 234		General electrical (Latrobe Valley) n = 44		Refrigerat-ion mechanics n = 47		Line-workers n = 13		TOTAL n = 338	
	Figures in parentheses are percentages to valid year total and valid total									
Year of apprenticeship										
First	21	(47.8)	1	(16.7)	4	(44.4)	0	(0.0)	26	(44.1)
Second	42	(40.4)	13	(50.0)	12	(50.0)	4	(40.0)	71	(43.0)
Third	31	(46.3)	7	(63.7)	5	(55.5)	0	(0.0)	43	(48.3)
Fourth	8	(53.4)	0	(0.0)	0	(0.0)	0	(0.0)	8	(47.1)
TOTAL	104	(44.5)	21	(48.9)	21	(47.7)	4	(33.3)	150	(45.5)
English as Second Language	21	(43.8)	6	(40.0)	4	(40.0)	0	(0.0)	31	(40.8)
Group scheme employment	17	(35.4)	3	(75.0)	2	(66.7)	1	(33.3)	23	(39.7)

5.4 Workplace training *has been effective* in assisting writing skills

	General electrical (Melbourne) n = 234		General electrical (Latrobe Valley) n = 44		Refrigeration mechanics n = 47		Line-workers n = 13		TOTAL n = 338	
	Figures in parentheses are percentages to valid year total and valid total									
Year of apprenticeship										
First	20	(45.4)	1	(16.7)	3	(33.3)	0	(0.0)	24	(40.1)
Second	52	(50.0)	14	(53.9)	13	(54.2)	7	(70.0)	86	(52.1)
Third	33	(49.2)	7	(63.7)	3	(33.3)	0	(0.0)	43	(48.3)
Fourth	7	(46.6)	0	(0.0)	1	(50.0)	0	(0.0)	8	(47.1)
TOTAL	114	(48.7)	22	(51.2)	20	(45.5)	7	(58.3)	161	(48.8)
English as Second Language	23	(48.0)	7	(46.7)	4	(40.0)	0	(0.0)	34	(44.7)
Group scheme employment	22	(45.9)	3	(75.0)	2	(66.7)	0	(0.0)	27	(46.6)

5.5 Workplace training *has been effective* in assisting maths skills

	General electrical (Melbourne) n = 234		General electrical (Latrobe Valley) n = 44		Refrigeration mechanics n = 47		Line-workers n = 13		TOTAL n = 338	
	Figures in parentheses are percentages to valid year total and valid total									
Year of apprenticeship										
First	15	(34.1)	0	(0.0)	4	(44.4)	0	(0.0)	19	(32.2)
Second	30	(28.9)	11	(42.3)	11	(45.9)	4	(40.0)	56	(33.9)
Third	13	(19.4)	6	(54.6)	3	(33.3)	1	(50.0)	23	(25.8)
Fourth	5	(33.3)	0	(0.0)	0	(0.0)	0	(0.0)	5	(29.4)
TOTAL	65	(27.7)	17	(39.5)	18	(40.9)	5	(41.6)	105	(31.8)
English as Second Language	16	(33.4)	4	(26.7)	5	(50.0)	0	(0.0)	25	(32.9)
Group scheme employment	11	(22.9)	3	(75.0)	2	(66.7)	1	(33.3)	17	(29.3)

Secondly, it is important to examine the way apprentices view the set of skills (competencies) they are using in the workplace. Here we asked them to say whether work afforded them the opportunity to learn and practice the core, tool and material-handling and associated skills of their trade. In theory apprentices must be 'competent' in these skills before they obtain a trade credential. As expected the data show that apprentices practice increasingly more skills at work as they progress through their apprenticeships. Also expected is that third and fourth year apprentices practice a greater range of skills. Indeed, by the end of third year they should be competent in the full ensemble of skills, for at this time they sit their A-grade licence test. A skills deficit, therefore, would show up if third and fourth year apprentices were not able to completely exercise all the required skills on the job.

Table 5.6 presents the results for third and fourth year city electrical apprentices. (For convenience we have used percentages totals for all skills within the core, tool and material-handling and associated skills categories rather than itemise the results for each of the 121 skills in turn.) The results have not been

presented for the smaller groups of Latrobe Valley refrigeration mechanics and lineworker apprentices. Notwithstanding, the data revealed a consistency between these and city apprentices.

Table 5.6 Opportunity to *learn and practice skills* at work (3rd & 4th year city apprentices electrical only)

	Core skills %	Tool & material-handling skills %	Associated skills %	AVERAGE %
Yes	76.9	78.2	67.0	72.6
No	4.8	10.6	12.1	10.7
Unsure	18.3	11.26	20.9	16.7
Not enough	13.2	11.1	17.8	14.6
Not yet	3.6	3.16	2.9	3.1

* Note that yes/no were exclusive answers, with unsure being the residual. These three and not enough/not yet allowed for multiple (non-exclusive) answers.

These results should be considered with some care. First, responses from only 15 fourth year and 64 third year apprentices are used to compile the above table. Secondly, it is reasonable to question whether apprentices shortly about to come out of their time would be entirely forthcoming in declaring that they might have certain skill deficiencies. Thus we might expect to get some over-reporting of skills. Nonetheless we should set against these caveats two factors. First scrupulous care was taken to assure respondents that their answers would be confidential. Recall that the surveys were completed in a classroom setting in which the purpose of the study, as well as the importance of objectivity, was explained. Secondly, there is no reason to think that, though small in number, the third and fourth year apprentices surveyed are unrepresentative of their peers. (See the note above regarding the Latrobe Valley electrical, Lineworker and refrigeration cohorts). At any rate the views of this group of 79 are interesting to consider in their own right, even if we must be careful in the inferences we may draw from the opinions expressed by this sample of apprentices.

The data in table 5.6 show that these apprentices were not completely confident in the breadth of their skills base. The average proportion of 'yes' answers, namely the proportion of required skills practiced at work, is 72.6 per cent. This means that on average, less than three-quarters of the required skills (or competencies) of the trade are being practiced at work. Meanwhile the remaining proportion of skills are not being practiced (10.7 per cent) or the apprentices are unsure (16.7 per cent). Perhaps equally significant is that 14.6 per cent of the skills, on average, are not being practiced sufficiently by the third and fourth year city electrical apprentices surveyed. Forty-five of the 79 work across the commercial sector (26.0 per cent of the total sector entries); 57 across industrial (32.9 per cent); 39 across domestic (22.5 per cent); and 29 across construction (16.8 per cent). Some apprentices work across more than one sector, so the percentages above are of the total 'sector entries'. Nineteen of the 79 work for group training companies (24.1 per cent), while the other 60 are employed directly (75.9 per cent).

A closer look at skill deficiencies

All core skills rated higher than 50 per cent for a 'yes' response. However, significant skill areas that 3rd and 4th year city apprentices believe they are not getting an opportunity to learn or practice at work include a number of tools and material handling and associated skills. Table 5.7 presents these skill deficiencies, which relate to three phase, motor equipment and electronic equipment areas. Given that 57 of the 79 apprentices (72 per cent) stated that they work in the industrial sector, where these skills are important, the deficiency is very significant. Indeed it suggests the notion of two classes of tradesperson - those who do gain such skills, which are picked up in a good quality industrial environment, achieve an A-grade status and those who do not learn all of the skills obtain a qualification akin in reality to the old B-grade.

Table 5.7 Apprentice identified skill deficiencies

	Yes		No		Unsure		Not enough		Not yet	
Tool & material handling skills										
Test and measurement instruments: Phase sequence tester	21	(27)	29	(37)	29	(37)	18	(23)	2	(3)
Electrical equipment: Light emitting diodes, power diodes, heatsinks	26	(33)	22	(28)	31	(39)	21	(27)	4	(5)
Electrical Equipment: motor brush gear	32	(41)	23	(29)	24	(30)	16	(20)	5	(6)
Electrical Equipment: AC and DC motors, alternators, generators, motor starter (DOL, Star/Delta etc), motor control gear	39	(49)	18	(23)	22	(28)	15	(19)	3	(4)
Associated skills										
Decommission electrical equipment: use texts, manuals and manufacturers specifications to ensure decommissioning of equipment	36	(46)	13	(16)	30	(38)	28	(35)	2	(3)
Test and connect electrical equipment: written certification is submitted to the supply authority	37	(47)	21	(27)	21	(27)	14	(18)	7	(9)
Test and connect electrical equipment: test results and observations are accurately and concisely documented.	40	(51)	17	(22)	22	(28)	24	(30)	3	(4)
Test and connect electrical equipment: organise an inspection of site and equipment	40	(51)	17	(22)	22	(28)	20	(25)	6	(8)
Test and connect electrical equipment: AC motors, alternators, DC motors, generators and resistive/inductive heaters and/or furnaces and arc welders	40	(51)	14	(18)	25	(32)	21	(27)	7	(9)

* Numbers in parentheses are percentages.

Third and 4th year apprentices have indicated a deficiency of skills related to motor equipment. In addition, a number of the skill areas identified involve skills around documentation, certification and inspection. These are tertiary skills requiring integration and application of knowledge. The deficiency in these skills may be due to a lack of confidence by apprentices or the requirements of documentation to be carried out by qualified tradespeople. However, these are important skills, and apprentices here are saying clearly that they do not feel confident that they are gaining them on the job.

Impediments to skill development

Apprentices were asked to comment about their on-the-job skills development and to identify factors they believe impede their on-the-job skills development. This was an open question without a predetermined list of options. It allowed the apprentices to express their own opinions. As the survey results presented in Table 5.8 show, metropolitan apprentices identified the most important factor impeding them as being they were unable to use the required skills at the worksite (25 per cent). The other two most important factors ranked in order were that they were not allowed enough time to practice their skills (12.5 per cent) and that employers preferred to use an A-grade electrician rather than allowing apprentices the opportunity to attempt the job (7.5 per cent).

