School of Education

Evaluating the Effectiveness of the Plumbing and Gas-fitting Pre-Trade Programmes in New Zealand

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A Thesis submitted in partial fulfillment of the requirements for the degree of Master of Education.

Unitec Institute of Technology

2011
DECLARATION

Name of Candidate: Anthony Wareham

This Thesis entitled Evaluating the Effectiveness of the Plumbing and Gas-fitting Pre-Trade Programmes in New Zealand is submitted in partial fulfillment for the requirements for the Unitec degree of Master of Education.

CANDIDATE’S DECLARATION

I confirm that:

- This Thesis represents my own work;
- The contribution of supervisors and others to this work was consistent with the Unitec Regulations and Policies.
- Research for this work has been conducted in accordance with the Unitec Research Ethics Committee Policy and Procedures, and has fulfilled any requirements set for this project by the Unitec Research Ethics Committee.

Research Ethics Committee Approval Number: 2009.997

Candidate Signature: Date: 4th August 2011

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ABSTRACT

This research explores issues relating to the situation in New Zealand whereby emerging technologies and the highly specialised nature of the work has transformed plumbing and gasfitting into complex trades which has led to a demand for apprentices of a higher standard than previously. This has resulted in a number of pre-trade programmes being established to allow school leavers to be introduced to the trades and select their future occupation before they leave school.

The aim of this research was to use the qualitative methodology to examine the operations of three pre-trade programmes and evaluates their effectiveness in enabling school leavers to successfully integrate into the plumbing and gasfitting trades. In order to obtain the required data and obtain triangulation the study used three data gathering methods namely questionnaires, single semi-structured interviews, and focus groups.

To achieve its aim this research project explores the experiences, perceptions and opinions of three participant groups. These are the managers of the pre-trade programmes involved, an apprentice group, some of whom participated in a pre-trade programme before entering a trade and others who did not and finally, a selection of employers who have employed apprentices, some of whom had, and some who had not, had pre-trade experience.

The research revealed that there are significant differences within the three pre-trade programmes in that one of them serves as a profiling organisation linking potential trainees with potential employers, the second was a technical institute providing a pre-trade training programme while the third arranges for school leavers to gain work experience in a local firm.
The findings also disclosed that although there were commonalities between the three programmes they also had their own unique aspects which resulted in them being effective in some aspects, but less so in others, and that most differences occurred in the type of pre-trade activities and the subsequent opportunities or otherwise that these pre-trade programmes created for those who took part. This study concludes that while these programmes are in the main successful in terms of what they set out to achieve, it suggests that some improvements could be included to improve programme effectiveness.
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ABBREVIATIONS

ACTU Australian Council of trade Unions
ITO Industry training Organisation
MCEETYA Ministerial Council for Employment Education Training & Youth Affairs
MoE Ministry of Education
PGDB Plumbers’, Gasfitters’ and Drain-layers’ Board
VET Vocational Education and Training
CHAPTER ONE
INTRODUCTION

1.1 OVERVIEW OF THE RESEARCH

This chapter provides the background to this research project and details its relevance to vocational education and training (VET) in New Zealand. In addition the research aims, objectives, and research questions are explained. This is followed by an explanation of the justification for the research and the methodology used. This chapter concludes with a description of how the thesis is structured. Calder and McCollum (1998) write that the importance and purpose of vocational education and training is relevant in three areas; firstly the needs of employers, second the needs of industry, and finally the needs of the national economy. They suggest that VET is an important element in a Nation’s ability to compete successfully within the global economy. Thompson (1973) supports this view saying that public units of vocational education and training usually include agriculture, business, distribution, health, home economics, and trades and industry. He adds that trades lie within the definition of vocational education and training (VET) which is understood in relation to three components, people, society and technology (Thompson, 1973).

In New Zealand over the last decade and a half, the number of suitable school leavers entering trade training in New Zealand has been declining to the extent that there are fears that there will be insufficient skilled workers to provide for the needs of the country (Berridge, 2008). The reasons for this are firstly that trades’ persons are leaving New Zealand for jobs overseas, and secondly that the trades are not seen as an attractive career choice by many. Thirdly, many fail to complete the apprenticeship requirements due to the poor pass rates of the National Certificate and Registration examinations (Kern Uren, Personal Communication, 3rd November, 2008). Hoong (1999) explains that the main aims of providing training are to firstly ensure a sufficient supply of suitable trades people to fulfil the industry demand, to upgrade the standard
of trades people to satisfy the needs of the ‘the new generation client’ who embrace the latest technologies in both in the plumbing and gasfitting trades relating to heating, energy saving, and hygiene; secondly, to implement the changes undergone by the industry in both technology and its method of carrying out work.

These issues coupled with the fact that emerging technologies and the highly specialised nature of the work has transformed plumbing and gasfitting into complex trades where the responsibility for the methods employed to ensure that the systems installed meet the regulatory requirements, and that the standards of the work done is of the highest level rests with the trades person carrying out the job (Building Regulations, 2004). More than ever, the New Zealand trade environment requires its workers to have the ability to both understand and work to complex installation instructions as well the ability to be able certify that the work complies with the relevant regulatory standards.

Unfortunately, the pass rates for the National Certificate examinations are generally 20% - 30% (Plumber, Gasfitters, Drainlayers’ Board (PGDB) examination results 2007). This raises the issue of whether the level of many new trade entrants is less than these complex trades require. In response to this growing shortage of suitable trade trainees the Government increased its funding to the various Industry Training Organisations (ITO), New Zealand Trade and Enterprise, and secondary schools, to expand the school-to-work programmes (Mallard, 2003) which are designed to transition pupils into trades and industry when they leave school. To do this, a number of school/institute based pre-trade courses have been established.

1.2 THE RESEARCH OBJECTIVES

Based on the background information the objectives of this research were to examine the effectiveness of three pre-trade programmes currently operating in New Zealand. These programmes were chosen because they represent a good cross-section of pre-
trade programmes in New Zealand and differ in both design and delivery methods. To accomplish this the aims of this research project were to determine the activities and effectiveness of the various pre-trade programmes in identifying and preparing suitable secondary school students and others to successfully integrate and pursue a career in the trades. In addition, the research was to provide information on possible improvements which may be made to the programmes to make the pre-trade experience more effective in preparing participants for entry into trade training. This research project therefore set out to examine three pre-trade programmes presented below.

- An Auckland school based programme connecting senior schools students with employers in trades and industry. This programme has been operating since 1998 (Thompson, 2008).

- An industry based programme which arranges work experience for school leavers. This programme has been operating since 2005. (Evers, 2010).

- An urban technical institute programme which gives school leavers an introduction into four trades including the plumbing and gasfitting trades. This programme has been operating since 1999 (Multi-skills Definitive Document, 2004)

To date there has been no information released that sheds light on whether or not and to what degree these programmes are successful in assisting school leavers and others to achieve the skills, attitudes and knowledge needed for industry and trade training

1.3 THE RESEARCH QUESTIONS

The Questions that formed the basis of this research are:
(1). What theoretical and practical knowledge do the pre-trade programmes provide to school leavers who plan to enter the plumbing and gasfitting trades?

(2). How effective is the pre-trade programme experience and what benefits accrue to school leavers preparing to integrate into the plumbing and gasfitting trades?

(3). What could be done to improve the current pre-trade experience to better prepare students to be successful in their trade training?

1.4 JUSTIFICATION FOR THIS RESEARCH

The themes from New Zealand and around the world identify a drop off of suitable school leavers and young adults entering the trades and that as a result the trade numbers in these countries are falling to an extent which is causing much concern. The available literature also explains the programmes and initiatives being implemented in other countries to resolve this problem.

The New Zealand pre-trade programmes are recent innovations and to date there appears to be no information to indicate whether any previous programme examinations have been conducted. Within the industry there is deep interest in any improvements which can be made to trade training and the pass rates for apprentices sitting the National Certificate and Registration Examinations. There is also little New Zealand literature which indicates what effects these pre-trade programmes and initiatives are having on the trade shortages nor on how, or if, trade matters are improving. It is therefore important that research be conducted to determine whether the pre-trade programmes improve a school leaver or trade applicant’s ability to more easily integrate into the plumbing and gasfitting trades, and if not, to provide knowledge of why this is so. Because the participants (employers and students) are best suited to judge the effectiveness of the pre-trade programmes, their contribution to any evaluation of those programmes was deemed to be highly significant.
Because there has been no information released to shed light on whether and to what degree the pre-trade programmes are successful in assisting school leavers and others to successfully enter into trade training, it is possible that the programmes may well be being conducted and operating to their programme design, but may not be actually producing the desired programme outcomes. This study is an important attempt to explore this area.

Interest in this project has been expressed by national bodies and trade organisations. This research has the potential to provide critical knowledge to schools, employers, and student/apprentices alike. The organisations that will benefit from this research will include schools, employers, trade training centres, the ITO, the plumbing, gasfitting and drainlayers’ board (PGDB), and the apprentices themselves.

1.5 METHODOLOGY

This research project was based upon a qualitative research approach as it is the most suitable methodology to facilitate studies into a person’s understanding, experience and thoughts (Davidson & Tolich, 2003): (Cohen, Manion & Morrison, 2007). Quantitative and qualitative paradigms adopt different ontological positions when it comes to the question of the nature of reality. Quantitative methodology demands the researcher to adopt a stance of scientific detachment, the task of the qualitative researcher is to acquire insight and develop understanding (Clarke & Dawson, 1999). Due to the social nature of the research a qualitative inductive methodology was selected which is interpretive, and constructivist (Bryman, 2004) and (Punch, 2006). This is expanded upon in detail in Chapter Three.

Case studies are described as particular, descriptive and inductive and seek to illuminate a readers understanding of an issue (Somekh & Lewin, 2005). Because it develops an in-depth analysis of a single or multiple issues, the case study
methodology has been selected to explore the issues raised by the research questions. Because this research will be studying the content and effectiveness of pre-trade programmes, an evaluation method is the most appropriate to use (Cresswell 1998), and (Shaw 1999). According to Clarke & Dawson (1999) there are two evaluation methods, formative and summative. Because this research is to study the perceptions and experiences of those involved in pre-trade programmes the formative evaluation method has been used.

1.6 THE DATA GATHERING METHODS

It was decided that the triangulation model of using three methods of data gathering would best provide validity and reliability of the data collected during this research project. Data was gathered from three sources and used three different methods which were designed to answer the research questions. To obtain sufficient data and to be able to ensure methodological validity of the data through triangulation, the methods that were deemed to be suitable were questionnaires, interviews and focus groups (Ritchie & Lewis, 2003).

The first data sources were the managers of the three pre-trade programmes involved in this research. In order to lend reliability and validity to this research it was deemed important to obtain a clear and detailed description of each of the three pre-trade programmes which were being examined. Single semi structured interviews were selected as the data gathering method. This method was selected based on Marshall and Rossman (1999) who maintain that interviews gather more information across smaller numbers of participants than larger. During their interviews the managers were able to explain the theoretical and practical knowledge their programmes provides to school leavers and provided data to answer research question one.

The second source of data was two groups of trade apprentices using a combination of questionnaires and focus groups. The first group was drawn from apprentices who had
no experience of pre-trade programmes before entering the trades, and the second group was selected from apprentices who did have this experience before entering the trade. The reason for the mix was because this research is largely about personal perspectives and experiences and these participants provided a contrast between the apprentice groups in terms of their knowledge and expectations before entering the trades and the advantages or lack of them depending on whether they had attended a pre-trade course. The focus group interviews and questionnaires provided data for all three research questions.

The third source was three employers who have employed apprentices, some whom had attended pre-trade courses, and others who had not. Three employers were chosen in order to have a large enough sample to clearly determine whether they are able to discern any differences between the pre-trade and non pre-trade apprentices in terms of their attitudes and performance at work. These participants provided data to answer questions two and three.

1.7 RELIABILITY, REPLICATION, AND VALIDITY

Bryman (2004) writes that the criteria of social research are reliability, replication, and validity. It was decided that the methodology triangulation model of questionnaires, single interviews, and focus groups will best provide validity and reliability of the data collected during this research project. To provide replication and reliability the questionnaires and interview plans were piloted amongst staff from the faculty of Built Environment, Unitec, before being used.

In relation to the process of evaluation the joint committee of programme evaluation standards (Sanders, 1994) specified that the four important attributes of an evaluation are utility standards, feasibility standards, propriety standards and accuracy standards and that together these comprise the attributes that are necessary and sufficient for
sound and fair evaluation. These standards are included in the research methodology and help to provide replication, reliability and validity of the data gathered.

1.8 THESIS CHAPTERS

This contents and findings of this thesis are presented in six chapters with supporting documentation comprising of:

Chapter One provides a brief overview of the research that is undertaken and why, the research objectives, the questions that have been enquired into during research, the literature gap that has been identified, the methodology used to conduct the research, and the data gathering methods that have been used for this project.

Chapter Two presents the literature review which explores the major issues surrounding VET in New Zealand and overseas and problems that exist therein. It also provides information on the pre-trade courses that are conducted in New Zealand.

Chapter Three outlines the research methodology and data collection methods used during this research. Further, it provides justification as to why these were selected for this research project.

Chapter Four gives details of the data analysis process which was used as well as the research finding that were revealed. The research findings and their relevance to this project are described in detail.

Chapter Five provides a discussion of the findings which will be used to provide the basis for the last chapter.

Chapter Six presents the conclusions and identifies the limitations of this research. It further provides recommendations for further research into this topic.
CHAPTER TWO

LITERATURE REVIEW

2.1 INTRODUCTION

Chapter One introduced the topic, research questions, aim, and objectives of this research project. A brief overview of the research was also given in Chapter One. Chapter Two aims to provide further information on the subject of (VET) and the New Zealand pre-trade programmes. In order to illuminate the findings in Chapter Four and the discussion points in Chapter Five, this chapter also examines the evolution of vocational education and training (VET) from its earliest inception to the present day, and the significant developments which occurred in New Zealand by which VET became established as a national entity. This literature review discloses that there is little New Zealand material relating to pre-trade courses, and none was found which focuses upon the perspective of participants.