Latrobe Valley apprentices identified skills not used at the worksite (32 per cent), belief that skills will be taught later in apprenticeship (20 per cent) and lack of variation, employer preference to use a licensed electrician, inadequate supervision, and employer intervention (8 per cent) as the factors leading to lack of skills development. Lineworker apprentices identified inadequate time (43 per cent), followed by inadequate variety, inadequate supervision, overwork as cheap labour, and skills being taught at a later time (14 per cent) as the key factors. Refrigeration mechanics identified narrowness of skills exposure (38 per cent), skills not used at the worksite (30 per cent) and inadequate time to practice skills (15 per cent).

Table 5.8 Apprentice identified factors impeding skills development

	City		Latrobe Valley		Lineworker		Refrigeration	
Factors	No.	%	No.	%	No.	%	No.	%
Don't use those skills at workplace/site	60	25	8	32	-	-	4	30
Not given enough time to practice a range of skills	30	12.5	1	4	3	43	2	15
Not given tasks, easier to use an A-grade electrician	18	7.5	2	8	-	-	1	7.6
Not enough variation on-the-job	15	6.3	2	8	1	14	-	-
Limited development and use of skills because of narrow range of on-the-job tasks	13	5.4	1	4	-	-	5	38
Over worked as cheap labour	11	4.6	1	4	1	14	-	-
Will learn skills later in my apprenticeship	9	3.8	5	20	1	14		
Sent out on my own to do work, not shown how to do jobs, not supervised adequately	8	3.3	2	8	1	14	-	-
Isolated, tradesmen not supportive	6	2.5	1	4	-	-	1	7.6
Work with a limited range of equipment on site, cannot achieve all skills associated with a full range of equipment	3	1.25	1	4	-	-	-	-
Employer/supervisor directs my training	2	0.8	2	8	-	-	-	-
Trade school is good, on-the-job poor	1	0.4	-	-	-	-	-	-
On-the-job good, school poor	1	0.4	-	-	-	-	-	-
Responses Q17 (including multiple responses)	*175*	*100*	*25*	*100*	*7*	*100*	*13*	*100*

The following quote from the apprentice surveys gives some of the general flavour of the responses and the feelings of apprentices on these issues:

> *As long as bottles are coming out of the machine, the company doesn't really care. My host employer...thinks apprentices should be seen and not heard and while I know how to do a sinusidle (sic) wave form, I still don't know how to sharpen a drill.'*

Constraints imposed on the learning time of apprentices as indicated by these results correlates with employers' own expressions of time constraints that stem from the competitive contracting and sub-contracting environment in which many electrical businesses operate. Using A-grade electricians rather than apprentices is another expression of these tight time and economic constraints: an A-grade can work more quickly and without supervision.

The other responses were fewer in number, but their importance should not be underestimated. For example, almost five per cent of respondents indicated they are working alone or with irregular and inadequate supervision. Given the dangers of the electrical trade, and regulatory requirements to supervise electrical apprentices, this is of concern.

'Sending a first year apprentice offsite alone without a tradesman. Employer expects too much out of a first year apprentice. Apprentices are cheaper to employ then fully qualified electricians. Being used as cheap labour in all areas of the site.'

'Having a tradesman (to work with) was an expectation. So far, it has been self-taught.'

The totality of issues raised provides an important insight into why 17 per cent of apprentices surveyed said they were disappointed and dissatisfied with their apprenticeship training. Further, they provide important insight into the quality and culture of apprenticeship training at some workplaces and are useful in understanding factors that drive apprentices to leave the trade (see the discussion of attrition in chapter 3). It should also be noted that, during the administration of the survey, apprentices explained that this was the first time they had been asked about the overall quality of their apprenticeship. Significantly they also said that this was the first time they had been shown the complete list of skills, knowledge and standards required to achieve their A-grade licence.

'My company is large. We work on big construction sites and are used as cheap labour and at the end of my 2nd year I still have not even seen inside a switchboard. My company is not interested at all in training their apprentices correctly. Cable-pulling and watching concrete in car parks dry is not much in the way of variety. No, [my apprenticeship hasn't lived up to my expectations], because it's shit boring doing the same thing every day.

Because I work in an industrial workplace and, as yet, I have not fitted off a power point or a light switch and I have only seen my boss 10 times in two years.
Because of management's cost-cutting strategies (sic) there are currently insufficient numbers of tradesmen on the shop floor and, because of this, I'm swamped with work as an Instro. (instrument fitter).

These quotes illustrate that apprentices working in different industry sectors are experiencing similar problems. This indicates a lack of structured and adequately resourced on-the-job training. This, in turn, may be symptomatic of an industry-wide problem requiring industry-wide solutions. Recommendations made in the Schofield report (Schofield 2000), such as quality induction programs and structured and adequately resourced individual training plans, should be considered in light of on-the-job training problems identified in this report.

Influences on apprenticeship choice

To understand better why people choose to enter an electrical or associated apprenticeship we asked apprentices to nominate the various factors that influenced their choice. The factors identified by respondents were then ranked. It is important to understand the significant influences so that resources may be

targeted, for example in the school careers education process, to help to overcome a shortfall of applicants or to promote trades as a viable option to higher achieving students. It also allows us to appreciate more clearly the expectations and motivations an apprentice has when entering the trade, such as family and income, that might or might not be maintained as their apprenticeship progresses. These, in turn, can influence important issues such as attrition (see chapter 3). Table 5.9 presents the results. Comments on these will be made in the next section.

Table 5.9 Influences on apprenticeship choice

	City		Latrobe Valley		Lineworker		Refrigeration	
Factors	No.	%	No.	%	No.	%	No.	%
Careers education at school	226	97	1	2	0	0	1	2
Family	213	91	4	9	1	8	7	15
Family knows someone in the trade	201	86	8	18	0	0	6	13
Money	174	74	12	27	0	0	14	30
They knew someone in the trade	154	66	20	46	0	0	19	40
Wanted to	133	57	21	48	4	31	10	21
Previous experience (e.g., work experience)	131	56	13	30	7	54	15	32
Other	222	95	2	5	2	15	7	15

Overview of the apprentice survey results

While it would be unmanageable to comment on each question of the apprentice survey, a number of significant concerns are raised by the apprentices. First most apprentices perceive that they are gaining the majority of core skills relating to their trade over the time of their apprenticeship. However, there appears to be some skill gaps developing. The deficiency of skills generally relates to motor control, alternators/generators, three phase and electronics as well as confidence or knowledge regarding documentation, interpretation of test results and inspection.

It is important to note that apprentices were asked to respond in regard to their on-the-job skills development and that some of these skills may be picked up at the off-the-job training. However, it is important not to forget the underlying principles of apprentice training. These require practice in a work environment and repetition of tasks and skills under supervision.

Another conclusion arising from the apprentice survey relates to factors influencing the decision to undertake an electrical apprenticeship. Significant is the influence of family and school as well as some knowledge of the industry/trade. This has significant implications for groups that are under represented, such as women, ATSI and NESB. Given the 'influence factor' in decision making, it is important that those people who influence a young person's career are well informed with regard to apprenticeship training.

Chapter 6

Practitioner perspectives

Introduction

The information in this chapter comes from individual and group interviews with industry training professionals and others with a direct interest in electrical apprentice training outcomes. Thus we have used the term 'practitioner' to describe the perspectives provided by those in these groups. Two purposes were served here: first a deeper understanding of participants' perceptions of apprentice training was obtained; and, secondly, the interviews illuminated changes in the training culture and policy development. An extensive range of Vocational Education and Training professionals were interviewed, including representatives of the following categories: TAFE teachers, heads of department and administrative personnel; private training providers; Group Training Companies (GTC); Industry Training Board (ITB) personnel; union representatives; Vocational Education and Training (VET) system policy officers drawn from a range of organisations; and VET system researchers.

Nineteen people were interviewed based on participant and organisational anonymity. The basic employer survey was used as the schedule interviews (see appendix 3). A modified version of the survey/interview tool was developed for the TAFE cohort. All interviews were taped and later transcribed with information grouped into key areas of interest. Interviews ranged in duration from 1 – 2.5 hours. Two comments collected during the telephone interviews with employers are also included. These are tagged in the document. To preserve anonymity, the individuals and organisations that participated in this research are referred to as 'participants' and are divided into categories of 'systems', 'group training' or 'provider'.

Overall, practitioners from across the electrical industry provided similar responses. There is general agreement on the current issues such as the comparatively lower uptake of apprentices by private industry, potential and current skills shortages and the lower level of practical/hand skill development of apprentices and new entrants to the industry.

Skill needs and skills shortages

A range of insights came from within the industry on the central concern of skills shortages. In the discussion of a skills shortage, it is important to clarify whether we are discussing a shortage of apprentices, a shortage of tradespeople or a deficit of specific skills and experience. As noted in Chapter 1 a number of questions need to be asked. First are enough tradespeople being trained? The second is about the quality of training. Are the skills being imparted sufficient to equip tradespeople in a fast changing work and technological environment? In other words, will there also be a skills shortage in the form of a skills deficit?

A GTC representative made the following comment regarding skills shortages:

Here you need to determine whether you are talking about people or skills. If it is the number of people, then you need positions for apprentices to train. If it is the skills, then you need to reform the system.