It was possible to locate literature of a more general nature concerning VET from Australia and elsewhere which in many ways mirrors the situation in New Zealand. One theme that came through strongly was that the plumbing and gasfitting trades have changed a lot in the past 20 years, becoming more technically advanced and more intellectually demanding (Hoong, 1999). A review of the available literature identified themes and discovered gaps in the current writings on the topic of VET in New Zealand generally, and on pre-trade programmes in particular. This had a strong bearing on the framing of the research questions, in particular whether or not the pre-trade programmes in New Zealand could be improved to better meet national and industry needs. In addition, a significant amount of this research project focused on what activities are included in the pre-trade programmes and whether the secondary schools/colleges pre-trade courses are helpful in preparing students to succeed in
trade training as apprentices in Plumbing and Gasfitting, and what advantages if any are bestowed by participation in attendance on such courses.

In order to address the research questions that are the focus of this thesis and the background in which they exist, this literature review considers the following themes and issues which provided the context for this research. The definition of VET; The history and evolution of VET; The growing complexity of the plumbing and gasfitting trades: The stages in vocational development: Trade training in New Zealand: Pre-trade programmes in New Zealand: Overseas pre-trade training initiatives.

2.2 THE DEFINITION OF VOCATIONAL EDUCATION AND TRAINING

This section provides important background information which is helpful in order to introduce this topic and to illuminate the research questions and the themes which were revealed. The term vocational education and training is one that has a variety of meanings and this makes a precise definition difficult to provide. In some instances it refers to a specific range of skill training whilst in others it refers to attitudes and values. According to Thompson (1973) the term describes educational programmes that assist people as they develop towards occupations and careers and is understood in relation to three components: technology, people and society. In his view vocational education is any education that provides experiences, visual stimuli, affective awareness, cognitive information, or psychomotor skills; and that enhances the vocational development processes of exploring, establishing, and maintaining oneself in the world of work. (Thompson, 1973, p. 216). He expands upon this viewpoint stating:

Vocational training is described simply as being concerned with social utility and that its specific purpose is to fit a man for a job whilst vocational education is concerned with the individual’s welfare in assisting them to explore a career not to fit him for a specific job.
The American writers Hammonds and Lamar (1968), and Draper (1967) make the distinction between education and training. It is apparent from their writings that early VET (1910 – 1967) was looked upon as job training to fill a need in industry or to facilitate an expansion into the use of new technologies to fit with social and industrial needs. They differentiate between education and training by explaining that education is believed to be the process of developing an individual’s mind and their ability to develop a career, while training is seen to be the acquisition of knowledge, skills and competencies as a result of the teaching of vocational or practical skills knowledge that relate to specific useful competencies.

From this literature two distinct elements emerged which warranted consideration. These are the differences between vocational training and vocational education. According to Thompson (1973) training would seem to have a more narrow focus than education and appears to be primarily concerned with learning skills associated with a job or trade whereas vocational education would seem to be concerned more with developing an individual’s knowledge, abilities, and potential in the wider aspects of a career.

The issue of defining and clarifying VET was mainly pursued in America and these precepts have been accepted world-wide, including New Zealand as demonstrated by the statutes from the early and mid 20th century (table 2.1). Thompson (1973) comments that a major factor in influencing vocational education in terms of social and philosophical foundations are the definitions that have been applied to it and that have given it meaning and substance guided by the theory of ‘accident’. This theory held that one has little control over his environment and must therefore mould his life to what exists rather than attempt to adjust, or modify, or rationally consider his surroundings. The accident theory places major emphasis on environmental forces, which are external to the individual while they minimise the individual’s influence. The literature reveals that most writers on the topic were of the opinion that people needed to be fitted or matched to jobs and that the work to be done determined who was to perform it, and that essentially it was simply a matter of accident or fate as to which
persons filled which jobs. This gave rise to great importance being placed upon skill development whilst the issue of individual development was deemed to be less important. Thompson (1973) concludes that research into growth and development and how it affects the individual was largely ignored in vocational education and recounts that it was considered unwise to recognise vocational education as a necessary and legitimate form of education deserving full status and support. This latter view became the crux of much debate and finally reform in that VET did become a part of the education system. Thompson (1973) explains that this came about because people continued to urge the public school system to help in the task of fitting workers for jobs. Vocational education was thus included within the educational system. In this social climate the Smith-Hughes Act of 1917 was passed in America and, for the first time ever, Federal monies were designated directly to vocational education. The Act however drew upon the prevailing ‘accident theory’ to define vocational education and stated that:

Vocational education is that education which is under public supervision or control; that the controlling purpose of such education shall be to fit for useful employment; that such education shall be of less than college grade and that such education be designed to meet the needs of persons over 14 years of age who have entered or who are preparing to enter work (Thompson, 1973, p. 107).

This Act laid the foundations of VET as we know it today and the theme was pursued by other writers. Conant (1959) gave more substance to school based VET with the proposition that the controlling purpose of vocational training programmes at the high school level is to develop skills for useful employment. He added that in the case of vocational education, it is an integral part of the education programme and requires aptitude that students at the lowest academic level do not have. These programmes relate school-work to a specific occupational goal but involve more than training for specific job skills. Conant (1959) also considered that vocational education is not offered in lieu of general academic education, but it grows out of it, supplementing and enhancing it. Meanwhile, Hammonds and Lamar (1968) formulated their broader definition which is more in line with today’s view on the matter when they wrote;
The guiding purpose of vocational education is to develop the competencies needed to enter or advance in a vocation. Education should aid individuals’ in discovering their vocational problems and in developing the specific abilities needed for vocational success – for the sake of the individuals and of society.

This state of affairs in terms of definition remained until the Vocational Educational Amendment Act of 1968 (Thompson, 1973) and a new legal definition was formulated which specified that:

The term vocational education means vocational or technical training or retraining which is given in schools or classes under public supervision and is designed to prepare individuals for gainful employment as semi-skilled or skilled workers or technicians or sub-professionals in recognised occupations: or preparing to become teachers in a vocational education program or preparing such teachers to meet special education needs of handicapped students; teachers, supervisors, or directors of such teachers while in such a training program.

This Act was instrumental in clearly defining VET and explaining the different categories within which VET falls. The philosophy of ascertaining what work needed to be done and then “matching” the person to the job became central to the industrial and economic growth of the 1960’s and 1970’s. What this meant was that those without jobs would be matched to industry needs and provided with training in the skills needed to do that job and then offered a job conforming to the training that had been received.

In this way vocational training was directly linked to industry needs which were geared to provide goods and services to meet the needs of society and led to VET being recognized as a viable employment option. Thompson (1973) adds that vocational education was for those who had made a choice regarding an occupation. Further, that choice had to require an education of less than university grade.
2.3 THE HISTORY AND EVOLUTION OF VET

As previously described VET is essentially concerned with non-tertiary education and training and historically involves the education of those entering vocational occupations and the training of trades persons and skilled technicians. New Zealand’s trade training system was based for many years on the Master and Apprentice Act 1908 whereby a master craftsman was entitled to employ young people as an inexpensive form of labour in exchange for teaching them the skills of the trade. This gradually changed into the Government controlled National system which is in place today (The Trades’ Certification Act, 1948).

Harris, Guthrie, Hobart and Lundberg (1995) argue that as technology progressed during the twentieth century and began to be applied to wide areas of human endeavour, it was recognised that the skills and technology required by workers at every level were increasingly complex and needed a more practical and applied form of education. To facilitate this Harris, Guthrie, Hobart and Lundberg (1995) record that requests increased for the skills manipulating this technology to be measured for validly and reliably. Vocational education and training was seen to have evolved from a narrow view of training people to work or fit into jobs as the social utility of the day required, to the more modern view-point of developing people to achieve their full potential. Thompson (1973) defines vocational education as that for persons who had settled on an occupation and it had to require an education of less than University grade.

Pickersgill (2001) writes that after the First World War (1914 – 1918) vocational training schemes were introduced. In New Zealand, as part of this system the Ministry of Education (MoE) was appointed as the examination body for those entering vocational education and for trade trainees (The Trade Certification Act, 1948). This legislation was a great step forward for VET in New Zealand because it provided for one examination body which provided consistency and MOE oversight to vocational
and trade examinations and qualifications. This shift in control was also noted by Green (1991) who recorded that examinations of those proceeding through trade training were administered by Government bodies. It is appropriate to think of VET as beginning when the individual enters school and includes understanding the processes, agencies and materials of work. These can be seen as the underpinning of the pre-trade programmes which are the focus of this research (Green, 1991).

In order to better situate the current position of VET and more importantly to this research, the pre-trade situation it will be helpful to make an appraisal of VET in New Zealand. As shown in Table 2.1, the first recorded effort to consolidate vocational education and training in New Zealand occurred with the passing into law of the Master and Apprentices Act 1908. This Act was followed by the Apprentices Act 1948 and the Trades’ Certification Act 1948. These acts combined created the conditions by which trade training in New Zealand was formalised and now came under the authority of the Department of labour. In addition the training, education, and examination of apprentices was planned and conducted at a national level. Changes were also effected in the education system whereby technical training was conducted at some secondary schools (McCulloch, 1992).

Earlier McCulloch (1988) had written that technical schools developed in New Zealand in the first half of the twentieth century but explains that these were not to provide trade training per se “but more of a realistic education of a more general nature which was designed, so far as it looked to the vocational future, to produce handiness and to give some insight into scientific principals” (p 124).

Another New Zealand writer of the time, Campbell (1941), recorded that in the mid 20th century New Zealand technical schools were highly biased towards industry and commerce but much less specifically vocational, in that they did not give specific trade training so much as a realistic education of a more general nature. McCulloch (1992) adds that not only were these school linked to commerce and industry but they were also usually regarded as inferior to secondary schools such as Auckland grammar, and more limiting than the majority of post-primary schools of the postwar era. Despite their
shortfalls it can still be argued that these were the first of the school based pre-trade programmes in New Zealand.

Table 2.1 Legislation of historical significance to trade training in New Zealand

<table>
<thead>
<tr>
<th>YEAR</th>
<th>ENACTMENT</th>
<th>KEY DEVELOPMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1908</td>
<td>The Master &amp; Apprentices Act</td>
<td>This Act regulated the terms of the employment of apprentices and the term of an apprenticeship under the control of the Department of Labour and brought trade training under Government control.</td>
</tr>
<tr>
<td>1948</td>
<td>The Apprentices Act</td>
<td>This Act appointed a Commissioner and District Commissioners of Apprentices to oversee apprentice training and trade examination. This created a national trade training syllabus for the education and examination of apprentices in collaboration with the Department of Education.</td>
</tr>
<tr>
<td>1948</td>
<td>Trades Certification Act represented by members of the Education Department, NZ Employers Federation, Federation of Labour, echnical School Teachers Association, Electrical Education Association, Office of the Commissioner of Apprenticeships, NZ Electrical Wiremans’ Registration Board, NZ Motor Trade Certification Board, Plumbers’ Board of NZ.</td>
<td>This Act established the NZ Trades Certification Board which consisted of 14 members. This Board had representatives from Government, the Labour Federations and the trades themselves and was responsible for the administration of apprentices and the testing and standards of trade persons.</td>
</tr>
</tbody>
</table>

The details of technical training in New Zealand schools revealed by McCollugh (1992) provides a direct link between school based trade skills training in 1950s – 1960s to the pre-trade programmes in existence today.

These developments make it now possible to be able to confirm the concept of VET in New Zealand as vocational training being concerned with social utility and is the process by which an individual is trained to fit into a job by completing a narrow training programme, whilst on the other hand, vocational education is a far broader purpose being concerned in the individual’s welfare and its purpose is to assist them in exploring a career and education for life; possible examples being Nursing, Police, and Beauticians. Based on the findings of Thompson (1973) and Green (1991), it is noted that skills are important in vocational education but their acquisition is not all there is to vocational education.

Another issue which emerges from the literature is the importance that VET plays in a nation’s affairs in that it one of the pillars which supports a nation’s economic success. The Draper report (cited by Thompson 1973) identifies that this is an important theme which reinforces the importance of VET at national level and adds weight to the concerns expressed by Hoong (2003) and Berridge (2008). Thompson (1973) asserts that vocational education is education for production to serve the ends of the economic system and is said to have social utility.

Tuijnman (1995) points out that a number of studies have argued that economic success depends on having a competitive ‘high-tech industry, and that previous under-investment in vocational education and training has undermined efforts to respond to changing economic conditions. This is commented upon by Calder et al, (1998) who give the example that the expansion of VET in the UK represents the attempts by government and industry to respond to the profound changes that have taken place in the global economy. Harris et al (1995) agree and add that economic factors are increasingly becoming the rationale for educational policy decisions. We can observe some validity in this from the fact that both vocational preparation and education in
general are being challenged by concepts of relevance in terms of the standard needed for competitive output from work and business profitability.

In terms of trade training this viewpoint is shared by Ridout, (2008) who writes that at a Council of Australian Governments (COAG) meeting on trade reforms it was decided that to go some way to addressing the country’s skills shortages, apprentices and trainees will be able to work as qualified trades-persons as soon as they have demonstrated competence to industry standards.

2.4 THE GROWING COMPLEXITY OF THE PLUMBING AND GASFITTING TRADES

Historically, skilled trades are understood in relation to three components: trade theory and science, Trade technology, and trade work skills. As science continues to produce new technologies, trades persons must constantly develop their knowledge and understanding of them so as to remain effective within the industry. As technology continues to improve the tradesperson, in order to operate successfully within the industry, must constantly adapt to the changes that are occurring. Over the past 10 years the trades have become much more technology and science driven.

The themes in international literature are the same in that they describe a similar trade situation to that of New Zealand and focuses is on the shortages of trade trainees and strategies to address this problem and the issues of trade training in a modern trade environment (Thompson 1993), (Harris et al, 1995), and (Calder et al, 1998).

Trade training in New Zealand is very similar to that of Australia as described by Hoong (1999) who states that apprentice training is conducted through modules consisting of two elements, the theoretical knowledge and the necessary practical skills. He further explains that the main aims of providing training are firstly to ensure a sufficient supply of trades people to fulfil the industry demand, and secondly to
upgrade the standard of trades people to satisfy the needs of the ‘the new generation client’, and to necessitate the changes undergone by the industry in both technology and its method of carrying out work. In addition, Hoong (1999) adds that emerging technologies and the highly specialised nature of the work has transformed plumbing and gasfitting in recent years. This has transformed them into complex trades where the responsibility for the methods employed and to ensure that the work done is of the highest level rests with the trades person carrying out the job.

**Figure 2.1. Venn Chart showing the merger of the three components of VET.**

Literature from Australia reveals that industry, trade union and youth advocacy bodies called for fresh approaches to national skills training. The National Skills Policy Collaboration, a consortium of Australian peak bodies, recommends a new wave of training reform to take advantage of opportunities beyond the current economic crisis. The consortium has released a report, *Investing Wisely*, setting out a framework to elevate skills development and to entrench a culture of learning across the workforce. The report stresses that skills development needs to keep pace with the demands of the new economy, and that there must be a focus on quality, not just quantity. Sharan Burrow, President of the ACTU, one of the members of the consortium, said that
increased productivity flowing from enhanced skills and training will be vital if the trades are to emerge from the economic slowdown with a more skilled workforce that is able to compete globally. Ridout (2009) adds ‘There is always a risk that in the current economic climate, the focus on skills will take a backseat to other more immediate concerns. That would be a big mistake”.

2.5 THE STAGES IN VOCATIONAL DEVELOPMENT

The literature revealed that in terms of selecting our future career or profession the literature reveals that when we are young our thoughts are shaped by the things we see around us and predominantly what seems exiting such firefighter, nurse, space-person, police-person etc. This is termed by Thompson (1973, p 205-206) as the Fantasy phase which is limited only by a person’s imagination. As shown on the figure below, as a person grows older the range of occupations considered and not rejected becomes smaller (curve A), and a person begins to learn about themselves, about occupations, and they begin to relate themselves to work (curve B) and what are seen to be the possible professions for the individual’s class or strata in society.

Thompson (1973) describes curve A as being a function of curve B and as such, as an individual continues to acquire information this is used to narrow and refine the range of occupations or professions he or she is considering. He argues that the theory of VET development evolving through a series of life stages has been central to much of the early written work in this area by Pressey and Kuhlen (1957) also O’Hara and Tiedeman (1959) who support this view in that they agree there are stages, each which contains sub-stages, which an individual encounters and which he/she must transition before they can progress onto the next.

They suggest that the ages at which these stages occur are as follows:

Growth Stage, Birth – 14 years (Fantasy 4 – 10, Interest 11 – 12, Capacity 13 – 14).
Exploration Stage, 15 – 24 years (Tentative 15 – 17, Transition 18 – 21, Trial 22 – 14).


Maintenance Stage, 45 – 64 years.

Decline Stage, 65 years onwards (deceleration 65 – 70, Retirement 70 onwards).

This research project is aimed at the exploration stage 15 – 24 years. This is because the age group of the school leavers and young adults who are the major focus of the research.

Figure 2.2. Forming an occupational choice or selecting a career (Thompson, 1973 p.205).
This literature has major significance in that it is situates the stage and framework by which young people select their future career or employment. The research which has been conducted largely flows from this pivotal life stage and the perceptions of the participants who did or did not complete a pre-trade programme before joining the trades. Another important theme was revealed which showed that between the growth and exploration stages a person’s initial choice of vocation or career may change, and that their choice of profession may well be subsumed by subsequent exposure to their first, and later deemed to be unsuitable selection of job.

2.6 TRADE TRAINING IN NEW ZEALAND

The literature revealed that in order to better understand the importance, function and relevance of New Zealand pre-trade programmes it is important to understand training requirements which must be met to become a tradesperson. Recent events in New Zealand concerning the ‘leaky house’ disaster, have seen a complete overhaul of construction and building which led to the creation of the Department of Building and Housing and the writing of the a new Act (Building Act 2004). The transformation within the building industry has had a big impact on the technologies used, work practices undertaken, and the materials that are now available, however, the biggest impact came about with the introduction of a new system of the compliance regimes laid down by government and enforced by the local authorities. These have become more rigorous and more responsibility to ensure that the work done complies in all respects with the trade codes and standards have been placed on the trades persons concerned. This has led to a demand for a better standard of trades-person. The research data obtained from employers indicates that they wish to be given more certitude that when they employ an apprentice that there is some assurance that they are suitable.

This, coupled with the fact that emerging technologies and the highly specialised nature of the work has transformed plumbing and gasfitting in recent years and have
made them complex trades. Additionally, the responsibility for the methods employed to ensure that the systems installed meet the objective, function, and performance criteria required, and that the standards of the work done is of the highest level rests with the trades person carrying out the job (Building Regulations 2004).

The most important enactment in the overall improvement of VET training in New Zealand is the Industry Training Act 1992. This Act authorized the creation and funding of Industry Training Organisations (ITOs) whose task is to administer the trade training of their particular industry.

Currently, to complete trade training and to obtain registration as a plumber and gasfitter an apprentice spends four to five years of practical and theory instruction. Harris et al (1995) explain that the ITOs supervise and administer the delivery of systematic training programmes and set national industry standards, and that the NZQA brings them together to constitute a National Standards body for the purpose of establishing those standards.

Another significant theme which was revealed during the examination of the literature was that the choice of which career to follow is often not an easy one to make. This will be further expanded in the research findings but essentially, there are various reasons for this, the most causational ones are external forces, age and knowledge (Thompson, 1973).

The table describes the pathways to obtain trade qualifications. The pathway used by apprentices in New Zealand is that shown on the right of the figure whilst that used by new immigrants or those with overseas qualifications is shown on the left. To become a registered tradesman the apprentices must train for 4 years during which time they must pass National certificate and pass the written registration examination set by the PGDB (Plumbers, Gasfitters, and Drainlayers Act 2006).
The pathways by which school leavers and others obtain trade qualifications is critical to ensure that apprentices obtain the best possible training in order to be able to meet the requirements of industry and to be able to discharge the new responsibilities of plumbers and gasfitters in terms of compliance (Building Act 2004). According to
Dessinger (2007) there are three pathways to achieving VET qualifications in the trade training area. He lists these as:

- Full-time training courses at a college or polytechnic Institute.
- Part-time at college/full time job (‘apprenticeship model’).
- Full time fully on the job.

The literature from the Building Act 2004 and the Plumbers, Gasfitters and Drainlayers’ Board reveal that the trade training the system used in New Zealand is the apprenticeship model.

<table>
<thead>
<tr>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part-time at college/full time job</td>
<td>Lower status compared with the alternative of higher education.</td>
</tr>
<tr>
<td>(‘apprenticeship model’)</td>
<td>Not available to those without jobs.</td>
</tr>
<tr>
<td>Student gains different types of learning and experience in the different environments.</td>
<td>Sometimes perceived to be inadequate links between work and college.</td>
</tr>
<tr>
<td>A balance between generic skills and authentic experience.</td>
<td>Employer loses student on his or her college days.</td>
</tr>
</tbody>
</table>

Sourced from Dessinger, (2007, p. 34).

In the New Zealand trade training system trade theory is almost entirely taught and assessed at technical institutes and trade training centres whilst the practical skills are predominantly taught on site with the apprentice’s employer or tradesmen employed by the firm. There is a direct link between competency based unit standards and trade qualifications. The courses are essentially practice based, and consists of a combination of theory and practical based teaching with the same elements making up the assessment events (ITO Assessment and Moderation Action Plan (2008)).
Table 2.4 details the Plumbing and gasfitting trade training model used in New Zealand. To become a registered tradesperson apprentices must pass the New Zealand National Certificates in Plumbing and Gasfitting, which are administered by the New Zealand Qualifications Authority (NZQA) and pass the registration examination which is theory based and set and administered by the PGDB. The national registration examination results for plumbing and gasfitting reveal that 50% - 70% of apprentices fail at the first attempt. The examination papers disclosed that many who sit do not have the required knowledge of the underpinning trade theory and science nor the required levels of literacy and numeracy to pass these examinations (PGDB published results of national examinations).

**Figure 2.4**  The apprentice plumbing and gasfitting trade training model used in New Zealand.

In year 4 the Apprentice passes the National Certificate and Registration examinations.

NB. Note that if an apprentice fails the end of year assessment they must return to a trade training provider and successfully resit it before transitioning to the next training year’s courses. This system is essentially based upon those used in the United Kingdom and Australia.
The government’s awareness of the disturbingly low levels of trade training within the country has sparked a comprehensive response which included providing support for school to work programmes in schools (Mallard, 2003).

2.7 PRE-TRADE PROGRAMMES IN NEW ZEALAND

In order to create an interest in a trade career a number of initiatives have been developed that provide school leavers with exposure to work within a trade environment during their last year at school. The literature notes that these programmes are designed to provide a pre-trade experience to those who seek or believe that they are suited to a trade career. The first two research questions of this project focus on the pre-trade programmes and their effect on potential apprentices and employers.

A secondary school based pre-trade programme.

Thompson (personnel communication 2009) revealed that the aim of the Auckland based secondary school programme is to connect schools leavers with possible employers in trades and industry. This programme is the first recorded school based pre-trade programme and was launched in Auckland in 1998. It is essentially a programme based around careers expos which seeks to connect secondary school leavers with employers in trades and industry. According to Thompson (2008) the programme consists of profiling students and advising them of their most realistic career/employment options and providing some school based technical training to them. The main element of the programme is however is aligning school leavers’ career ambitions with major skills shortages in industry and trades. The programme seeks to ensure that students leave school with some knowledge of the opportunities available to them in the various employment sectors and the careers expos are organised for their information and consideration of career opportunities. For businesses, it is a chance to connect with a pool of future employees who, based on
the subjects they are already taking, have already shown as interest in the trades, sciences, or technology areas’.

Thompson (2008) emphasises that each expo concentrates on specific sectors and industries, namely focusing on engineering, automotive, transport and logistics, marine, and construction industry trades. The Pathways to Employment expos bring together approximately 1500 students from 60 schools and prospective employers each year in an informative and structured environment.

**An industry organisation pre-trade programme**

This pre-trade programme is operated by an industry organisation for students who wish to transition from school to the trades. It is a secondary school based initiative which introduces school students to work and training (Industry website 2009). It seeks to increase those taking up trade training by providing a smooth transition from secondary school education to industry training.

The programme web site gives some direction to would-be trades apprentices by informing them of the following requirements for Year 11 and 12 school-leavers, and advises that on-the-job industry training is often the best way to achieve a lifetime career. This programme is however limited to secondary school students in decile 1 – 6 schools only and offers those students an opportunity to experience workplaces first hand while engaging in structured workplace learning. The programme students remain enrolled in their school and spend one day a week with a work experience employer.

The employer’s role is to provide a safe workplace and to take the student out on jobs in order to provide the work experience in a real life setting. Work experience placements may run for anything from one term to the full year and a student may try as many trades as they wish in order to be able to select the one which best suits them (Industry Website 2008).
An Urban Technical Institute pre-trade course.

This pre-trade programme provides trade training in four sectors of the construction industry which gives students a broad over-view of Building Construction. The course is set at learning level 2. It is a 60 credit course lasts for 16 weeks during which students spend 4 weeks on each trade as shown in figure 2.3 below. According to the programme definitive document the course lasts for 16 weeks during which students spend 4 weeks on each trade as shown below. This programme has been operating since 1999 and is called the Certificate of Building Construction Multi-skills. (Multi-Skills definitive Document 2004).

The programme consists of both theory and practical skills being taught. The theory consists of basic topics, mainly based around workshop, equipment, and welding safety. Also included are numeracy, literacy, and problem solving. There are four theory test conducted through the course and each project is graded. A course report is given at the end of the course and students are graded on their performance.

2.8 OVERSEAS PRE-TRADE PROGRAMME INITIATIVES

The trade situation in the rest of the world seems to mirror that of New Zealand in that shortages have been identified and initiatives are being put in place to resolve the situation. The key themes that emerged were that In addition to a shortage of suitable apprentices, industry internationally has concerns about maintaining its effectiveness and ability to meet their nations' needs. The literature revealed that most countries have developed some pre-trade strategies which are headed by multi-agency and industry groups and which involve some form of school-based programmes.

Literature from Australia shows that the growing awareness of shortages within the trades is not confined to New Zealand. Keating (1995) records that in order to increase the numbers of trade trainees the responsibility for trade training was moved from
State to Federal level and a system of locating the initial vocational preparation in schools was instituted whereby VET minded students are exposed to trade training before beginning an apprenticeship. VET in School programmes are becoming increasingly common, with 44% of senior secondary schools offering such programs in 2002 (MCEETYA, 2003).

In common with New Zealand pre-trade programmes, Australian students gain trade experience while still attending school. School students also have the option of undertaking school-based apprenticeships and traineeships (almost 17,000 were in training in 2005) which involves being in a part-time apprenticeship or traineeship employment contract and studying at trade training centres which in some cases is the school itself (Keating, 2005). Chief Executive of the Australian Industry Group, Heather Ridout (2006), said that;

*It is critical that we avoid the mistakes of past downturns where training was seriously neglected. If we do not maintain our current level of all forms of training, especially apprenticeships, skill shortages will re-emerge with a vengeance as soon as economic conditions improve.*

The literature also discussed the situations in Europe and USA/Canada as being similar to New Zealand and Australia. The economies have grown at an unprecedented rate over the last decade and the demand for skilled workers has increased dramatically, but is not being met (O’Connor, 2006). According to Green (1995) VET in England is frequently seen as one of the weakest areas of the education system and despite recent reforms rates of participation in VET are much lower in Britain than most other European Union (EU) countries. He adds that to improve matters training and enterprise councils (TEC) have been established to assist those seeking to gain pre-trade experience. Finlay, Niven and Young (1998) reveal that to address the shortages in the trades the Scottish Executive has launched phase one of its ‘Adopt an Apprentice’ scheme, and that a ScotAction skills support package, would provide financial support to businesses and individuals.
Germany also suffers from a shortage of skilled trades persons. The need for a pathway specific to a career in industry and trades is supported in Germany where secondary school students are introduced to the trade or industry they are interested in pursuing before they commit to training (Deissinger, 2001). Again, this seems to be very similar to the pre-trade programmes in New Zealand. In Germany, non-academic VET is delivered either in what has become known as the ‘Dual System’ (school and work experience combined) or in full-time vocational schools.