This comment was reiterated by a number of participants. One GTC representative said that there was a shortage of apprentices last year but a surplus this year, and they had more apprentices than jobs. A provider who said that the numbers of apprentices had remained steady over several years echoed this view, but added that the numbers are beginning to climb once more (see, e.g., chart 3.3 for the years from 1995). This provider did comment, however, that other providers are struggling to fill classes. However, this may be a regional phenomenon or a reflection of employers' perceptions of those providers' adequacy. Another provider suggested that there was a skill shortage of tradespeople across the industry but that this was not reflected in the intake of apprentices.

Nearly all participants indicated that the industry was experiencing or about to experience specific skills shortages. Most agreed that there was a shortage of refrigeration mechanics and electronics tradespeople. In addition, many suggested that there will be a shortage of qualified power supply tradespeople and, in the longer term, potentially a shortage of electricians. One of the reasons for a shortage of tradespeople in the power supply and distribution and electrical trades is that, in the past, 'large public utilities over-trained for the industry. Industry is not currently training at the same rate, which will lead to skill shortages.' (Systems) Another systems participant reiterated this, explaining that everybody in the industry benefited from the Victorian Government's training initiatives:

... because the apprentices were known to be some of the very best trained, paid for with public money. The industry kept the majority but not all of them. They drifted into other industries, they were picked up by other industries, there was that natural flow into other industries, other callings, and overseas and interstate. So that was public investment into our future. That disappeared and is gone.

A systems participant stated that the trade qualification provides a stepping stone for a career, with many tradespeople 'leaving the tools' in their mid-to-late thirties. This has always been the case, partly due to the physical nature of the work. A question for the industry is whether this natural attrition is balanced by intakes of new entrants to the industry.

Therefore, despite the apparent consistency in the overall electrical apprentice intake numbers (see again chart 3.3 for the years from 1995), nearly all participants maintained that not enough apprentices were being recruited. Many cited privatisation of public utilities and contracting/outsourcing of labour as reasons that not enough apprentices were being trained. This view was echoed in an address by Graeme Watson, a long-time specialist in lineworker training at both State and national levels, to a seminar organised by the Workplace Studies Centre on Victoria's power industry. He provided the following figures:

'The shedding of highly trained staff began under the SECV, but was greatly accelerated by privatisation. The permanent workforce was

reduced by 22,000, in Victoria. In the Maryborough region covered by Powercor, for example, the permanent workforce was reduced from 20 to 3 workers. Powercor closed a further 17 regional depots replacing over 70 permanent employees with four "local service agents" who are on call virtually 24 hours a day, seven days a week. Citipower reduced their permanent workforce from over 400 in 1996 to 32...
...The loss of experienced maintenance people is now at crisis levels. The average age of a linesman in Victoria is 48. The 5 distribution companies now have a combined total of 12 junior lineworker apprentices.' (Watson 2000)

Group training companies have stated that there is a shortage of host employers in the electrical industry. They are reluctant to take on too many apprentices, only to have them out of work for long periods of time. Other systems participants, who support only a gradual increase in apprentice intakes at this stage, corroborated this view.

A systems participant provided the following summary of common views on how to overcome skills shortages:

Overcoming potential skill shortages requires changes to the industry's structure and attitude. Training is currently seen as a cost, despite genuine interest at an individual level to 'give someone a go'. The trend of outsourcing labour raises issues of contracts (and economics of training costs) and there is a role for government with regard to encouraging apprentice training as part of contract negotiations. The information technology area experiences poaching of staff, who can claim high incomes. There is a possibility that such a scenario could happen with electricians in the future if potential skill shortages are not addressed.

Another critical issue as seen by participants across the industry is the lack of promotion and awareness of trades in general in the secondary school system. Participants identified the two key areas of limited hand skills development and lack of careers advice as significant causes for low numbers and poor quality of apprentices coming into the industry. There were wide-ranging views on who should be responsible for undertaking promotion and marketing of the industry at the secondary school level. However, many participants identified this as a role for government and the industry training boards (ITBs). Specific strategies identified include professional development for careers teachers, work experience programmes for students and seminars for students, teachers and parents.

An industry representative explained the problem this way:

Apprenticeships are not as attractive to young people as they once were. It's just not in their faces enough, and they don't see it as a viable way to go for their future life. I think there are two things going on here. Firstly, there's a cultural shift where young people are not choosing apprenticeships because they're not attracted to manual work. But secondly, at the secondary school level, there's no trade-related training where kids would go and do actual work, woodwork, metal work, etcetra. Because trade schools are gone, many employers

perceive young people as having no skills, and most of the time they're right, because people don't have the opportunity to get the basic hand skills with tools and so on.

A provider explained that employers (and apprentices) do not value the indenture or contract of training as much as they used to. A general feeling among other participants was that, with the demise of the Apprenticeship Commission and monitoring of individual apprentices and employers, the attitude had changed.

The contract is not worth the paper it's written on any more. (Systems)

A group training participant suggested that, currently:

... there is apathy with apprenticeship training. It is driven by the dollar. We need to educate employers on the long-term benefits of training, and this is a role for the ITAB.

The above comments lead to the question of a skills deficit. First skills in particular roles are in demand. These include experience in copper wire systems (communications), specific networking systems (communications) and business equipment maintenance. More generally, however, participants alluded to the lack of trade skills overall. Specifically they pointed to the lower skills level of apprentices and new recruits. A group training company also stated that:

Change in technology has had a big impact. In manufacturing, the change in technology has caused a tapering off of numbers. The trick for us is to look at the new type of skills areas and become involved.

Industry representatives noted the shortage of skills in the lines area, relating this to the significant changes in the power generation and distribution industry. Prior to the changes, the employment of apprentices was ongoing and acknowledged as part of the price for providing secure access to power. One respondent explained that:

... right now, it's not possible to buy a linesman. People are out there now undertaking very dangerous tasks, yet with very little experience. A lot of companies haven't put on any apprentices for the last six years, and they're starting to wake up particularly where, in the case of transmission and distribution, the average age of lineworkers is around 50.

A group training participant identified difficulties the system has had with skills development of apprentices:

There has always been a problem with the model of apprenticeship training. How do you top up on skills deficiencies among apprentices? Part of the problem is that the government is still providing funding on a student hour basis. The problem is not understood by them, either. There is nothing in the funding model to cover the cost of additional training for those who are not at the appropriate level of

skill development ... The new package might help, but the changing market conditions seem to intervene and prevent anything from being done ... It is not that easy to address the issue of programming the deficiencies of skills among individual apprentices. Even under the new system there will be problems.

Problems of attrition and retention

Specific questions on attrition were not asked during interviews. However, some participants commented on attrition as one of the reasons for a skills shortage in the industry. Victorian systems personnel propose that the attrition rate for electrical apprentices is about 10 per cent. (Refer to Chart 3.8 and Table 3.7. These show that, on average from the start of the 1980s the net attrition rate has been closer to 5 per cent, but that, in recent years, it has moved towards 10 per cent.) It was suggested that this is higher than other trades, possibly due to the 'technical level of skills required'. A provider also stated that an increasing number of apprentices are not completing or not completing on time.

Other systems personnel have suggested that in-depth attrition information is difficult to ascertain. However, some evidence (a participant identified NCVER research) suggests that non-completion is increasing for electrical apprentices. Reasons given for non-completion are mainly centred on issues of apprentice ability and suitability. Such reasons include:

Kids have a short-term mentality, i.e. not [being] prepared to stick with a long-term goal.

The cohort of school leavers that would traditionally have gone into an electrical apprenticeship are going into para-professional occupations. Generally the level of apprentice recruits is lower than in previous years.

Bright kids think much of the work expected from them in the apprenticeship is below their standard.

Recruitment of apprentices is less personal, and therefore matching of apprentices to work that would suit them is not happening.

One provider reiterated these concerns and added that some apprentices struggle with the off-the-job training due to the difference in classroom delivery between secondary college and further education. In particular many apprentices are not used to taking tests:

It's coming from the secondary school system where they don't have to be put under test conditions.

A small employer provided the following example of their recent experience of apprentice training (collected during telephone interviewing). The telephone interviewer noted that the employer seemed reluctant and uncooperative initially about apprenticeships until he detailed his experience:

I employed an apprentice recently and, in [the] first few weeks of employment, he turned up at work with a television. He proceeded to set up the television and to sit there and watch it. When I asked what he thought he was doing, I was told that he brought the television for something to do, that the apprenticeship was good because it meant he didn't have to attend school any more.

Industry representatives associated attrition with changes in the perception of the apprentice about the level of discipline involved, as well as the importance of attitudes of tradespersons toward apprentices at the worksite:

In a workshop a single apprentice might find themselves working with 10 people, with a range of personalities and experiences, but they've all completed their apprenticeship and are qualified. Two attitudes prevail if the apprentice is falling behind in their school work. Some of the tradespeople will come forward and help the kid. And that's very good for both the apprentice and the tradesperson, because they're revising their knowledge by going through the books with the apprentice. This still happens on larger jobs. But the vast majority of apprentices can't access a tradesperson to help them. Other tradespeople will just say the kid's failing, hasn't met the grade, and they will let them fail. So if you've fallen behind, that's where discipline comes in. Some apprentices believe it's OK to miss school. It all comes back to having a clear perception of your responsibilities when you start your apprenticeship, recognising also that getting an apprenticeship is a relative privilege. A formal approach to apprentice mentoring is needed ... Apprentices can't form a relationship with tradespeople on the job anymore ... and that comes back to the situation in apprenticeship training of change for change's sake rather than fixing what needs to be fixed and valuing what needs to be valued.

Industry representatives also explained the problem in terms of poor recruitment practices associated with significant changes in the apprenticeship training system:

Employers are often headed toward someone who has Year 11 and VCE. But that is a lazy way to select someone. The reality of the apprentice master is that they used to have the skill to determine whether someone had the aptitude and skills to make an apprentice and a tradesperson. They didn't make many mistakes. That's gone now. These days, taking on an apprentice involves a paper chase to work out who the best candidate is and, in the process, they wipe out hundreds of candidates who were more than capable. It's a really major problem. As a tradesman, in my experience, you get worse apprentices.

A group training company also commented on the failure rate of apprentices due to a lack of practical skills:

At present the student will be signed off on the 40-hour module but not on the experience of carrying on that skill on the job. They will get their A grade licence because they have done the theory side. The failure rate is fairly high, and this is one of the reasons. The 50 per cent failure rate for licensing at the end of the fourth year is due to the lack of appropriate on-the-job training. It is all a question of lack of mentoring.

A group training participant also commented on employers' unwillingness to contribute to training and skills development of apprentices:

The companies do not want to become involved in these issues. If the apprentice does not have the skills for the job they do not want them. If they do have the skills they do not want them rotated [in order to gain further skills].

Implications of alternative work arrangements

Two significant and interrelated shifts in training culture and work organisation were foci of this research, namely the growth of labour hire and the development of group training. Both, of course, relate to structural shifts in industry that include contracting out of maintenance functions, the decline in public sector employment and an increase in self-employment. Participants thus were asked who participates in the training of apprentices? What is the incidence of apprentice training among labour hire companies? What is the incidence of apprenticeships through the group schemes? How important is the group scheme for employers under different forms of work organisation?

A group scheme representative offered interesting comments on labour hire and apprentices:

Labour hire haven't taken apprentices. Labour hire's attitude is to sell skilled labour. They have gone into workshops and undercut the existing workforce. On the whole they do not employ apprentices. Occasionally, they will take over an apprentice where they are employed in a workshop. But they generally do not have apprentices and this is a problem ... They do not contribute to training in the industry and this is a real problem ... What is required is pressure by government on the employers who use labour hire firms to pay for some of the apprentices that labour hire should put on. Regulation via the award or EBA [Enterprise Bargaining Agreement] process is required. It is, after all, a regulated industry. This would be the best way of getting a level playing field that would prevent the labour hire people from using competition as a copout for avoiding putting on apprentices.

The information provided here coincides with that presented in chapter 4 'Employer perspectives'. It was noted there that, of the 21 labour hire firms participating in the study, only six employed apprentices. Five of these had workshops. Of the firms that were wholly engaged in labour hire, only one (seven per cent) employed apprentices. The link between workshop facilities and

employment of apprentices, especially direct employment, is clear. There were very few electrical apprentices in the labour hire firms participating in this study.

Recruitment through group training companies is generally through pre-vocational programmes. Often applicants are required to undertake an aptitude test first. The 'pre-voc' thus provides a filtering function for both the GTC and the student about whether this is an appropriate career choice. One GTC gave further examples of recruitment methods, such as attendance at school careers nights, liaison with VET in schools programmes and word of mouth.

One GTC said that employers choose group training for a variety of reasons, including: flexibility; economics, particularly where they cannot afford a tradesperson; external management of paperwork. A training provider also stated that apprentices employed under group training had more opportunity to obtain a variety of work and therefore skills. Generally participants stated that there was no demonstrable difference between apprentices from group training and those employed directly. Nor did they identify a difference between apprentices employed by different group training companies. There was concern, however, that many apprentices employed by group training are used as top up labour for short periods. A provider explained that apprentices experiencing this type of work tend to have problems with the off-the-job training, as they:

> *... do not pick up a work ethic ... If an employer knows they only have them for three months there is no commitment to teach them anything [on the job].*

Industry representatives queried the entrance requirements set by GTCs, asking why it was so high. One interviewee cited a boy who had won the Year 10 maths award at school failing the entrance test to get an apprenticeship with a GTC. They also indicated concern about group-training-based arrangements overall, noting that there are problems with apprentices not getting the full range of skills and experiences necessary. Comment was made about the pressures that existed to push apprentices through their training, even if they had not obtained the required skills:

> *With group training companies you have a group of employers who have a vested interest in getting kids through quickly ... There are not many employers who will carry a kid who has fallen behind in their studies. There's too much dough in getting kids through. Everything has tightened up so much.*

This is an important point to note about the prevailing training regime. Though group schemes clearly meet a structural need, the methods by which they are rewarded can have unintended consequences for training quality.

Impediments to apprenticeship training

Another important aim of this research is to identify impediments to firms taking on apprentices. One GTC proposed three impediments to taking on more apprentices: scarcity of suitable applicants; poor quality of applicants; and difficulty of placing apprentices in the early years of their trade as they are less

productive. Clearly this view reflected the position of GTCs in the industry and their specific needs.

A systems participant, however, reported anecdotal evidence from small employers explaining their reasons for not employing apprentices:

> *High competition [results] in cost cutting, where possible. Apprentices are not productive in early years and are seen as a cost ... [The] business planning timeframe for small business has dropped to six months: i.e., many small businesses are unable to plan beyond six months, making it difficult to accommodate apprentices ... 'Apprentices are not what they used to be' is a common phrase among employers, and their perceptions of young people affects their decision to take on an apprentice.*

Small businesses were also regarded to have a lower commitment to training in general. Interviewer's notes from a telephone interview with an employer illustrate the tight conditions in which some contractors work:

> *His company had a history of employing apprentices over a 40-year period. However, his firm has not employed any apprentices for the last nine years ... He believed that the Government should subsidise firms such as his. These days he cannot afford having anyone on the payroll who does not pay their way. Clients want to pay the minimum amount for the maximum benefit.*

A second employer contacted by telephone noted that his company:

> *... is a contracting company, which does not have apprentices of its own nor through a group. Clients do not ring requesting apprentices. They want 'A-grade' sparks.*

However, he personally supported apprenticeships, having two sons who are apprentices.

A provider, echoing the 'competition' theme, stated that, because employers do not have the time to train new apprentices, they are often looking for apprentices with some experience:

> *You get employers ringing up saying 'do you know any good second or third year apprentices?' It's not 'do you know any good secondary school kids?' They want someone who has been trained a little bit so they can come in and make money for them.*

A group training participant also said:

> *The charge out rate is too high compared with the value of the service provided by the apprentice ... Apprentices have limitations and are not always suited to the job. The final year apprentices sometimes do not have the variety of skills to make them attractive to the employer. Employers often use the group scheme for topping up the workforce. They have high expectations as to what the apprentice can do. They*

sometimes will specify the skills required for the job that they currently have. Apprentices are sometimes sent back because they are not seen as satisfactory.

Another group training participant corroborated this.

Industry representatives also gave a wider perspective. One put the impediments to employing apprentices in context by setting these against the very real cost of not employing apprentices:

> *Many big manufacturing companies have contracted out maintenance functions, including electrical and, as a result, have stopped employing apprentices* ... [Various companies were listed.] *So they're not employing apprentices and are having real problems finding qualified electricians ... People are retiring. But contracting out has changed the workforce. In most cases, a small percentage of employees retain some of the knowledge. In a manufacturing environment, you can't just walk and talk and pick it up ... someone in the plant has to have the skills and knowledge about that plant. A lot of companies lost that knowledge when they contracted out the maintenance employees, and lost very badly. They lost all their skills and local knowledge about their plant at the same time. While they may have saved lots of dollars ... they lost out when it comes to keeping the plant operating, knowing what's wrong and where and when the plant goes down.*

A systems representative also drew out similar implications:

> *With the shift that's occurred in industry broadly and the impact of contracting out and removing that maintenance function from industry, as though it's some economically wise thing to do, has removed the training principle from the tradesperson's role. Now, they simply don't have the time.*

Apprentice attributes and appropriate trade and post-trade training

Participants were asked during interviews what they believe are the important attributes of a good apprentice (see also chapter 4 'The quality of apprentice and post-trade training' for an account of employer perspectives; see especially table 4.19). Overwhelmingly, they responded that a good apprentice in the electrical industry must have:

1. a positive attitude to learning;
2. a good set of general skills, including reading, writing, arithmetic and relationships; and
3. a desire to be an electrician.

Other attributes that were rated highly, but not considered essential, include:

4. an ability to use initiative and solve problems;

5. an ability to work in a team;
6. hand skills;
7. good communications skills; and
8. pride in their trade.

Given the comment 'apprentices aren't what they used to be' as a general perception by employers, there appears to be some contradictions in what industry say they want in a potential apprentice. Many employers, particularly group training employers, recruit through pre-apprenticeship courses offered at TAFE or the Skills Centre and prefer those students with a Year 11 pass. The rationale is that the pre-apprenticeship programme acts as a filtering device. Students gain an understanding of the trade and can make an informed decision about continuing with an apprenticeship. The programme also provides employers with potential recruits who are able to undertake the classroom work required for an apprenticeship. In addition, many employers administer selection tests. These test for mathematical, communication and mechanical reasoning skills. This process would appear, in theory, to provide recruits who fulfil the essential attributes presented above: i.e., a willingness to learn, a desire to continue in the trade and general skills in maths, communications and with hands.