The United States and Canada follow the trend in shortages of trade trainees. Taylor (2002) found that although the basis of school based VET introduction was growing in many cases market policies make it more difficult to facilitate school-to-work transitions for all students. In America the U.S Department of Education and Labour has teaming up with leaders of the construction industry to boost high school students’ interest in potential building careers by coordinating outreach efforts to schools which provide details of VET career options that are available to students. The international literature clearly indicates that school based pre-trade programmes are in existence but there was no information as to how successful they have been.

2.9 SUMMARY

VET is an integral part of a nation’s economic ability, development and wellbeing. As a major part of VET, the trades play a crucial role in developing and sustaining a skilled work force which is capable of supporting the national economy through industry and is vital to maintaining suitable standards of health, prosperity and standards of living. In the last decade there have been many concerns that the ability to maintain the skilled trades sector is becoming too great in the face of technological advances, and the outflow of skilled trades persons leaving the country to work overseas.

Traditionally, trades have been the career of those not suited to an academic career. Thompson (1973) contends that early formulations of vocational education focused on
the development of skills and competencies associated with those skills. Vocational education was for those who had made a choice regarding an occupation. Further, that choice had to require an education of less than college (University) grade. There now needs to be a change of attitude that trades are the refuge for the less successful school leavers and that the standard of trade trainees must improve in order to support the trades in an increasingly technological world. The literature has shown that employers are not as prepared to waste time and money with apprentices who are not able to perform at the standard required.

Pre-trade programmes play an important part in producing suitable trade apprentices from school leavers and those who are undecided on what employment option would best suit them who have the ability, intellect and practical ability in order to sustain the required levels of skilled tradesmen in New Zealand. One way of attracting school leavers to apprenticeships is to offer work experience in trades during the school curriculum or to have potential trade apprentices attend pre-trade or multi-Skill type courses to introduce them to trade training. By linking up entry-level training with workplaces these systems have the advantage that they are able to impart competences needed in the world of work.

This research seeks to contribute to three major gaps in the available literature. The first is to ascertain what activities the pre-trade programmes provide their participants and how are they structured. The second issue is what experiences to participants have during the pre-trade courses and what advantages if any accrue to them. This issue is significant to apprentices and employers alike. The last issue is whether any improvements can be suggested for these programmes, and the selection of suitable candidates for training in the plumbing and gasfitting trades.

There was no literature located which records that research of this nature being previously conducted either internationally or in New Zealand.
CHAPTER THREE

METHODOLOGY

3.1 INTRODUCTION

The literature review in Chapter Two provided an overview of the VET situation in New Zealand and elsewhere and explained the pre-trade programmes that are the focus of this research. Chapter Two also identified some key themes which link the problems that this country is experiencing in obtaining sufficient suitable trade trainees to meet the country’s needs. This chapter reveals why the qualitative research methodology was chosen to achieve the research aims and objectives that were stated in Chapter One. A number of key research matters were identified and this chapter explains further why it was decided that a case study evaluation was the most suitable research methodology to use to examine the questions posed by this research project.

3.2 THE QUALITATIVE RESEARCH METHODOLOGY

In terms of research Bryman (2004), and Punch (2006) hold that there are two main approaches suitable to conduct social research. They list these as the Quantitative research approach and the Qualitative research approach. According to Thomas (1998) qualitative research compares the characteristics of one educational entity with those of another entity, with no concern for amounts or frequencies of the characteristics being studied, whereas quantitative research compares the amounts of frequencies of the characteristics that are being investigated. The choice of which one to use depends on the nature of the question the researcher hopes to answer. Clarke et al (1999) argue that whereas quantitative methodology demands the researcher to adopt a stance of scientific detachment, whereas the task of the qualitative researcher is to acquire insight and develop understanding.
Bryman (2004) describes quantitative research as the collection of numerical data and exhibiting a view of the relationship between theory and research as deductive. He explains that quantitative research is concerned with values, norms and an impersonal approach to the issues being examined. This view is supported by Davidson and Tolich (2003) who argue that the quantitative research methods seeks consensus and norms, to predict or explain, and values detachment and impartiality. Quantitative research was not suitable for my research because this project is based on research into people, their experiences, views and opinions and not the collection and interpretation of large amounts of impersonal data.

Davidson and Tolich (2003) stated that qualitative research is seeking difference and divergence, to interpret and understand and that which generates theory and is inductive. They stress that this type of research values personal involvement and partiality. Bryman (2004) describes qualitative research as a research strategy that usually emphasizes words rather than quantification in the gathering and analysis of data. He adds that as a research strategy it is inductive, constructionist and interpretive and adds that this type of research has become an increasingly popular approach to social research including ontology and epistemology. The selection of this methodology is supported by Harvey and Myers (1994) who make the point that arguments which put forward the need to consider context in research tend to support qualitative techniques. Lee (1991) agrees with this view and writes that there is an extremely broad range of qualitative techniques, ranging from anything that does not directly deal with numbers to the most in-depth and self-reflective interpretive techniques.

Davidson and Tolich (2003) and Cohen et al (2000) confirm the choice of a qualitative research methodology as the most suitable methodology to facilitate studies into a person’s understanding, experience and thoughts which fits this research project. Cohen et al (2000) also hold that the qualitative research methodology is ideally suited to facilitate studies into human behaviours and to interpret experiences. As the
research focuses on pre-trade programmes the choice of a qualitative research methodology is further reinforced by Marshall and Rossman (1999) who declare that qualitative research is important for enquiry into education and that qualitative research genres have evolved into increasingly important modes of inquiry into the social sciences and applied fields such as education, social work and community development. Marshall and Tolich (1999) argue that qualitative research takes place in natural settings rather than laboratories and that as this research was to be conducted into pre-trade programmes in the workplace and schools, qualitative methodologies were the best method to employ as it observes activities in the natural rather than artificial world.

This is a major factor because the participants in this research are trade apprentices, programme managers, and employers who were to provide information concerning their personal feelings and focuses upon their experiences, perceptions, views and opinions it was clear that a qualitative research methodology best suited to this research. According to Marshall et al (1999) there are a number of significant characteristics of qualitative research. In the table below these characteristics and their relevance to the research is displayed.

**Table 3.1 Characteristics of Qualitative research relevant to this research.**

<table>
<thead>
<tr>
<th>Qualitative characteristic</th>
<th>An element of this research</th>
<th>Relationship to this research</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. It takes place in the natural world</td>
<td>YES</td>
<td>This research is based on workplace experiences.</td>
</tr>
<tr>
<td>2. It uses multiple methods that are interactive and humanistic.</td>
<td>YES</td>
<td>The research uses questionnaires and interviews.</td>
</tr>
<tr>
<td>3. That it is emergent rather than tightly prefigured.</td>
<td>YES</td>
<td>This topic has never been researched in New Zealand.</td>
</tr>
<tr>
<td>4. it is fundamentally interpretive</td>
<td>YES</td>
<td>Themes are revealed for analysis.</td>
</tr>
</tbody>
</table>
3.3 RESEARCH DESIGN.

To enable this research to be conducted, a trade training centre was critical in order to provide a large enough pool of apprentices to ensure that sufficient participants who had attended pre trade courses before starting their trade training were available. A second requirement was that a large enough pool of employers existed in the area to provide some who had employed apprentices who had attended pre-trade programmes and those who had not and who were therefore on a position to make a comparison between these two apprentice groups. A third critical element was that because this project focuses upon trades and trade training, of necessity it had to be centered upon a trade training institution in an area where the three main pre-trade programmes were being operated.

The only major centre which provided these requirements is Auckland. This city has two major trade training institutions. One had a clear advantage over the other because it offers and conducts the complete range of plumbing and gasfitting courses. These include pre-trade courses, as well as the complete National Certificate programme and the advanced Craftsman courses. This institute also conducts assessments of the trade Unit Standards as laid down by the New Zealand Qualifications Authority (NZQA). Therefore a large number of trade trainees pass through the plumbing and gasfitting department on training or assessment courses each year which meant that obtaining sufficient apprentice participants would not be difficult. More importantly, the required numbers who have attended pre-trade courses is far higher than other institutions. As a result of these factors it was chosen as the research site.

Because it was important that the research data was gathered in the natural setting of the various pre-trade programmes and work places, any experiment would disrupt the normal flow of events, and would not provide valid data because it would introduce an artificial environment. In addition, the pre-trade programmes are a recent innovation
and, because little previous research has been conducted into them, much is yet to be known about them.

**Figure 3.1. Diagram of the design and key elements of this research.**

A critical element of this research is that it focuses and is involved predominantly with people and seeks to obtain a clear understanding of the experiences, perceptions and influences the pre-trade courses had on those who take part in pre-trade courses before entering into trade apprenticeships, and on their later employers. This raised the important issue of which research methodology would be the most suitable to use. For this research to be successful data was needed about the individual views and experience of each of the participants. Cresswell (1998) advises that there are in fact five types of qualitative studies which can be employed. He lists them as:

- a biographical life history – exploring the life of an individual,
- a phenomenology – Understanding the essence of experiences about a phenomenom,
- a grounded theory study – developing theory grounded from data in the field,
- an ethnography - describing and interpreting a cultural and social group,
• a case study – developing an in-depth analysis of a single case or multiple cases which links directly to this research project.

In further refining the research design it was noted that Denzin & Lincoln (1994) agree with Cresswell but add historical social science, participative inquiry, and clinical research to his list. What is important is that case studies seek to illuminate or provide understanding of an issue (Somekh & Lewin, 2005). This was another strong link to this research as it was critical that this project captured the experiences of apprentices, as well as those of their employers and the managers of the pre-trade programmes. Therefore, in order to examine the effectiveness of pre-trade programmes, the case study method of research and analysis is clearly the most appropriate to be used.

In support of that decision it was considered that a case study methodology allowed comparative analysis of the experiences of apprentices who went through the three pre-trade programmes to be carried out. This and the effect it had on their trade experience would also allow an initial evaluation of the pre-trade programmes to be made. It then fell to decide which case study methodology to use. Creswell (2007) writes that case studies can essentially be classified into one of three methodologies. He lists these as:

• **Intrinsic** – This method is used to research a particular or unique case. This method was not suitable because the topic under enquiry is generic and not unique to any particular institution.

• **Instrumental** – This method is concerned with research into a single issue or concern and focuses on a single case. I decided that this is also not suitable because this project is to focus on three main issues.

• **Collective** – This concerns research which essentially compares multiple cases in a single research project.

Since this research project sought to examine three pre-trade courses and to evaluate their performance, as well as obtain information for improvements, it was concluded
that the collective case study method which compares multiple cases in a single research project was the most applicable to use.

### 3.4 REFINING THE EVALUATION RESEARCH METHODOLOGY.

A significant element of this research involves examining the effectiveness of the three pre-trade programmes which are the focus of this research. Patton (1990) asserts that when one is involved in examining and judging accomplishments and effectiveness then one is engaged in evaluation. Scriven (1991) states that evaluation refers to the process of determining the merit, worth, or value of something. He is supported by Mark, Green and Shaw (2006) who add that formal evaluations are systematic and allow a fuller, less biased view of that being evaluated to be obtained. This view is also supported by Pawson & Tilley (2002) who write that evaluation offers a process with which to measure worth and value and in doing so bestows the ability to justify decisions and to learn from social policies, programmes and initiatives in order to modify and improve their effectiveness. Each of these observations and explanations confirm that part of this research must involve some form of evaluation of the pre-trade programmes in order for this project to achieve its aims and objective.

To assist in clarifying the form and nature of the evaluation Posavac, and Carey (2003) comment that the regular use of social science methods to gather information needed to assist in assessing a programme or service’s worth, and assessing the quality and effectiveness of those services and programmes only began to be recognized about fifty years ago. They add that as a result, the use of programme evaluations has grown rapidly and propose that there are four types of programme evaluation which can be employed. These are:

- **The evaluation of need**, in which the unmet needs are identified and the useful aspects are identified.
● **The evaluation of Process**, in which the degree of implementation is assessed and the evidence sought that the activities carried out by staff match the plans for the programme.

● **The evaluation of Outcome** can be used to compare the performance of those in the programme with those who have not received its services.

● **The evaluation of Efficiency** in which the costs of the programme is assessed against the extent to which it has helped the participants. This type is also called a cost-effectiveness analysis.

As this research is centered on examining the effectiveness of pre-trade programmes in terms of the individuals involved as well as investigating the effects they create within the plumbing and gasfitting industry it was decided that a case study evaluation research should be conducted. This decision is supported by Rossi, Freeman and Lipsey (1999) who argue that although the broadest definition of evaluation includes efforts to place value on events, things and processes, a more accurate definition is that programme evaluation is the use of social research procedures to systematically investigate the effectiveness of social intervention programmes. Because this research concerns humanities and their perceptions and experiences, and is intended to evaluate the effectiveness of the three pre-trade programmes being examined, the evaluation of outcome method was chosen as this provides the most suitable approach to meet the research objectives.

Pawson and Tilley (2002) and Clarke and Dawsonl (1999) state that there are two main evaluation methods and these are the formative and the summative. They explain that in a formative evaluation study the emphasis is on identifying the strengths and weaknesses of a programme or intervention, with particular emphasis on the perceptions and experiences of the programme planners, practitioners and participants.

They hold that this is different from a summative evaluation because there the aim is to determine the overall impact of a programme to recommend whether it should be
continued or not. Because this research is also to study the perceptions and experiences of those involved in pre-trade programmes, and the on-going effects of the programmes themselves, it was decided that the formative evaluation method was best suited for this research.