Many practitioners indicated, however, a concern about what they perceived to be a lower standard of apprentice coming into the industry. One provider stated that:

> *... intellectual standards have dropped ... Some of them [the apprentice intake] can't fill out the enrolment form or spell their own name.*

A question that is difficult to answer is whether the general standard of apprentices coming into the trade has dropped or the level of skills expected by the industry has increased. Many interviewed believed that the former is occurring. However, at least one systems participant questioned whether the apprenticeship training is providing the basic skills that apprentices need as a foundation:

> *What are we trying to teach a tradesperson? Are we going to the high end of technology before we teach them about the low end? And I use the 'hand skills', as we refer to them, as the example of what we aren't teaching them as opposed to what we are teaching them. And I'd be the first to admit that apprentices will jump to the high end of technology 'cause that's what they are used to at home. The average young person today has got a computer of one form or another, even if it's a little 'game-boy' game. They don't like fiddling around with a pick, bar and shovel. Half of them, if you ask them to use a shovel, they'll throw it at you, but when you ... take the care to explain why you've got to use their tools in a certain way, and teach them right up the front end, they twig that this makes sense. The same applies to all these things.*

Providers also expressed concern regarding the change in curriculum over several years, in particular the reduction of practical training off-the-job. This

practical training is supposed to be provided by the employer. However, providers gave several examples of this not occurring. The most common reason for this is the narrow field of work many employers undertake. While there is agreement by most participants that it is and has always been impossible to provide an apprentice with experience of every aspect of the electrical trade, the role of the training provider has been to provide a broad base of theoretical and practical skills. The concern of providers is that, with a reduction of practical skills being taught off-the-job, apprentices are not gaining the core practical skills of an electrician. One provider gave the following, alas not uncommon, example:

> *... finished his apprenticeship, has done 14 weeks of LEM modules. He is just about to sit his LEM exams and he comes up to me and says 'I just wired my very first power point'. All he's done is run data cables and he's an A grade electrician! ... We weren't training him to do data because he's doing electrical here, and they're [the employer] not training him to do electrical because he's only doing data ... So he's not getting the theory background to do his work.*

Most practitioners saw the off-the-job training as also being the responsibility of the industry and workplace. One group training participant added:

> *You can't rely on TAFE to provide all of the training. This is also the responsibility of the employer. It is a diverse industry. TAFE provides a broad overview ... You can't expect apprentices to know everything but, by the end of their apprenticeship, they [should] have access to information on additional training they may wish to follow up.*

A systems participant reiterated this:

> *Off-the-job training provides a safety net so they [the apprentices] learn skills they can't get on the job.*

Group training companies reported a high degree of control over the progress of the apprentice and frequent communication with training providers. One commented on the effectiveness of the off-the-job training:

> *It's a modular system, which is not an ideal system, and the training package system is better because of that fact. The training package is based on a system where they do the classroom work and are then meant to spend the rest of the week doing that on the job. But the system is falling down when they are not doing the training on the job. For example, testing is done in the classroom, but is not done on the job. Part of this is due to the changing workplace, where employers haven't got the 'fat' that they used to have years ago to baby-sit an apprentice through the training. So there is a critical issue of getting suitable on-the-job training.*

A number of providers and systems participants raised concern over the ageing of teachers in the training providers. Few tradespeople are moving into training, and

the casualisation of teaching in the TAFE sector, according to practitioners, result in shortages in the TAFE sector. Teachers' skills will be superseded or less relevant, and the 'generation gap' between apprentices and trainers may result in difficulties in communication, empathy and effective delivery.

A number of providers also said that increased competition between providers has had a detrimental affect on the quality of training. Providers cited past examples of interchange and exchange of teachers and information between providers that enabled all providers to keep abreast of new technologies and delivery methods. Competition, participants stated, has decreased cooperation between providers and meant that the consistency and standards between providers had diminished.

When asked how well prepared apprentices and tradespeople were to be effective in the workplace in five years, most participants thought that it depended on where they wanted to work. There was general agreement that the culture of the industry fosters the notion of continuous learning. This is partly due to the licensing requirements, need for refresher courses regarding changes to the standards and regulations (e.g., AS300) and changing technology. There is an expectation by apprentices and tradespeople that they will undertake additional training during their career. Also, there was strong support for business skills training for contractors. A few participants mentioned the need for apprentices to pick up computer skills as well. Providers identified post trade training currently being offered and taken up by tradespeople. This included programmable logic control (PLC), AS3000 (standards/regulations), test and tag, estimating, project management, computer aided design (CAD), general computer courses, motor control, and microprocessors.

Equity and pastoral care

Practitioners raised two additional areas of concern. These were equity, and the associated issue of pastoral care, and the changes to the training system currently being implemented by introducing training packages. This section will discuss equity and pastoral care, while the training reform agenda will be raised in the next.

All participants indicated that recruitment of women into the industry was extremely difficult. A GTC reported that, despite having women complete pre-vocational training and being offered jobs, they were unable to attract women into apprenticeships. This GTC suggested that the image of the building industry and peer and family pressure were important factors in the women's decision not to continue. A number of participants proposed that positive discrimination programmes were needed:

> *We haven't had women for three years. As a provider, we have no control ... [It is] up to employers, who resist taking on women or ATSI [Aborigines and Torres Strait Islanders]. Employers need to be targeted for marketing. This could be done through TAFE, but [there are] no resources to do it.*

> *If you take that, as a consequence of what had happened with privatisation, and thereby turning apprentices into arms and legs, I would argue that employers said the arms and legs are better being*

male than female, on the basis that they can sweep a bit harder than the female. It's a fairly blunt statement, but I think that was the general principle. I think another component was that the advice in the electrical family of trades to females was so limited as to what they can access it is appalling. It was described in terms of the lineman trades, which is my trade background ... I was actually party to a process, and quite horrified by it ... The old SECV in its dying days in the mid-late 1980s tried to figure a way to actually keep women out of the trade on a national basis ... It was based on that silly nonsense that the female couldn't handle the pressure, physical pressure, of the job. In some cases you [are climbing 200-300 foot towers or 60-70 foot poles]. But there were requirements, such as the normal human bodily functions. ... A woman up a tower couldn't do what a man could do. It might sound humorous, to the extent that they even considered whether a new pair of overalls could be designed for a woman. It's not an exaggeration when I say that that this was a very serious consideration, and [this was an example of] the kind of lines they were trying to draw in the sand to keep women out of the lines area.

Another provider explained that when women are in the industry, there is little support for them to continue. They are often isolated, and trade teachers are not equipped to deal with issues of harassment.

Industry representatives pointed to a structural approach to fix the problem. They cited the Australian Vocational Certificate (AVC) pilot seven-eight years ago that brought 20-40 women through the trade. Other structural approaches mooted included arriving at standard industrial arrangements with employers (particularly large employers) where a percentage of the workforce had to include women. Cultural issues were cited as being of major importance when seeking to increase the numbers of women in the industry:

I first met a female electrician in the 1970s on a worksite, and it was a real shock. But then I talked to her about her work, about the trade, and that got me over the shock and it was okay after that ... but most employers in the industry are contractors, trade trained themselves coming through the industry, and the belief is ... boys do apprenticeships. I can't see employers changing that position voluntarily. It's going to have to be a structural push.

No participating practitioner was able to cite an example of an indigenous apprentice in the electrical or electronics industry. One GTC reported that they had made some efforts in this area. The general consensus was that, though some adult apprentices had been employed, it was not financially viable for companies to pay adult wages. This was stressed by the GTCs in particular. At the same time, there was a general consensus that adult apprentices are preferable in terms of attitude:

Young people go through a major period of change, and so older apprentices tend to be better. Apprentices nearer 21 are a bit more settled and have more work experience. (Group training)

There was general agreement among participants that a key to increasing the participation of marginalised groups is to market the industry to secondary schools. In addition, professional development needs to occur for careers teachers and trade teachers.

Group training companies provide apprentices with a field officer or case manager who supervises and 'polices' how they are going. Providers indicated an increase in the pastoral care they provide to apprentices, although they were also quick to point out that this is not resourced. Many stated that they arranged alcohol and drug seminars as well as counselling sessions for apprentices. One provider mentioned using the Electrical Trades Union welfare officer as a resource during induction of apprentices.

Reform of system: training packages

All participants stated that they supported the thrust of the new training model towards competencies as an outcome, although many added comments such as:

> *The apprenticeship system has always been about competency ... You can't argue against the idea of competency.* (Systems)

> *What does a competency mean in actuality?* (Systems)

> *... having done all the skills audits that I've done across Australia in the electrical industry, and ... after years of developing national competency standards in the electrical trades, [we see that] the application of them varies greatly across Australia. If you go back and talk to tradespeople as to what competency is all about ... they themselves, the doers, simply don't understand it all. The question I've been asked over and over is: 'If I'm not competent does that mean I'm incompetent?' ... Teach people what the standards are about and how to use them to achieve what you're after. Get away from this nonsense that's its about proving they're incompetent, reducing their wages, all the traditional things that people are most scared of. That's where all the blockers come from ... People are scared ... I think competencies are the way to go, but it's the way you apply it that is so important ... Thousands of hours have gone into the development of the electro-technology training package and related competency standards – and I think, as a principle, their development has been very good – but it's the application around Australia that has been so poor.* (Systems)

Providers commented that they have little input into curriculum or training packages. Two providers made the same comment:

> *Most employers would trust TAFE to teach what they think is relevant. The teacher makes it work regardless.*

> *Attempts they've made to reduce the time of an apprenticeship through the introduction of competency-based training, that's a vehicle to reduce the hours required. And I think the damage that's*

been done to the apprenticeship overall is to remove the hand skills element. (Systems)

One group training participant made the following comments about the new training package system:

> *The new system has some hurdles, but it is a better way of doing business. It has the potential to ensure that apprentices reach a state of competence in the application of skills before they are accredited. ... WorkCover is coming down hard on situations that arise through lack of competence.*

However, another group training participant raised the fear that:

> *The signing off will occur without observation of on-the-job performance. The system might still be too much driven by money, and this could act against a thorough assessment of competence.*

All participants raised concerns regarding the practicalities of implementing the new system, particularly with regard to the assessment of skills. Under the new system, the training provider assesses apprentices and issues the certificate of competency. One group training practitioner commented:

> *We want progressive assessment. But there is a danger of a huge failure rate. The other question is who will pay for the additional training for those judged not to be up to standard?*

There was general support for the notion of independent workplace assessors who periodically assess the apprentice at the workplace and conduct testing at the provider level. However, all participants agreed that there was no funding, nor was there likely to be, for this model.