To add clarity to the issues surrounding evaluation research the joint committee on standards for educational evaluation examined the issues surrounding programme evaluation which led to their publishing a text on programme evaluation standards which was published in 1995. In it they insisted that for qualitative analysis the observation protocols, categories of information, and methods of summarization are often not predetermined and that qualitative analysis often involves an inductive, interactive and iterative process whereby the evaluator returns to relevant audiences and data sources to confirm and/or expand the purposes of the evaluation and test conclusions (Sanders, 1994). The joint committee also declared that education and training programmes are evaluated in order to determine their quality and gain direction for improving them. In this regard they stated that the four important attributes of an evaluation from which the standards have been organised are utility standards, feasibility standards, propriety standards and accuracy standards. Together these comprise the attributes that are necessary and sufficient for sound and fair evaluation and were used in this research.

3.5 THE EVALUATION CRITERIA

The four evaluation standards were used to design and define the evaluation criteria and it influenced the data gathering process of the research. To address the broad aims of this research, each pre-trade programme was to be evaluated on its performance as to whether or not it fulfils its purpose, and whether it achieves its own aims and objectives. Once the critical success factors for pre-trade programmes was identified by the participants during the data gathering phase it was a matter of sifting the information and identifying the essential criteria that would be used to evaluate
them. This would allow each to be evaluated to determine how successful their operations have been.

As a result of the single interviews with each of the pre trade course managers, differences between the programmes became very apparent. At first glance it appeared that all of the programmes were very similar to each other but as the research progressed it became apparent there are some quite significant differences between them. The interviews with the apprentices and employers revealed their perceptions and opinions of what pre-trade programmes should provide and what their expectations of such programmes were. The following criteria were distilled from the themes which emerged from the data. These criteria are deemed to be sound and allowed an evaluation of the pre-trade programmes using each of these criteria to be made.

The criteria encompassed the key issues relating to per-trade programmes that were identified by the participants and which fitted the four attributes of an evaluation according to the evaluation standards committee. The criteria which were distilled from the findings and used for the evaluation are listed below:

1. To profile students for their levels of literacy and numeracy to assess whether they were suitable for the plumbing and gasfitting trades.
2. To provide a suitable choice of trades for Pre-trade work experience.
3. To have a set programme of work or experience that the Pre-trade student should be exposed to during their pre-trade experience.
4. To note and record the work experience activities completed by students during their pre-trade experience.
5. Students should be exposed to trade tools, trade work and trade culture during their pre-trade experience.
6. Students should be introduced to the real world of the industry on job sites and to the trade work ethic during their pre-trade experience.
7. The programmes should be widely available across New Zealand.
8. The programme should provide a suitable number of new apprentices each year depending on the needs of industry.

These criteria were used in Chapter Five to carry out an initial evaluation of the three pre-trade programmes under examination in this project.

3.6 PARTICIPANT SAMPLING

For this research to be successful data was required from three specific groups of participants. First the managers who supervise the overall conduct of the pre-trade programmes; second students who had gone into the plumbing and gasfitting trades as apprentices; and thirdly employers who had recently employed school leavers as apprentices. Ritchie and Lewis (2003) explain that when sampling strategies for social research are described, a key distinction is made between probability and non-probability samples. They further explain that qualitative research uses non-probability samples for selecting the population for a study because the sample units are deliberately selected to reflect particular features of or groups within the sampled population. This process is known as ‘purposive’ sampling and was a critical element of this research and its successful conclusion.

In this case participants were needed who had specific attributes not found in the general population. The first was for participants who were managers of pre-trade programmes. The pre-trade programme managers were selected because they were running the programmes that were to be evaluated. Letters were sent asking if they were willing to participate in the research.

The second was for participants who had taken up an apprenticeship in Plumbing and Gasfitting. They were divided into two research groups, those who entered the trades via the pre-trade programmes and those who did not. To mitigate the ethical issues surrounding the fact that I am a staff member the apprentice participants were selected
on a purely volunteer basis. This was arranged by the staff members who were the respective course co-ordinators. The method used was that during the administration period of each course the course co-ordinators would canvass for student participants to take part in this research project and arrange a meeting for me with them. They also distributed and later collected the questionnaires to those who wished to fill them out. The questionnaires were delivered to the researcher ‘safe hand’ in a sealed envelope.

The third was for employers who agreed to take part and were selected because they have employed apprentices over the past three years and they have a mix of those who have attended pre-trade programmes and those who have not.

### 3.7 DATA COLLECTION

The collection of data is one of the most critical elements of a research project and there are a number of data collection methods to choose from, depending on the type and nature of the information sought. Cresswell (1998) lists the four basic types of information to collect during research as observations, interviews, documents, and audio visual materials. Sharma (2009) supports this and writes that according to Yin (2003) documents include archival records and physical artifacts. Ritchie and Lewis (2003) advise that the use of qualitative methods will be heavily influenced by the aims of the research and the specific questions which need to be answered. Both Ritchie and Lewis (2003) and Davidson and Tolich (2003) add that the approaches to collecting qualitative data can be divided into two very broad groups – those that focus on naturally occurring data and those that generate data through the interventions of the research. Because the research involved participants who are actively involved in the industry, this research focused on naturally occurring data throughout.

Each of the possible information types available for research purposes has been listed on Table 3.2 below which identifies their genre and indicates whether they were
included in the data collection for this research. The elements which are denoted by
the ‘Yes’ response are those which were deemed to be appropriate to this research.
Observation was not considered practical for the reason that the focus of the research
is on pre-trade programmes which the participants, to be eligible for this research
project, had already completed. Since the focus of this research revolved around the
experiences and perspectives of the participants a data collection plan employing a
majority of interviews and conversation was considered to be the most suitable to use.

Table 3.2 The types of data and the relevance of each to this research

<table>
<thead>
<tr>
<th>Naturally Occurring Data</th>
<th>Yes/No</th>
<th>Generated Data</th>
<th>Yes/No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observation</td>
<td>No</td>
<td>Individual Interviews</td>
<td>Yes</td>
</tr>
<tr>
<td>Documentary Analysis</td>
<td>Yes</td>
<td>Paired (or triad) Interviews</td>
<td>No</td>
</tr>
<tr>
<td>Discourse Analysis</td>
<td>No</td>
<td>Questionnaires or Surveys</td>
<td>Yes</td>
</tr>
<tr>
<td>Conversation Analysis</td>
<td>Yes</td>
<td>Focus Groups</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Table compiled from data sourced from Ritchie and Lewis (2003), & Davidson and
Tolich (2003) *(The page numbers were not noted at the time).*

In order to ensure data validity through triangulation, it was decided that the prime data
collection methods would be a study of the literature followed by questionnaires, single
interviews and focus group interviews as shown in Table 3.2 above. In terms of the
numbers in each focus group it was decided to use four participants. Bryman (2004)
says that three or four participants would be the minimum number to give a usable
cross section of information and data for a sub group. Any less than that and the
information obtained may be too little for meaningful analysis. Since this research is
exploratory in nature and is restricted by sample size the analysis of the research data was restricted to univariate analysis. Marshall and Rossman (1999) state that interviews are a useful way to get large amounts of data quickly. Bryman (2004) agrees and adds that a key feature of interviews is their ability to provide an undiluted focus on the individual and provide an opportunity for a detailed investigation of peoples’ personal perspectives. In order to obtain the primary data required for this research and to also provide flexibility in being able to follow up an unexpected line of enquiry interviews were selected as the most useful data collection tool that would be used.

In addition, because of the exploratory nature of the research it was decided that, single interviews would ensure that the responses were genuine to the person being spoken with and that this would avoid cross contamination of thoughts and participant experiences. Ritchie and Lewis (2003) support the decision to use single semi structured interviews as they provide an interview framework whilst allowing the flexibility to follow an unexpected lead or opening which appears during the conversation. This provided the ability to explore areas where further information was needed, or when little was known about that topic. Each interview was audio recorded and transcribed prior to analysis to assist clarity of data and consistency of analysis, and easy retrieval of key points.

In order to obtain a cross section of information from the experiences and perceptions of the apprentice participants, focus groups were also employed in the data collection phase. Posavac and Carey (1998) advise that a discussion between focus group members forces participants to reflect more thoughtfully about the reasons for their opinions and recollections than they would if interviewed alone. Creswell (1998) recommends that focus groups can be as small as four or five persons and that they should be audio taped and later transcribed. To collect the data for the case study evaluation I finally conducted four focus groups, each consisting of three or four apprentices split between those who attended pre-trade programmes and three who did not. In order to collect the wider selection of data required the focus groups were
also conducted using semi-structured interview plans (Ritchie & Lewis, 2003). For accuracy I audio taped the focus groups and later transcribed for the data analysis.

Marshall and Rossman (1999) hold that questionnaires are a useful way of gathering data about a person’s attitudes and beliefs but caution that the researcher must rely totally on the honesty and accuracy of participants’ responses. Questionnaires are viewed as a good tool to collect primary data and are best used in a collective situation (Clarke & Dawson, 1999). The questionnaires were distributed by course co-ordinators during the initial administration period at the start of each course. The course co-ordinators also canvassed the classes for participants willing to take part in this research during the administration. The use of multiple methods assisted in the triangulation of the research data obtained. Marshall et al (1999) hold that in using multiple methods for exploring the topic of interest, qualitative research is pragmatic, interpretive and grounded in the lived experience of people. For reliability and veracity all interviews were recorded on Dictaphone and then transcribed into documentary form.

**Table 3.3  The Data Collection Plan**

The plan of the data collection was gathered from three groups of participants as shown below.

<table>
<thead>
<tr>
<th>Group</th>
<th>Data Collection Method</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Group One</strong></td>
<td></td>
</tr>
<tr>
<td>Pre-Trade Programme</td>
<td>3 x Single Interviews</td>
</tr>
<tr>
<td>managers</td>
<td></td>
</tr>
<tr>
<td><strong>Group Two.</strong></td>
<td></td>
</tr>
<tr>
<td>Apprentices</td>
<td>28 x Questionnaires</td>
</tr>
<tr>
<td></td>
<td>4 x Focus groups of 3 - 4 persons a total of 15 participants</td>
</tr>
<tr>
<td><strong>Group Three.</strong></td>
<td></td>
</tr>
<tr>
<td>Employers</td>
<td>3 x Single Interviews</td>
</tr>
</tbody>
</table>
These methods were designed to provide the best options for gathering the data that was critical to the success of thesis research project in terms of relevance, reliability and validity. As shown above, the data gathering consisted of single semi-structured interviews of the three managers of the pre-trade programmes, and also from the three employers. Questionnaires and focus group interviews were used to obtain data from the apprentices in group two. In order to ensure that the research is reliable and valid the questionnaires and interview questions were piloted before use to ensure their utility to the aims of the research and to identify and remove any ambiguities or lack of clarity in them.

**The pre-trade programme managers**

Data from the three pre-trade programme managers was obtained using single semi-structured interviews from which specific detail of the various pre-trade courses, their scope, and the course intents as well as results was obtained. This data addressed question one.

**The apprentices**

The participants were selected from students in the first and second year of their apprenticeships in order that their pre-trade experiences, or the lack of any, will still be fresh in their minds.

The questionnaires were used to provide information from both groups of apprentices and focused primarily on obtaining data relevant to questions one, two and three. It was originally planned that thirty-six apprentices would complete questionnaires and twelve of these would be invited to take part in focus groups. Two questionnaire forms were prepared, one for use by those who had attended a pre-trade programme before beginning their apprenticeship and another for those who had not. This was designed
to provide a contrast between the experiences and perceptions of both groups both before and at the commencement of their apprenticeships.

Initially it was planned to hold two focus groups of six students each but it was found that this was not possible because the desired mix of three students who had attended a pre-trade course before starting their apprenticeship, and three who had not was impossible due to the lower than expected student numbers in each two-week course. It was then decided to use three focus groups of four students each, split equally between those who had attended a pre-trade course before starting their apprenticeship and those that had not. However after only three participants arrived for one of the focus groups, and in another three of the four students had attended pre-trade programmes concerns were raised that the data could be skewed by a participant being influenced in his answers by the three who had been to pre-trade and as a result validity could be compromised. The upshot of all this was that four focus groups were held comprising three of four participants, and one of three. The apprentices addressed questions one, two, and three.

**The Employers**

The employers were selected because they operate large businesses which employ six or more apprentices and who have employed apprentices who have attended pre-trade training before commencing their apprenticeships and those who have not. Because of their experience with this apprentice mix, these employers are in a unique position of being able to provide high quality data regarding their impressions of the differences between the two groups of apprentices and any perceived differences in their attitudes, work ethic and commitment, all of which were vital to this research by providing data on questions two and three.
3.8 RELIABILITY, REPLICATION AND VALIDITY

Posavac and Carey (2003) stated that research methods are the means by which knowledge is acquired and constructed within a discipline. In terms of methodology and research methods it is important that these are both relevant and rigorous in order to be accepted as legitimate. Bryman (2004) writes that the criteria of social research are reliability, replication and validity. The soundness of this research is enhanced by the use of three data gathering methods which provide a triangulation of methods which allows the data to be assessed and overlayed to assess the trustworthiness of the findings.

Reliability. In order that the results of this research are repeatable in that the process and measures are consistent, the data gathering methods tools remained the same across each group of participants. This ensured that conditions of one period of the research were matched in those that come later.

Validity. To ensure the validity of the research findings and the integrity of the conclusions reached, the criteria laid down by Bryman (2004) were followed. In this case validity is related to the consistent measurement of the evaluation criteria for each pre-trade programme, the soundness of the conclusions draw from the data presented which assist in sustaining the validity of the research. External validity, which is described as whether the treatment would have the same effect outside the study cannot be guaranteed due to the relatively small number of participants involved so that the results of this research cannot be safely generalised beyond the specific research context of subject pre-trade programmes (Bryman, 2004).

Replication. Bryman (2004) observes that in order for replication to be possible a researcher must record and detail the procedures used in great detail and research records must be accurate and unbiased. These imperatives have been in this research by having all data recorded in writing and on Dictaphone and by using the same questionnaires and interview guides which each participant group.
make it possible for this project to be copied exactly in order to confirm or repute the initial findings.

The use of three groups of participants in this research provides multiple sources of information from three different perspectives which adds to the robustness of the findings. It was decided that the triangulation method of using questionnaires, single interviews and focus groups will best provide validity and reliability of data collected during this research project. To provide replication and reliability the questionnaires, focus group guides and interview plans were be piloted amongst staff members.

3.9 DATA ANALYSIS.

Yin (2003) cited in Sharma (2009) describes data analysis as the examination, categorising, tabulating, or otherwise recombining the evidence, to address the initial propositions of the study (p. 99). The data analysis was transcript based in which unabridged transcripts are used as the basis for analysis (Krueger & Casey, 2000). A long-table data analysis approach was selected for this research which, although a manual method, does allow the analyst to identify themes and categorise results.

Fairclough (2003) writes that written and printed texts such as lists and newspapers are texts but are also transcripts of spoken conversations and interviews. Because it was planned that most of the data in this research was to be obtained from semi-structured interviews and focus groups, the analysis of text had to be included in the data analysis process. Because trade staff use ‘industry’ vocabulary and trade slang in normal conversation, the need existed for these elements of the text be analysed and reported accurately and in the genre with which they were spoken. This idea is supported by Fairclough (2003) who noted that the main point of reference on text analysis is systematic functional linguistics which is profoundly concerned with the relationship between language and other aspects and elements of social life (p. 5)
Strauss (1996) explains that coding is an essential procedure for those who wish to be proficient at doing qualitative analysis and that the coding paradigm consists of conditions, interaction between actors, strategies and tactics, and consequences (p 27-28). The coding conducted during this research consisted of ‘Open Coding’ which entailed studying each transcript with the aim of producing concepts which fitted the data. This was followed by ‘Axial Coding’ which was the detailed analysis of one category at a time. The overall approach was Open and Axial coding to enable a thematic analysis of the data by which themes in the participant responses were able to be identified and an analysis of the data to be made (Sommerville, 2003).

**Method for the Data Analysis of the Student Questionnaires**

The method that I used for the analysis of the questionnaire data was to create a document which listed all of the questions from the originals but with rows of blank space between each. I used the blank space to record the response of each student to each question. Usually for each question there were three of four different responses by the students and each was collated and quantified as to how many students gave which response. At times some students provided two themes within their response. In order to preserve reliability and validity these were treated as separate responses. Once all of the responses had been collated I added them together on a master document which gave me the final data findings for the questionnaires. I used this system to record separate results for both the questionnaires of those who had attended pre-trade courses and those who had not.

**Method for the Data Analysis of the interviews and the Focus Groups**

Originally I had planned that as the themes were identified they would be given a number. Each item of data relating to a theme would in turn be given a sequential numeral. For example, the first data item for theme one will be given the identifier 1.1; the second data item for theme one will be given the identifier 1.2 and so on. In this way I hoped to be able to keep the themes separate and also record the order in which
the items of data appeared. The intent was ease of tracking data themes and that it would be very useful to facilitate the write-up of chapters four and five. The dialogue was recorded on audio tape. To ensure the names of the students taking part remained anonymous, and for ease and clarity of transcribing, the individual participant responses, each participant was given an individual number. The numbers started at one and were only used once. In this way it was possible to easily track every individual’s reply to questions and their comments without confusion and error which allows a holistic insight into their attitudes and experiences to be clearly portrayed.

As the data analysis began it quickly became apparent that there were a large number of themes running through the interviews from the focus groups and that the initial system of identifying themes as they arose in each question was going to be very difficult. The main problem was that some themes were repeated throughout several questions which meant that if the original method for identifying and coding themes using numbers based upon the number allocated to that question in the focus group was followed, some themes would have two, three or even four different numbers. It was anticipated that this would make it hard to track individual themes as well as making it a very time consuming activity with a fairly high probability of error in that data would become merged with other themes and the whole would become very confusing. What was needed was an easily identifiable way of determining and differentiating between the themes that were presented.

After some deliberation a colour coded theme identifier was decided upon. In this way it would not matter where the theme or partial theme emerged in the text, it would be possible to group all data for that particular theme under its specific colour code. This allowed for an easier method of collating them to be used. The colour and number method was then used to code the themes in the interview transcripts and those of the focus groups. In this way it was easy to use a long table method to sort and analyse the data. All of the themes were cut out with scissors and each colour coded theme was placed in a separate area. In this way all of the themes were identified and separated out from each other which allowed them to be analysed individually.
3.10 ETHICAL ISSUES.

The issue of ethics is extremely important in any type of research but more so in circumstances where the element of ‘power’ between the researcher and participants may be seen as an issue. Education and trade training institutions are examples of where those circumstances may occur. For this reason any ethical issues were fully detailed in the Ethics Application for this research project. UREC provides eight guiding ethical principles governing research and teaching activities are listed and were all that were relevant were adhered to during this research. The eight principals are: Informed and voluntary consent; Respect for rights and confidentiality and preservation of anonymity; Minimisation of harm; Cultural and social sensitivity; Limitation of deception; Respect for intellectual and cultural property ownership; Avoidance of conflict of interest; Research design adequacy.

I ensured that informed and voluntary consent was obtained from those interested in becoming sample participants and provided a full and fair explanation in writing of the purpose of the research project, what is required of them if they consent to participate, and what form the various parts the research will take i.e. questionnaire, interview etc. They were given an outline of what was required and a written research information sheet which explained the project and was signed by those who agreed be a participant in the research project. A copy is attached at appendix F. They were informed that:

- That consent to participate is voluntary and may be withdrawn by participants at any time.
- That confidentiality of information and anonymity of the identity of participants will be maintained before, during and after the project has ended.
- Where and how the information would be studied, inserted into the written research document and how it will be secured.
- Data and/or information would not be able to be linked to any participant by only using a coded system to identify the sources of information.

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The location of interviews was away from the Built Environment department in order to further protect the identity of those taking part in this research.

These principles were adhered to throughout this research project. Penslar (1995) explains that;

A number of distinctive approaches to ethics may be applied to issues that arise in the conduct of research. He adds that consequentialist approaches consider the outcomes of a particular course of action is central in determining its moral rightness or wrongness (p.25).

Silverman (2006) argues that the main ethical pitfalls whilst conducting qualitative research are exploitation – deception – revealing peoples’ identities when they might not want it or not revealing peoples’ identities when they do expect it – fraternizing with groups that we dislike – participating in dubious bargains.

Another staff member canvassed and obtained the student participants who took part in this research as recommended by Bouma (1996). McNamee and Bridges (2002) write that those conducting research need to consider the effects of their involvements and the consequences of their work or its misuse for those they study and other interested parties (p.236).

To ensure the reliability of the findings those who took part were given the opportunity to check transcripts for their interviews for accuracy. Because this research could have involved Maori participants all ethical considerations were taken consistent with the provisions of the Treaty of Waitangi and UREC policies and principals. Apart for tangential Maori involvement this research did not directly involve Maori or Maori issues. In the event the research was conducted in a manner that was be respectful and culturally sensitive to all participants. My responsibilities as the researcher recommended by Punch (2008) (academic integrity and honesty, and respect for other people were adhered to throughout this research project.
3.11 SUMMARY

Pre-trade programmes play an important part in producing suitable trade apprentices from school leavers and those who are undecided on what employment option would best suit them who have the ability, intellect and practical ability in order to sustain the required levels of skilled tradesmen in New Zealand.

This research methodology is the best suited to this project and has provided all of the elements that I required from it during this project in terms of illuminating and identifying in some detail the themes and supporting detail needed for sound analysis of the findings in Chapter four.

The soundness of this research is enhanced by the use of three data gathering methods which provides triangulation of method which allows the data to be assessed and overlayed to assess the trustworthiness of the findings. The use of three groups of participants provided multiple sources of information from three different perspectives which adds to the robustness of the findings.
CHAPTER FOUR

RESEARCH FINDINGS

4.1 INTRODUCTION.

Thus far the literature (Chapter Two) and methodological issues (Chapter Three) related to this research have been presented. This chapter presents the experiences, perceptions and opinions of the participants as the findings that emerged from the questionnaires and interviews that were conducted during this research project. The information has been generated from three stakeholder groups, namely the pre-trade programme managers, plumbing and gasfitting apprentices, and employers who are currently placed in the plumbing and gasfitting industry.

The information that was obtained from the data gathering methods was analysed for underlying common themes which were grouped by their respective insights and topic. These have been further examined and graded as either positive towards the pre-trade programmes or those that are negative. The information that was provided assisted in creating an overview of the perspectives relating to the industry as well as establishing the effectiveness of the three pre-trade programmes under evaluation. In addition it provided insight into the experiences of those who took part. The findings conclude by detailing the shortfalls in the programmes that were identified by the participants and suggestions on how these could be improved.

As explained in Chapter Three the data was obtained using three data gathering methods, namely single interviews with the managers of the three pre-trade programmes, single interviews with the three employers, plus questionnaires and focus groups with the students volunteers. The interviews, focus groups and questionnaire guides can be found in appendices A, B, C, D and E. The findings have been divided into those that are positive towards the pre-trade programmes and those that are
negative. Because there was a range of participants and not all of the themes related to each group, the applicable themes are presented separately for each group. I have used a numerical system to differentiate between the participants. This was done to allow the views and opinions of individuals to be tracked throughout this chapter.

4.2 BACKGROUND and DEMOGRAPHICS.

As stated previously the three pre-trade programmes being examined in this chapter are an Auckland based secondary school programme, a pre-trade programme sponsored by an Industry Organisation and a pre-trade course delivered by an urban technical institute, all of which can provide school leavers an introduction into the plumbing and gasfitting trades. In order to better understand what these involve they have been expanded upon.

The secondary school programme provides some technical training but focuses mainly on evaluating students, profiling them for likely career choices or to their future suitable employment, and introducing them to industry representatives. The system is that the programme manager would then plan and organise business expos to which VET organisations were invited to attend and advertise. There is no record of attendance or other report given to students who attend this programme.

The Industry organisation programme arranges that school leavers are taken to work experience firms where they spend for one day a week and accompany tradesmen from the firm on their daily work. There is no set list of activities that are to be accomplished during the work experience and no course report or record of achievement is given in the Industry programme. This course is restricted to decile 1 – 6 schools and colleges.

The technical institute course sees the participants exposed to a variety of construction industry trades. Numeracy and literacy is also included in the course. The course
covers the basics of plumbing and gas theory and practical work and practical projects are completed to cover those basic techniques and work requirements. Each phase of the course is given a result with a final course report being provided to each student for use in their job application.

Although the actual order of data gathering was from the student group first, followed by the employer group, and lastly the pre-trade programme managers the order has been altered so that sequential order of information can be given. The grouping and make up of the participants has the advantage that the views and opinions expressed can be considered as representative of many in the plumbing and gasfitting trades.

The Pre-Trade programme managers.

The demographics of this group are that it consisted of one female and two males who have managed their programmes from between three and eleven years. Two of them are based in Auckland and one in Wellington. The pre-trade programme managers were selected because they operate the pre-trade programmes which provide pre-trade courses to secondary school students and others in order that they gain trade work experience and knowledge before commencing their apprenticeships. Because of their experience with pre-trade students these managers are in a unique position of being able to provide quality data regarding their courses and the students who attend them.

The Apprentices

The demographics of this group are that it consisted entirely of males who have been employed as a plumbing and gasfitting apprentice for between one and two years. The ages of the participants ranged from eighteen to forty-two years and included native New Zealanders and recent immigrants. These participants were selected because they volunteered to be part of the research project and had either attended or had not attended a pre-trade programme before commencing their apprenticeships.
Because of their experience of a pre-trade programme or the lack of such experience before starting their apprenticeships, these participants are in the position of being able to provide valuable data for this research project. Although it was planned to have thirty-six apprentices fill out the questionnaires, due to the more limited participation only twenty-eight apprentices only completed a written questionnaire. As detailed in chapter three of these four focus groups of three or four participants were held.

The Employers.

The employers were selected because they operate large businesses which employ six or more apprentices. Further more they are employers who have employed some apprentices who have attended pre-trade training before commencing their apprenticeships as well as those who have not. Because of their experience with this apprentice mix, these employers were in the position of being able to provide valuable data regarding their impressions of the differences between the two groups of apprentices and any perceived differences in their attitudes, work ethic and commitment, all of which was vital to this research if its objective and intent is to be achieved. All of these firms are placed in most aspects of plumbing and gasfitting whilst two also specialise in roofing and drainlaying as well.

4.3 FINDINGS FROM THE DOCUMENTS

The documentary analysis revealed that there is a lack of New Zealand literature relating to pre-trade courses. Information was gathered about the secondary schools programme from an “Auckland Plus” article and the manager agreed to assist me. General information from the industry programme website was obtained which gave an outline of how that programme worked. Details of the technical institute Certificate course were obtained from the course documents. The information gathered initially was of a general nature but gave the overall framework of the programmes and in the case of the Certificate of Construction course it provided the outline syllabus which the
participants were expected to complete. The main elements of each programme are shown below.

Table 4.1  Details of three Pre-Trade programmes conducted in New Zealand.

<table>
<thead>
<tr>
<th>Name of Pre-Trade program</th>
<th>Year in which it started operation</th>
<th>Operates within its own resource</th>
<th>Operates within its own resource</th>
<th>Offers a variety of trades for student selection</th>
<th>Is designed to assist students in terms of selecting their best career choice.</th>
<th>A certificate is given at the end of the Program or other credits accrue</th>
</tr>
</thead>
<tbody>
<tr>
<td>The secondary schools based programme</td>
<td>2001</td>
<td>No.</td>
<td>Yes. It relies on schools and Trade shows to facilitate it.</td>
<td>Yes, it offers many of the trades</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>The Industry based programme</td>
<td>2007</td>
<td>No.</td>
<td>Yes. It relies on schools and local firms to facilitate it.</td>
<td>Yes, it offers many of the trades</td>
<td>Yes</td>
<td>Yes. Credits for two Unit Standards can be gained.</td>
</tr>
<tr>
<td>The technical Institute Certificate Course</td>
<td>1999</td>
<td>Yes,</td>
<td>No. The institute provides the trainers, the facilities, the and resource.</td>
<td>Yes, it offers Plumbing, Carpentry, Painting and cabinet making.</td>
<td>Yes</td>
<td>Yes. A Course Certificate is given.</td>
</tr>
</tbody>
</table>

The information gathered was sufficient to allow me to design the pre-trade programme managers’ interview guide. What was clear was the fact that pre-trade programmes were instigated because there was a discernable drop in the number of
suitable school leavers taking up trade and vocational training. This led to fears that the trades were in some respects in danger of dwindling to unsustainable levels and it became clear that interest in the trades needed to be established within secondary schools (ITO, 2009).