A big issue regarding assessment is that providers are not able to assess at the workplace for a variety of reasons, including occupational health and safety, timing, etc. Therefore assessment will need to occur at the providers' premises. Furthermore, a systems participant added:

> *Well, I think that's the area of TAFE that is most vulnerable. With all due respect to all the people in TAFE institutes around this country, there's many, many good people, what they have missed over the years is the exposure to industry. And so when it comes to assessment of competency, how do you conduct [it]? Do you use a project in which you prove to me how competent you are? Well I'd defy anyone to set a project that uses the full range of competency that a person has to have in the electrical family of trades. I simply can't imagine how a project can show competency in a precise kind of way. All the variability associated with the standards and the electrical trades can't be built into a project.*

Industry representatives argued that a secondary trade school concept should be re-introduced. Particular concern was expressed about pre-apprenticeship

programmes being introduced to replace secondary trade school and about the introduction of bridging programmes to get into the pre-apprenticeship. Yet, despite this, kids were still failing a simple apprenticeship entrance test.

Chapter 7

Conclusion

Findings

This study set out to establish whether a skill shortage existed in the electrical and associated industries in Victoria and to explore the nature of that shortage and the factors contributing to it. Official statistics showed a decline in the trend number of apprentices in training in this industry, and there is no evidence of a turnaround in this trend. The shortages appear to be related to globalisation, the emerging new economy and the move towards privatisation within the Victorian economy. They are also associated with the growth in self-employment and other kinds of alternatives to the traditional forms of work organisation. Apart from the decline in the number of apprentices there also appears to be a skills deficit emerging.

The analysis of the parameters of the skills shortage has been informed by the literature, official statistics and a body of evidence from a number of industry participants, such as apprentices, employers, labour hire firms, group training companies and industry training bodies. The data set developed as part of the study was used to reveal the contribution to apprenticeship training by specific types of employers from the industry. One group, namely labour hire firms, have not been active in apprentice training. Of traditional employers, little difference could be established in the contribution of small and large firms – though there was a slight tendency among firms surveyed showing higher ratios of apprentices to tradespersons in smaller firms – with the exception of the self-employed, who, by definition, are not involved. The contribution by organisations varies, with some firms demonstrating a tradition of a strong commitment to apprenticeship training and others either not being involved or changing their involvement over time.

Two plausible explanations of the skill shortages are the cost of apprenticeships and a shortage of suitable applicants. The evidence provided by employers suggests that factors other than cost have been more important deterrents to taking on apprentices directly. In particular the employers surveyed cited economic uncertainty as the main factor, followed by the flexibility offered by the alternative of group training. However, cost is said to be a more significant factor explaining the very low incidences of apprenticeships within the labour hire sector. The lack of suitable applicants appears to have been an issue. Concerns were expressed by a number of participants in the study about whether suitable applicants were receiving sufficient information and encouragement about apprenticeships in their school setting. Further, very few apprentices are being recruited from among disadvantaged groups and women.

Some major developments have recently occurred in apprenticeship training. The first was the introduction of group training. This mode of apprenticeship training is now well established, and it is a very significant provider of apprentices within the electrical and associated industries. While its introduction has provided firms with additional choice it has also introduced some additional challenges to the training regime.

The second set of changes was introduced with the implementation of the National Training Reform Agenda. This study assessed the impact of this

initiative on the opportunities for disadvantaged groups. It also assessed the impact of a competency based system on the participants. There evidence suggests that disadvantaged groups do not have a higher participation rate in apprenticeship training as a result of the changes. On the issue of competency based training, employers surveyed were supportive of the new system, although they had a number of reservations about it. They expressed serious concerns about the ability of the system to sustain the changes to assessment currently being introduced with the new 'training packages', and they indicated significant uncertainty about these changes. In this they echoed the views of training practitioners, who also expressed fears that the new assessment system would falter.

The study also sought apprentice perceptions about a number of aspects of contemporary training. The evidence suggests that apprentices also have concerns about the quality of training being delivered. More than 17 per cent of electrical apprentices sampled expressed an opinion that their apprenticeship has not lived up to their expectations. A majority of apprentices believed they were not getting an opportunity to learn and practice the skills of their trade at work.. Further, there is no evidence of an improvement in the quality of training: Additional evidence that apprentices are dissatisfied with their apprenticeship training is provided by the high ratios of apprentice dropouts and unemployment during apprenticeships.

Thus there are a number of issues of concern about the quality of the contemporary apprenticeship training, and this, when added to the evidence of an emerging skills deficit, is creating the need for a close evaluation of the system. There is general agreement among industry practitioners on current issues such as the comparatively lower uptake of apprentices by private industry, potential and current skills shortages and the lower level of practical skill development of apprentices and new entrants to the industry.

The skills deficit question raises some complex issues. These issues will not be easy to unravel since they cut across traditional boundaries and will not be viewed by the industry players from the same vantage point. Since a key question is to agree on the nature of the skills deficit, more research will be necessary to establish and agree on the regimen of skills for the tradesperson of the future wishing to work in this field.

To overcome the skills shortages identified in this study a number of policy approaches and recommendations are apposite. These are presented under two headings:

- Increase the intake of new apprentices
- Reduce the level of attrition

The study also contains issues of significance to the quality of training, and we present approaches to address these issues.

Increase the intake of new apprentices

The number of apprentices in Victoria is too low to ensure an adequate supply of tradespeople. A greater number of apprentices should be trained, both through direct and group employment. The significant reorganisation within the industry over the last generation as a result of downsizing, privatisation and/or corporatisation, self-employment, casualisation and labour hire arrangements introduces a major constraint to the policy solution, namely that all stakeholders and sectors of the industry be involved. In particular the encouragement of labour

hire firms to participate in apprenticeship training is an important part of the strategy, and it is also of great importance that the self-employed are attracted into the training loop.

We estimate that to bring Victoria up to the average Australian ratio of electrical apprentices to tradespeople there is a need for an additional 700-750 apprenticeship places per annum. This number of additional apprentices would help to overcome the skills shortages in this industry in Victoria.

The question of how this additional training commitment might be achieved has been considered. It appears highly unlikely that this will occur without some form of intervention by government, and three options present themselves. The first option is in the form of a financial incentive to employers or the self-employed to increase their commitment to training. The second option is a penalty for those who elect to opt out of the training loop. This could be in the form of a levy. A decision by a firm not to train apprentices should not be used as a lever to gain a competitive advantage, as this only encourages others to take this route. Alongside this should sit a principle that results in any funding collected through such a levy remaining in the industry and being tagged for a training application. A third option could be to introduce a system of apprenticeship quotas. While this may not be able to be applied universally, it might be considered, for example, for public sector employers or private sector employers who propose to tender for public sector contracts.

More needs to be done to promote the benefits of being involved in apprenticeship training, especially the 'good corporate citizen' obligations attaching to this involvement.

Recruiting a more balanced intake, one that reflects greater diversity and equity, could considerably enhance the stock of apprentices. A targeted training infrastructure to attract and keep women in the trades could also be useful (e.g., women's officers, pathways programs such as the Women's Electrical Bridging program, promotion of career opportunities to girls, young and mature-age women and additional workplace resources that support female apprentice employment). Similar programs can and have been designed to attract young people from newly arrived ethnic communities (e.g., the pre-apprenticeship program for youth from the Horn of Africa). Women and newly arrived communities represent a largely untapped resource that can play a significant part in replenishing apprentice intake numbers and helping to overcome attendant skills shortages.

Finally, government initiatives aimed at improving the apprenticeship infrastructure, both public and private, would be complementary and enhance the effectiveness of the above measures. This could be achieved by maintaining sufficiently resourced providers to overcome the problems identified with the capacity of providers to service the new 'training package' assessment system. The industry must provide an adequate physical infrastructure, both quantitatively and qualitatively (e.g., employer workshops and on-the-job training facilities). In the labour hire segment, for instance, the only firms that engaged apprentices were those with workshops. All stakeholders have an interest in maintaining the larger custom apprentice workshop training facilities (e.g., the AIG training facility in Richmond and the former SECV, rail and aviation industry training annexes). The human and system infrastructure of government field officers, training officers, apprentice supervisors, etc., and the formal links between them, will be a necessary part of the policy formulation, and its evolution should take cognisance of the recommendations proposed in the Schofield report (Schofield 2000).

Reduce the level of attrition

There are two principal causes of attrition: the loss of apprentices in training and the loss of people who are trade qualified. Wastage occurring when qualified tradespeople leave the trade was an issue not covered thoroughly in this study. The loss of apprentices is likely to be influenced by factors such as the quality of selection and the quality of training.

Improving the quality of the apprenticeship intake should reduce the rate of attrition, since underlying unsuitability of the people taking on apprenticeships is a contributing factor to a high attrition rate.

Support for strategies to identify attitudinal barriers to entry to electrical apprenticeships would be one measure that could assist in promoting the trade at an appropriate time in the career decision chain. This strategy could involve the promotion of the trade in schools and elsewhere by developing a promotional and marketing campaign aimed at increasing the number of people seeking to commence entry level training (see also Catelotti 2000, p. 40). In addition this research indicates a need for specific strategies to improve knowledge of the value of electrical trades by parents and careers counsellors (see recommendation 14 from the Kirby 2000, p. 20). This calls for the integration and improvement of careers information and guidance services relating to education, employment and training for young people and adults.