Another issue of concern to the industry was that the trades were becoming more technology based and complex. This meant that the selection of suitable trade trainees had to become more rigorous which resulted in that obtaining suitable candidates for apprentices was becoming more difficult than ever before (Berridge, 2008). Hoong (2009) observed that because increased levels of numeracy and literacy were required for the more technical trades such as Electricians, Plumbers, Gasfitters. Pre-trade programmes were a useful way in which this growing problem could be addressed.

4.4 PERSPECTIVES OF THE PRE-TRADE PROGRAMME MANAGERS.

The initial data collection was gathered from the three pre-trade programme managers using single semi-structured interviews. The interviews were designed to elicit information about the structure of the pre-trade programmes, the methods by which they operate and what external assistance they utilise in order to achieve their purpose. The information that was generated during the interviews with these participants was analysed for its common themes which were grouped by their respective insights and depth. The positive themes are listed below and revolve around the areas which are believed to be most advantages to pre-trade students.

Expectations

A theme that came through strongly was that the change from school to work is often difficult to adjust to. To assist with this transition the pre-trade students are exposed to a variety of experiences depending on which of the pre-trade programmes they attend.
The managers commented that it was difficult for persons making the transition from the relatively free environment of school into the more structured one of full time work within an adult world because of the changes in values, routines and type of activities. They all believe that being given the opportunity to be exposed to the work environment and having time to assimilate the more important aspects of the workplace culture before committing to full time work is of great advantage to school leavers, particularly as they understand what to expect and what is required of them. In their view the pre-trade programme was valuable because it shaped their expectations of the work that they would be required to do, and introduced tools and their uses. This gave them confidence and confirmed that they had selected the right trade for them. Manager A stated that “one of the biggest strengths of the programme is that in general terms of course is giving young people a real exposure to what the industry’s really like and helping them in their decision making”.

Manager B reported that What is essential is that the students are gathering work place evidence, getting them trained to think about, to understand, the daily life of a plumber or gas fitter, that the work sets in within a unit standard frame work and how that all adds up to providing evidence towards a qualification.

Seeking employment

The pre-trade programmes are designed so that students are doing work experience with or being introduced to a potential employer which is a big advantage to both. The students are able to ‘market’ themselves, and the employer can assess the potential apprentice before deciding whether to employ them or not. The managers agree that the most difficult aspect of beginning an apprenticeship is finding an employer who is willing to “take on an apprentice”. The secondary school and industry based programmes include students being put into contact with potential employers which greatly improve their chances of gaining employment. Because the length of an apprenticeship in plumbing and gasfitting is four years (Plumbers’, Gasfitters’ and Drainlayers’ Board, 2004) this represents a big investment in time and money for an
employer to make, particularly if they have no direct knowledge of the applicant apprentice. The school pupil who goes to a firm for work experience through the secondary school and industry based programmes is placed with an operational firm which is actively working in the industry. Here the student has an opportunity to “show-case” themselves and seek full employment with their work experience boss. They agree that the difficulties of employing or being employed without any real knowledge of the other party can be very problematic in both the short and long term. Manager A added that “For work experience placements we use workplace loosely. It’s a firm, an employer in plumbing, gasfitting or drain laying”.

In addition manager C stated: Students register that they want to have work experience or information, industry visit, trade, diploma or degree. So they pick what area they’re looking at and that’s what they focus in on. We look at engaging them with the employer and what I’m finding now in the case of the employers is they will then link it back to companies under them where a job comes available.

Resources and opportunities

The managers pointed out that one of the most important life decisions we make is that of the career path that we should follow. The choice is great and the ability to select the best and most suitable option is difficult without a good deal of information. In this area the pre-trade programmes are of very great assistance to the correct choice of career being made. By exposing students to a variety of possible career or trade choices it helps the student school leaver to better weigh options and choose the best career for them to pursue.

They believe that the pre-trade programmes are well run and where students gather experience of a variety of trade environments and the trade culture and behaviours. This gives them the opportunity to understand the trade environment and choose the trade that offers the best career for them. Manager A stated that “Once the student gets into a work experience placement, that’s the best preparation they could ever
have. Once they get into the pre-trade placement they’ve got a clear idea about what is involved in the industry”.

Manager B commented that What this pre trade course is all about is exposing students to a range of different trade options so that they can have some certitude in deciding which one best suits them. Often the student basically knows what they want to do but not a hundred percent sure. So they will give the programme a go and that often changes their mind or reinforces their original decision.

Co-ordination of the local programme

The managers explained that pre-trade programmes are affiliated to either technical institutes or secondary schools all around New Zealand whose staff co-ordinate the local programme and arrange and monitor the firms which provide students with work experience for one day in each school week. According to the managers of the secondary school and industry based programmes the main element of pre-trade programmes is to ensure that those attending are given some guidance in what career would best suit them and some exposure to that particular industry or trade(s). To be able to achieve this, the pre-trade organisations enlist the assistance of the country’s network of secondary schools and colleges which allows the potential for a complete coverage of New Zealand.

The managers agreed that this is a very important component of their pre-trade courses. The research disclosed that the secondary schools provided at least one pre-trade programme co-ordinator who manages the relevant programme(s) in concert with the school’s career advisors. The pre-trade co-ordinators are also responsible for sourcing the local firms who are willing to provide work experience in various trades and careers to the year 12 and 13 pupils. In this area manager noted:
There had been considerable interest from schools in a work experience programme and our programme co-ordinator fielded a lot of enquiries from students wanting to get into the industry. The primary partnership is with the schools. There’s a second removed partnership with host employers through the school. There’s a work arrangement for students usually one day a week. The schools have to arrange their own host employers.

Further manager B explained that, Secondary schools in Auckland were running the multi skill programme in house themselves and we were providing all of the resources for that and then the odd time they would come in and actually use some of our facilities because they may not have had their own. Other times we’ve run multi skill type programmes for school kids extensively, so they’ve come in and they’ve done the course for just one day a week or whatever, or parts of the course.

The negative themes from the interviews focused on areas that were outside their direct control but which have a significant effect on the success of the pre-trade programmes. The managers revealed that although the coverage provided by the schools does not incur any cost to the PGDR ITO it does however cause some difficulties in that unsuitable students are often sent to pre-trade work experiences. This nullifies some of the benefits unless the mismatch is identified by the pre-trade co-ordinator and remedial action taken quickly.

No recorded outcomes

The managers revealed that with the exception of the technical institute based programme, there is no set syllabus of work activities and no recorded outcomes credited to the majority of pre-trade students nor are any NQF credits awarded to them. The research shows that although the pre-trade programmes are primarily to introduce students to a trade or career experience there is no work record or report provided that
the school leaver can present to a potential employer as part of their portfolio of achievement. In this regard manager A reported

No, we don’t require a set programme of what the students do because it depends on what the work practices are of the host employer. One student might be with a host employer whose doing all refurbishment, or another employer might have a project to do plumbing in a big new building like the Wellington Hospital, which would be much more high tech and industrial.

The other problem that emerged from the research was that at the end of the programme there were no NQF credits gained by the students. The managers all said that none of the programmes had any NQF credits attached to them.

Manager B said that It’s In-house, an institute qualification. They (the students) have to get a result for each discipline and then there is a final result which is recorded for the multi skill programme. They need to have got a positive result for each discipline to get a pass in the final course.

Family influence

The research revealed that the majority of participants believed that families play the major part in assisting in the decision of what type of employment would be best for their child to take up and has the greatest influence on the choice of career for their children. The managers believe that a person’s choice of employment is often clouded by their family, their background and experience. They also thought that to a large extent the choice of trade is bounded by the student’s levels of literacy and numeracy.

The managers also agreed that although families had the most sway in terms of the selection of their children’s careers, their views (the families’) were often clouded by their own family back-grounds and parental expectations. They added that the problem that can arise is that the advice given is in some cases, unhelpful to school leavers by
resulting in them either going into careers that did not allow them to reach their full potential, or going into careers that they were completely unsuited for. Manager A stated that “I suspect parents probably have a fairly significant influence in determining career choice”.

Manager C concurred and added I think that it would be the family’s perception definitely. If I’m marketing to a low decile school a trade is a pretty good option because the families are probably unskilled labourers if anything, maybe unemployed. If I’m doing a high decile school to say Trade would be like “oh yeah whatever”, but if I say a trade leading to Business that’s the ball game.

Manager B believes that The majority over the time would be school leavers who have just mucked around for six months or a year until mum or dad says you can’t lay in bed the rest of your life, you’ve got to get out and do something and so they say I don’t know what I want to do, so that family say you should get a trade.

Career advisors

The managers reported that career advisors and teachers are typically not aware of the current trade situation and as a result do not always give the right advice to students about career choices. They acknowledged that in the past 20 years there has been a great advance in the type and complexity of technology in the plumbing and gasfitting trades and that this has led to the need for apprentices who can accept four years of theory examinations and practical training often on complex systems. Despite this, Schools based and technical institute programmes have no entry level and the industry based programme is only open to the 1-6 decile schools.

These issues add to the common belief that trades are the preserve of the lesser able students and this in turn perpetrates the problem of the more academically gifted students staying out of the trades. The pre-trade programme managers were united in
the view that this results in people who are unsuited to the demands of a modern and complex trades being directed into them by school career advisors. For example

Manager C. *A lot of teachers have got good will but they’re out of industry for a long time; a lot of teachers haven’t got the right advice, they are pushing the wrong kids into the industry. What I’m trying to do is break the back of is the school system, where if you’re smart you go to University, if you’re not you do a trade.*

Manager A tended to agree. *I don’t know. People in our industry perceive that career advisers are biased against the trade and see them still as requiring a lower entry level and that the courses and the profession or occupation is less demanding than it in fact is.*

The managers are concerned that the effect of limiting the programme to 1 – 6 decile schools may well have unwittingly added to the problems faced by the career advisors which has resulted in significant numbers of applicants seeking an apprenticeship having low levels of literacy and numeracy.

Manager B *Career advisors should recognise the fact that this kid can go into an apprenticeship but they need support. And also bear in mind their literacy ability, unless it changes, is going to be a level where their trade will be the end point for them.*

Manager is more direct in his views. *You can’t read, you can’t write, you’re basically illiterate, what can we do with you? oh you like cars? You can be a mechanic! So you’ve got an industry with is high tech, rapid technology, electro technology, computerised systems and this kid can’t cope with basic literacy and numeracy.*
This concludes the review of the data provided by the pre-trade programme managers which gives a number of insights into the various pre-trade courses being conducted in New Zealand. The next segment provides the perspectives and experiences of the apprentice participants.

4.5 THE PERSPECTIVES OF THE APPRENTICES.

Demographics of the Apprentices

The next group of participants are the apprentices who were divided into two groups. The first were those who filled out the questionnaires and other were those who took part in the focus groups. This first section deals with the questionnaires.

The table shows that seventeen of the twenty-eight apprentices who filled out questionnaires began their trade training within three years of leaving school. Of the students who completed the questionnaires, five had attended pre-trade training and the remaining twenty-three had not.

The five apprentices in group A (pre-traders) were aged between nineteen and twenty-three years of age and were in their first, second, or third year of apprentice training. Four members of this group started their apprenticeships within eighteen months of leaving school and the longest time prior to commencement was three and a half years. The twenty-three apprentices in group B (non pre-traders) were aged between nineteen and forty-two years of age and were in their first, second, or third year of apprentice training. Eight members of this group started their apprenticeships eight or more years after they left school with the longest gap being twenty-three years.

The data shows that those who attended pre-trade programmes started their apprenticeships sooner than those who did not attend pre-trade programmes.
Table 4.2 Background Demographic Data of the Questionnaire Participants.

<table>
<thead>
<tr>
<th>Year left School</th>
<th>1985</th>
<th>96</th>
<th>97</th>
<th>98</th>
<th>99</th>
<th>00</th>
<th>01</th>
<th>03</th>
<th>04</th>
<th>05</th>
<th>06</th>
<th>07</th>
<th>08</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Students</td>
<td>1 PT</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1 PT</td>
<td>1 PT</td>
<td>3</td>
<td>1 PT</td>
<td>3</td>
<td>1 PT</td>
<td>5 PT</td>
</tr>
<tr>
<td>Year Started as an apprentice</td>
<td>2008</td>
<td>07</td>
<td>07</td>
<td>05</td>
<td>07</td>
<td>07</td>
<td>07</td>
<td>07</td>
<td>07</td>
<td>07</td>
<td>07</td>
<td>07</td>
<td>08</td>
</tr>
<tr>
<td></td>
<td>2006</td>
<td>07</td>
<td>07</td>
<td>07</td>
<td>07</td>
<td>07</td>
<td>07</td>
<td>07</td>
<td>07</td>
<td>07</td>
<td>07</td>
<td>07</td>
<td>07</td>
</tr>
<tr>
<td>Average gap in Years</td>
<td>19.5</td>
<td>11</td>
<td>10</td>
<td>7</td>
<td>8</td>
<td>7</td>
<td>6</td>
<td>2.5</td>
<td>3</td>
<td>1.5</td>
<td>1</td>
<td>0.6</td>
<td>6</td>
</tr>
<tr>
<td>Largest Gap in Years</td>
<td>23</td>
<td>11</td>
<td>10</td>
<td>7</td>
<td>8</td>
<td>7</td>
<td>6</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

* PT denotes that the person concerned has completed a Pre-Trade course before starting his apprenticeship.