At the same time there is a need for intending applicants to be provided with better information about apprenticeships. Improved understanding of the nature of apprenticeship training and the electrical industry will assist in better 'matches" between the apprentice and the job and should therefore decrease attrition rates. Apprentices are on probation before signing the indenture. Hence appropriate induction into the job could also assist in this area (see Schofield 2000, p. 55), as could earlier work experience while at school.

Establishing alternative pathways for entry to the trade is also worthy of consideration. Current methods of recruitment are not achieving the desired level of intake, retention and completion, so alternative entry pathways should be explored (see also Catelotti 2000, p. 45). For example, it is important to explore opportunities for those entering trades to switch trades at various times during their training so that a better match is achieved and they are not lost to trades through a poor initial choice.

Quality of apprenticeship training

Although the soundness of the principle of a training system based on a mix of theoretical and practical skills was not questioned by industry participants, there were a number of quality issues raised in the study.

Overcoming a skills deficit requires more than an increase in the number of people being trained. The quality of training must also be improved, as suggested by a number of the above recommendations. Other quality issues related to the way in which the apprenticeship system delivered the training and what was being expected of it as it moved to embrace a new paradigm.

Establishing stronger support mechanisms for apprentice training on the job should be considered, including the introduction of resourced training plans. The views expressed by 343 apprentices who provided feedback about their experiences is a powerful piece of evidence that should be influential in a policy sense. This data number represents more than 10 percent of the 3387 apprentices in the electrical and associated trades in Victoria at the end of February 2000.

Significant results were: more than 10 per cent of apprentices were unemployed at some time during their indentures; more than 17 per cent of the apprentices expressed an opinion that their apprenticeship had not lived up to their expectations; their apparent dissatisfaction was caused by factors that included inadequate skills development, problems of supervision, lack of work variety and being used as cheap labour; and a significant minority of third and fourth year electrical apprentices do not believe that they are practicing all of the required skills of their trade in the workplace.

Tradespeople play the role of front line on the job trainer and mentor, passing on the changing skills of the trade to an upcoming generation. Therefore it is imperative that skilled tradespeople remain on the job and engage in post-trade training. (See also the Schofield recommendations on this.) The quality of people retained in the trade is an important variable affecting the overall pool of skills. Expanding opportunities for post-trade training in areas of technical and management skills is an important policy objective, to the extent that it encourages good tradespersons to remain in the trade and to assist with the training of others.

It is also essential that those involved in the formal education part of the apprenticeship training system, including the classroom teachers and on-the-job trainers, be properly prepared for the effective delivery of the new skills packages to apprentices. Additional resources will be necessary to ensure that this occurs.

Chapter 8

Recommendations of the Steering Committee

These recommendations arose after:

- considering the report *Apprentice and Ongoing Training Needs in the Electrical and Associated Industries* (Doughney et al. 2000) and its conclusion, together with the recommendations contained in the Catellotti (2000), Kirby (2000) and Schofield (2000) reports;
- structured discussion at the project steering committee meeting 19 September, 2000; and
- discussion at a later steering committee meeting and between participants.

Preamble

In developing the following set of recommendations the project steering committee and Workplace Studies Centre Victoria University/Access Training and Employment Centre research team also considered, and seek to complement, recent Federal and State reports reviewing the vocational education and training (VET) system, in particular Schofield (2000), Catellotti (2000) and Kirby (2000). The recommendations seek to address systemic problems in the electrotechnology area. They propose both practical measures and a targeted investigation to highlight VET system problems.

The industry project steering committee and research team share the unanimous view that the VET system is carrying chronic problems that must be resolved to improve electrotechnology apprenticeship training in Victoria. The proposed investigation was seen as a crucial step to remedy such problems.

Underlying the need for action in Victoria were worrying signs highlighted by the research (Doughney et al. 2000). A skills shortage in the trade is widely acknowledged, but a deficit in electrical apprentice training in Victoria is especially worrying. The ratio of apprentices to electrical tradespeople in this State is 26 per cent lower than the national average. Electrical here is defined to include electricians, electrical fitters, instrument technicians, refrigeration mechanics and lineworkers. There is a high level of apprentice 'attrition' and, in proportion to their size, small to medium sized electrical contracting firms, excluding those in the labour hire area, seem to be shouldering the greatest burden of training the State's apprentices. Larger firms and, significantly, the public sector and privatised entities had reduced their commitment during the 1990s.

Recommendation 1

The Victorian Government should introduce a range of measures to encourage those who employ electricians to participate in training apprentices. These measures should include a mix of benchmarks and financial incentives. The design of the mix must aim to motivate employers to engage and train electrical apprentices. It should contain monitoring mechanisms backed by penalties to allay community concerns that financial incentives may be wasted. Therefore these mechanisms should ensure that best practice supervision is not

compromised and that apprentices are not regarded merely as a form of subsidised or cheap labour.

- A benchmark of employer participation in apprenticeship training should be established and promoted across all sectors employing electrical tradespersons (building and construction, labour hire, power generation, transmission and distribution, industrial, commercial and the public sector). There should be a targeted ratio of one (1) apprentice per three (3) tradespersons engaged.
- Employers who conform to this benchmark should attract reduced payroll tax obligations. Employers may meet the benchmark either through direct employment or by engaging apprentices through group training companies (GTCs).
- All government contracts that require electrical labour to be engaged, including all building and construction contracts entered into by public sector agencies, should contractually require the best practice ratio of one apprentice per three tradespersons to be maintained by all contractors and subcontractors engaged on the project.

Employers who cannot or do not participate in training – such as labour hire companies, companies that have outsourced their maintenance functions and privatised entities that have reduced their commitment to training during the 1990s – are being cross-subsidised by those who do train apprentices. The Workplace Studies Centre Victoria University/Access Training and Employment Centre research team thus urge the Victorian Government and the industry to consider and/or debate the proposal that non-participating employers should make a financial contribution to apprentice training.

Recommendation 2

The Victorian and Federal Governments must commit jointly to an adequately resourced ongoing programme of vocational training research in the electrotechnology area. The Victorian Government also should actively support the Commonwealth Government and industry to implement the Electrotechnology Industry Action Plan.

Research should:

- develop an industry profile of training that includes the power generation, distribution and transmission sectors of the electrotechnology industry;
- identify alternative pathways into electrotechnology apprenticeships (and other vocational training) to create entry points for marginalised groups such as mature-age, female and non-English speaking background (NESB) applicants;
- identify resources needed for effective partnerships between contribution in lieu of apprenticeship training. This contribution should be tagged to underpin the electrical apprenticeship training system and be not used to supplement other areas.
- secondary schools, registered training organisations (RTOs) and workplaces regarding pre-vocational training, pathways into apprenticeship and careers advice to schools from the electrotechnology industry;
- establish ongoing data collection from apprentices at commencement, during and at completion of their apprenticeships;

- re-establish collecting data that distinguishes apprenticeships from traineeships and captures female, Aboriginal and Torres Straight Islander, NESB and disabled participation rates; and
- consider system infrastructure resources needed to implement these recommendations and overcome existing problems within the system (e.g., field officers).

Recommendation 3
Develop and implement a comprehensive continuing apprenticeship marketing campaign (as per recommendations and action plan in Catelotti (2000).

- Such marketing should be informed by surveying secondary school careers counsellors and parents; potential candidates who are mature-age (men and women) and/or from NESB and ATSI communities; and year nine, 10 and 11 secondary students.

Recommendation 4
Convene a regular industry and VET system stakeholder forum to consider and co-ordinate electrotechnology industry views and responses to qualitative and quantitative issues in apprenticeship training arising from improved data collections and current research.

Recommendation 5
Implement alternative pathways into apprenticeship designed to provide entry points for potential apprentices marginalised by the current entry arrangements.

- These potential apprentices should include women and girls, mature-age and ATSI and NESB candidates.
- The bridging programmes for women and young people from immigrant families, such as those from the Horn of Africa, and the trades orientation programme at Williamstown High School, developed in conjunction with industry partners and Victoria University TAFE, are possible models that should be expanded in the VET system.

Recommendation 6
Additional resources must be made available to the State Electrotechnology Printing Information Technology and Communications Industry Training Board (EPIC) and RTOs so that they can implement the electrotechnology training package.

- This should include essential system infrastructure resources (e.g., field officers) needed to coordinate and monitor the quality of apprenticeship education and on-the-job training, training plans and assessment requirements.
- It should also involve a comprehensive education and marketing campaign aimed at industry, including a demonstration programme on how to use the training package.

Recommendation 7

Additional resources must be made available to RTOs. The system is facing a critical shortage of trained electrotechnology teachers.

- It is essential to calculate the number of trade teachers and magnitude of additional resources needed by RTOs to service electrotechnology sectors.
- Professional development, remuneration and career pathways for electrotechnology trade teachers should be evaluated. So, too, should the impact of casual-sessional teaching on the quality and continuity of trade training.
- System infrastructure resources need to be bolstered to implement these recommendations and overcome existing problems.

Recommendation 8

The role of trade trainers at the workplace level must be formalised and acknowledged.

- This should include arrangements to provide adequate time for on-the-job teaching, mentoring and support of apprentices.
- Opportunity should be provided for professional development of workplace trade trainers, including familiarity with the electrotechnology training package, developing individual structured training plans and apprentice skills profiling methods and keeping up with technological changes.
- Resources should also be made available to improve links and communication between workplace trainers and RTOs.

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Appendix 1

Detailed specific research questions

To address the broader aims of the research (see chapter 1 'Research aims and questions') an extensive and detailed series of specific research questions emerged. These are presented below. It should be noted that these questions provided a guide for the research. However, given the exhaustive nature of the questions, it was not possible to provide equally exhaustive answers to all.

Skills shortage

1 What is the nature of the skill needs in the electrical and associated industries?

2 Is there a skills shortage in these industries?

3 Are the issues facing these industries similar to those facing industry in general or are they unique?

4 Is there a difference in the incidence of training between groups of workers according to the type of work organisation they experience?

Training culture and work organisation

5 What is the nature of the training culture associated with the various types of work organisation within the electrical and associated industries? For example, is there a difference in the training culture between self-employed workers and employed workers?

6 Is there a difference between the amount of training undertaken by direct labour and workers engaged by labour hire companies?

7 Is there a difference between the amount of training undertaken by workers working within small and large organisations within these industries?

8 What are the perceived training needs of workers who are working under the various forms of work arrangements? For example, are the post trade skills development needs of a self-employed worker similar to those of an employed worker?

Apprentice training in general

9 Who participates in the training of apprentices?

10 Does the incidence of training differ by size of organisation and sector?

11 What is the incidence of apprenticeship training among small business, including the self-employed? What is the incidence among labour hire companies?

12 What are the trends in the amount of training undertaken?

13 What degree of wastage occurs in apprenticeship training: i.e., what level of drop out occurs? What is the cause of the drop out?

14 What is the incidence of apprenticeships through the group schemes?

15 How important is the group scheme for employers under different forms of work organisation?

16 Does the hiring of apprentices from the group scheme vary according to the year of apprenticeship training?

17 What are the impediments to apprenticeship training?

18 What are the impediments to small business taking on apprentices? Are they different to those experienced by large firms?
19 Are these impediments different for employers servicing different sectors of the industry: e.g., electricians servicing domestic consumers and electricians servicing industry; communications workers servicing domestic consumers and communications workers servicing industry?
20 What are the impediments to labour hire firms taking on apprentices?
21 What can be learned from small businesses that have successfully hired apprentices?
22 What are the cost implications (e.g., barriers) of hiring apprentices?
23 What can be done to ensure that those who gain the benefits of apprenticeship training, e.g., skilled electricians and firms that hire skilled labour, also contribute to the cost of their training?

Apprentice training quality

24 What proportion of activity undertaken by apprentices embraces training at a level considered inappropriate: i.e., either beyond the competence of the apprentice at their stage of training, at such a basic level as to restrict the development of their skills, or unlikely to be related to enhancing their skills base?
25 Is there a perceived difference in the capacity of traditional apprenticeship schemes and group apprenticeship schemes to provide training at an appropriate level at each stage of the training process?
26 What are the quality implications for training of alternative work arrangements?
27 Are there concerns about the quality of training provided within an environment of alternative work arrangements?

Ongoing training

28 Do self-employed participate in post apprenticeship training?
29 What is the incidence of post trade training in the industries?
30 What is the nature of post trade training? Is it skills enhancing or skills broadening?
31 How do the training experiences of wages employees differ from those of self-employed?
32 How might self-employed be encouraged to engage in education and training?
33 Who should fund such training?

Non-technical skill development

Non-technical skill development includes the need for training in skills other than the craft skills related to the trade (e.g., 'business' skills, etc., for the self-employed). Issues here include:

34 What kinds of training currently occur and what are the skill deficiencies and training needs of self-employed?
35 What is the current mode of delivery and what mode should such training take (e.g., method of delivery)?
36 When does the training occur and when should it take place (e.g., on setting up the business or on an ongoing basis)?
37 Who pays the cost of such training and who should pay for it?

Technical post-apprenticeship training

Issues here will be investigated for labour hire companies, small employers and the self-employed. They include:

38 How accessible is post-apprenticeship technical training (e.g., is it available and in what form)?

39 What types of programmes are available and what types of training is needed?

40 Who currently completes post-apprenticeship training?

41 What mode of delivery currently exists and what is the desirable mode of delivery?

42 What obstacles to accessing training exist?

43 Who currently pays for the training and who should pay for it?

Appendix 2

Summary of research methods and stages

The following table sets out transparently in summary form the broad stages and methods used in the research. It allows the reader to see and evaluate the methods used against the aims of the research and the views presented in the body of the report.

Research component	Focus	Specific tasks/stages
1. Literature review	• Australian studies • Overseas studies • Supply/demand & training needs of apprentices & trainees • Training needs & culture • Comparative trends	Prepare a literature review & report orally to the Project Steering Committee
2. Data analysis	• Current trends & incidence (macro data) • Micro data targeted to EE&C • Comparison with other industries • Micro data from participating organisations	• *Stage 1*: assemble & analyse official data sets • *Stage 2*: assemble & analyse industry data for EE&C • Begin collecting data from participating organisations • *Stage 3*: detailed analysis of all data & integration into report
3. Industry participants' perceptions of training patterns	• Representative variety of forms of work organisations that employ apprentices & recently qualified workers: *viz.* labour hire, small employers, self-employed, apprentices, large employers who employ apprentices & group training companies • Extent of involvement in training, perceptions of quality, impediments, group & traditional schemes • Electrical apprentices & communications trainees • Policy development	• *Stage 1*: Develop interview & survey instruments • Organise to administer interviews & survey instruments • *Stage 2*: In-depth interviews (individual & possibly group) and survey work (telephone, face-to-face & possibly mail) • *Stage 3*: Recording and write-up of Stage 2 results • *Stage 4*: Intensive analysis of results of Stages 2 & 3; literature review & data analysis • Writing of report (a) first draft • Writing of report (b) final draft

Note: EE&C stands for electrical, electronic, & communications industries.

Appendix 3

Survey instruments

Survey tools for three classes of apprentice – general electrical (E1), refrigeration mechanics (E2) and lineworkers (E3) -- were developed by the research team and then tested in a supervised session with 11 electrical apprentices. The main survey tool was then modified using responses from the pilot survey group. Surveys completed in the pilot session were not included in the research database.

A survey tool (E4) was developed by the research team and tested in a supervised session with 15-20 employers. The survey tool was then modified using responses from the pilot survey group. Surveys completed in the pilot session were not included in the research database. Employers, who were drawn from the National Electrical and Communications Association database, were grouped according to the categories presented in table 1.2. A postal survey method was used in the first instance for general employers. This was followed by a targeted telephone survey. Employers surveyed by telephone were encouraged to either complete the survey with the telephone surveyor, or complete and return the survey previously mailed to them. There was approximately one month between the mail out and follow up by telephone surveyors. Labour hire employers were interviewed face to face with the same instrument.

Original quantitative data were systematically entered into Microsoft Access and Excel databases and converted to SPSS for analysis. Appendix 3 contains two of the questionnaires used (E1 and E4). Note that we referred extensively to the relevant competency standards, which feature prominently in the apprentice questionnaires (see chapter 5). All apprentice questionnaires (E1-3) are reproduced in the accompanying volume 'Apprentice and ongoing training needs in the electrical and associated industries: apprentice data set'.

Appendix 4

National Centre for Vocational Educational Research data on employer type

The following table comes from NCVER (1999). It shows inter alia that total Victorian apprentices and trainees in training are relatively underrepresented in the public sector, compared with both the national figures and those, e.g., for NSW.

Appendix 5

Definition and nature of 'labour hire'

The workplace arrangement known as labour hire is difficult to define. KPMG, in a recent study, defined it as

> '... an arrangement where a client firm contracts with a third party firm for the provision of contracted labour services, either on or off the premises of the client firm, and for contracts which may vary between one day and several years duration' (1998, p.1).

Within the limits of this definition, there are many possible configurations for labour hire, and the present study of firms engaged in the provision of labour hire services in the electrical and associated industries illustrates the diversity of arrangements that comes under the banner of labour hire.

One style of labour hire is for the labour hire operation to evolve from within a firm that employs a permanent workforce. Here the firm will have a core workforce of employees who work in a manufacturing or service environment, and some or all of the employed workers will be deployed on site for a client on a regular or irregular, short-term or long-term basis. The labour is hired out to a client at a particular rate. At the end of the contract, the workers will return to the location associated with their employment. This style of labour hire operation appears to have grown out of the workshop setting, where the firm has seen labour hire as a way of either expanding or maintaining their business in a more competitive environment.

A second style of labour hire arrangement differs from the first in that the employer engages a dedicated labour hire workforce. The firm will contract with other organisations for the supply of services. In many cases the contracts will be of such a long-term nature that the workers who are engaged with the labour hire company for the provision of those services will be, in many ways, like employees of the company purchasing the service.

A third style of labour hire is for the firm to be engaged essentially in placing labour within companies who have either short-term or long-term labour requirements. In this setting, with the exception of administrative staff, the labour hire firm does not employ any labour on a long-term basis. The principal role of the labour hire firm is to act as a broker between labour and clients, facilitating the placement of labour in a client company, with the labour being hired for the specific task. It will advertise for suitable workers and undertake the necessary recruitment tasks associated with that exercise, supplying labour to work on location for the client for a particular period of time or the duration of a specific task or set of tasks. In many instances the duration of the period of hire is indeterminate. The method of recruitment varies from the formal recruitment of labour following a process of advertising to one of the labour hire firm consulting a reserve list of possible workers. Some of the workers will be hired as contractors rather than employed under a traditional employer-employee relationship.

The arrangements described in this third style result in a greater volatility in the number of people 'employed' by the labour hire firm. The number of long-term employees hired will be minimal and possibly restricted to those who administer the hiring process. This is in contrast to the first example where the

firm has a core of workers who move from one place of work to another, perhaps in some kind of rotation, but who will nearly always be in employment with the labour hire company.

Thus the main ways in which the models appear to vary relate to:

- the employment relationship between the labour hire company and the worker;
- the nature of the contractual relationship between the labour hire company and the company receiving the service; and
- the extent to which the labour hire company has other manufacturing or service activities apart from its labour hire role.

Of course, there are other possible iterations.

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