4.5.1 THE THEMES FROM THE APPRENTICE QUESTIONNAIRES.

The participants were invited to complete questionnaires during their course administration periods. The questionnaires were completed individually by students from three separate courses which added validity and reliability to the research. To report the findings of the two groups of participants I have nominated the five
apprentices who had completed a pre-trade programme before starting their apprenticeship as groups A while those who had not are group B. Although some of the group B participants had done casual work or labouring for plumbers and gasfitters these activities were not as part of a formal pre-trade programme and for the purposes of this research have not been recognised as pre-trade training. The main findings have been summarised in the following tables. The table below summarises the responses of the non pre-trade group. The findings show that the majority believed that they would have benefited from a pre-trade course.

**Table 4.3. Perspectives of the non pre-trade group B questionnaire participants.**

<table>
<thead>
<tr>
<th>Apprentice response</th>
<th>Believe that pre-trade course would provide realistic expectations of trade work</th>
<th>Believe that pre-trade course would confirm that their choice of trade was the right one.</th>
<th>Believe that plumbing work would be hard and physical.</th>
<th>Believe that if they had pre-trade and knew what plumbing was like they would have still started their apprenticeship.</th>
<th>Believe that family have most influence on type of work school leavers take up</th>
</tr>
</thead>
<tbody>
<tr>
<td>YES</td>
<td>14</td>
<td>12</td>
<td>18</td>
<td>12</td>
<td>15</td>
</tr>
<tr>
<td>PROBABLY</td>
<td>4</td>
<td>7</td>
<td>3</td>
<td>7</td>
<td>0</td>
</tr>
<tr>
<td>NOT SURE</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>NO</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>8</td>
</tr>
</tbody>
</table>

The questionnaires were designed to ascertain what experiences and impressions the students experiences during the pre-trade programmes and what effect these had on their decisions as to future employment and their subsequent trade perspectives in terms of work and their preparedness their new work environment. The overall findings from these questionnaires was predominantly that those who had not attended a pre-trade programme felt that they would have provided much in the way of
reassurance that the plumbing and gasfitting trades were right for them and that their choice of career was correct.

Table 4.4. Perspectives common to both groups of the apprentice questionnaire participants.

<table>
<thead>
<tr>
<th>Apprentice Group</th>
<th>Liked that P and G provides a variety of work</th>
<th>Liked that P and G is well paid (in money)</th>
<th>Thought P and G would be hard trades physically,</th>
<th>Had practical knowledge of the trade before starting their apprentice ship.</th>
<th>Had some other knowledge of the trade before starting their apprentice ship.</th>
<th>Family were most influential in selecting the P and G trades.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group A (Pre-Trade) 5 persons</td>
<td>3</td>
<td>0</td>
<td>4</td>
<td>5</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>Group B (No Pre-Trade). 23 persons</td>
<td>13</td>
<td>14</td>
<td>18</td>
<td>7</td>
<td>16</td>
<td>18</td>
</tr>
</tbody>
</table>

The table shows that both groups had much the same perceptions concerning the generic issues of a person beginning an apprenticeship but group A were more prepared in terms of prior knowledge of the plumbing and gasfitting trades than those in group B. Of those in group B (no pre-trade) only 33% had any knowledge of plumbing and gasfitting as opposed to 100% in group A. In group B only 55% and 58% respectively had knowledge of variety of work and good pay but 76% knew that the trades involved hard work. None of the members of group A were influenced by money but they all knew about the trade which would appear to be the attraction.

4.6 PERSPECTIVES OF THE FOCUS GROUP APPRENTICES

The focus groups consisted of semi-structured interviews and were designed to provide contrasting data from the pre-trade students on their experiences on their pre-
trade programme and from the non pre-trade students on their experiences on entering the trades. Of particular interest was their view on whether and in what ways a pre-trade programme was or would have been valuable to them before they started work in the trades and what improvements would they (the pre-trade participants) suggest could be made.

**Participant Demographics.**

The fifteen apprentice participants who took part in the focus groups were aged between their late teens and early twenties and were in their first or second year of apprenticeship training and had volunteered to take part in the focus groups. There was a good mix in that of the fifteen participants, six had done the industry based programme, two had completed the technical institute programme and seven had no pre-trade programme experience. The focus groups were conducted away from the plumbing and gasfitting department and utilised one of the faculty meeting rooms. The participants have been differentiated by numbers for the questionnaires and number prefixed by FG for the focus group members.

**4.6.1 THE POSITIVE THEMES**

**Shaped their expectations**

This theme focuses on the transition from a school-person in a school environment surrounded by peers into a work environment surrounded by adults and immersed into an environment which is completely alien to that which one has been used to. The pre-trade programme was deemed to be valuable to school leavers because it shaped their expectations of the work that they would be required to do, and introduced tools and their uses. This gave them confidence and confirmed that they had selected the right trade as a career.
The pre-trade programme participants agreed that the trades have their own rules, standards, behaviours and culture. To fit in a new comer must learn those rules, standards, behaviours and culture. The majority of participants thought that the rules of workplaces are usually concerned with hours of work and punctuality, standard of dress, degree of industry and good character and believe that pre-trade programmes allow a student to observe, participate and assimilate a new and unknown environment before they join the trades. For example FG1. No 2. “Yep I think the pre trade experience is valuable. Shows you what you’re going to be doing before you actually enter into the trade, gives you a bit of background”.

No.25. It [Pre-trade] gives you a good idea of how the trade works and what you are getting yourself into for the future. It gets you ready for work instead of coming straight out school and just being dropped in your job and not really knowing what to do.

FG1. No 3. It’s [pre-trade] worth doing so you can get a feel about the kind of jobs that are out there. I think it was a good …. effective. Gets you ready for the longer days of work instead of school. Yeah I found it really good.

Potential employers

All of the participants agreed that the most difficult aspect of beginning an apprenticeship was finding an employer who was willing to ‘take on an apprentice’. The length of an apprenticeship in plumbing and gasfitting is 4 years (Plumbers’, Gasfitters’ and Drainlayers’ Board) which is a big investment for an employer to make, particularly if they have no direct knowledge of the applicant apprentice. The pre-trade programme students are placed with a potential employer which is a big advantage to both. The students are able to market themselves in seeking employment, and he employer can assess the potential apprentice before deciding whether to employ them or not.
It is an advantage to students that the schools’ based and industry organisation based programmes include students being put into contact with potential employers which improves their chances of gaining employment.

This is not the case, however, with the urban technical institute certificate course. This latter is conducted entirely at the institute and there is no industry exposure for the students during the course. They do get a certificate if they successfully pass the course which would be of assistance when presenting a CV in search of an apprenticeship as noted by FG3, No.8. “The experience was pretty good. You get to see what you will be doing and if you like it you can continue and apply for an apprenticeship, if you don’t you can try something else”.

FG1, No.4. They took me on and I’d go once a week to their workshop and work with a tradesman. I’d go to school for the rest of the time. I asked the boss at the end of the year what the chances of me getting an apprenticeship and he said oh yeah just apply through the Trust and stuff and it went from there.

FG3, No.10. It was valuable in that it confirmed plumbing was what I wanted to do as opposed to the other trades and very valuable because I got a good reference, which makes it easier to get a job. It gave me a good insight into what to expect.

The programme is well organised

This theme came through strongly from the apprentice participants who had taken part in pre-trade programmes. The participants thought that the pre-trade programmes are well organised, well run, and well resourced by the schools and technical institutes and allow students the opportunity to gather experience of a variety of trades and trade environments. This gives them [students] the opportunity to choose the trade that is the most suitable type employment for them.
For example FG1, No.2. Yep it was very well organised. They take you out there, introduce you to your pre trade boss and have a bit of a talk and stuff and then yeah come back in about a week or so and start your pre trade.

No.27 wrote It’s a great opportunity to gain experience in a trade before starting a career. If a work experience programme presents itself, you would be silly not to take the opportunity to do work experience.

FG1, No.4. Yeah it’s pretty good. I think the strengths of the pre trade programme are quite high because they introduce you to the boss and you get to know the boss and see where your workshop is and where you’re going on certain days. The guy that I was going to work for, he just said what day do I want to come in and I just told him a day and he said that’s fine. They organised a time and place to meet him and everything and they took me there.

**Secondary School work experience**

The pre-trade programmes are mostly affiliated to secondary schools all around New Zealand whose staff co-ordinate the local programme and arrange and monitor the firms which provide students with work experience for one day in each school week. In this regard the data obtained from focus group participants disclosed that doing their pre-trade training during school time as part of their school curriculum was an advantage because they were able to do something constructive towards identifying a future career.

Another reported plus factor for the students was that they were able to do their pre-trade experience during the working week and not on the weekend and were therefore able to take part in main stream plumbing and not weekend emergency work. This ensured that they were given a realistic and genuine introduction to plumbing and gasfitting. The students were also exposed to trade culture and work place routines and were able to try as many different trades as they wished. Many felt that the latter
were the most important. For example No.28 recalls “I had bad truancy and school made a deal with me. I would go to school 3 days and do work 2 days. So I came to school more often and learnt heaps about working”:

FG2, No7. I did a pre-trade course when I was at school. One day a week I would go out with a plumbing firm and do plumbing work. It was with the same firm. I had a bit of knowledge before I started my apprenticeship.

FG1, No4. I think it’s [pre-trade] quite good because if you don’t like what you’re doing, you still have the chance to get out of it without being too much of a hassle and then you can at least try getting involved with another trade or whatever.

The participants who had not been involved with pre-trade courses were very attentive when those who had voiced their impressions and experiences. At the end of the focus groups the non pre-trade participants all felt that they would have benefited from a pre-trade course in terms of knowing something about trade tools and working on a job site. Typical responses were No.14. “Yes, it [pre-trade] would be good as you would be doing actual plumbing and not just being told what its like rather than experiencing it yourself.

FG1, No1. Yeah I think it would have prepared me a lot more. Not so much the work, but as far as working with the plumbing guys and going out to jobs and all that kind of stuff I think it would be a lot more different.

4.6.2 THE NEGATIVE THEMES

No set syllabus of work activities

Because there is no set syllabus of work activities and no specific outcomes achieved for pre-trade students the pre-trade work experience is sometimes limited, does not
give a good overview of trade work, and has a negative effect on the student. As the data obtained from the pre-trade managers disclosed, apart from the technical institute programme, there is no consistency in what work experience students are shown or what comprised their pre-trade experience. Unfortunately most of the pre-trade work experience is completely random and there is no guarantee that the student will be provided with a good understanding of the trade or a good experience of the work one is likely to be doing in the trade. Although there were few complaints by participants about their pre-trade experience there were some which created the opposite effect that that which as sought. For example FG2, No.7. “Once I actually started my apprenticeship it was a lot different to what I was doing in the Gateway programme. My expectations were that I was going to be doing the same thing but it changed, its different work, different type of work”.

FG1, No.4. I did the pre-trade programme through College. They organised it for me through a company (can’t remember the name). They do big jobs, like apartments. I worked for them for a while but I didn’t like it – I didn’t like being on the same site all the time. Never saw daylight, go to work in the dark, leave at dark. I was just scraping glue off pipes. I said I didn’t like it so the school said that I wasn’t enjoying it.

No report or record of achievement

As well as there being no set syllabus of work activities to be undertaken by the participants in two of the pre-trade programmes, there is also no report or record of achievement, nor are any NQF credits awarded to them. This is felt to be a disadvantage by school leavers seeking to compile and credible CV to assist in securing a job.

As previously noted in this research apart from the technical institute certificate course which does have a course syllabus and provides a course report to successful students there is no formal reporting on the work done or trade
practise learnt by the pre-trade students. Although the pre-trade programmes are primarily to introduce students to a trade or career experience there is no work record or report provided that the school leaver can present to a potential employer as part of their portfolio of achievement. FG3, No.10. said that he had a better result from some casual work he did before the pre-trade course: “The two months I did with DNL plumbing prior to my pre-trade course was very valuable because I got a good reference which makes it easier to get a job”.

Similarly FG4, No.14. stated Pre-trade gave me credits towards my NCEA, not in the year I did my plumbing which was my 7th form year, but in my 6th form year when I did the Dairy farming. I got modules from the Open Polytechnic that were NCEA worth credits, basically like doing homework module questions about that trade. I didn’t get those for the plumbing though “If we had some form of plumbing workbook to go through as well, I could see that as being a good insight into plumbing.

FG4. No.15 reported that The other good thing I guess about doing a pre-trade course is, you know in times of recession and that, it would look really good on a CV. You’re probably more likely to get hired. It lets them know you’re more keen than maybe someone who hasn’t done it.

In summary, while the participants were positive overall about the benefits of the pre-trade programmes they did highlight some key areas in which the programme could be improved, which in turn would improve their employment prospects.

Those participants who did not attend a pre-trade programme before starting their apprenticeship felt that it would have been beneficial to be exposed to the trade culture and type and variety of work to which they would be performing during their apprenticeship. They believed that this would have helped to shape their expectations
of the work that they would be required to do and would have confirmed their choice of career and built confidence that they were going into the right type of work.

Many of the non pre-trade participants spoke of being apprehensive when they started work because they had no idea who they would be working with or what they should be doing. They said that although they wanted to impress their employer and fellow workers they did not even know how to use many of the tools much less anything else. Some were not sure if they really wanted to be a plumber and gasfitter as they had been pushed or talked into doing a trade by their family. No.2. “Sure, you would find out quickly what you are good at or like”.

FG2, No.5. “Yep as I said before, I think it would make me more fully committed to my apprenticeship, before I actually dropped everything I did have. It would have made me more confident going in. More reassured”.

FG2, No.6. Pre trade would have been beneficial to me because you’re not sort of chucked in the deep end, not expecting anything – you don’t know what you’re going to expect the next day. Yeah it would have been beneficial because then you can use tools easy and you know how to use them properly and you know what you’re supposed to do.

4.7 PERSPECTIVES OF THE EMPLOYERS.

These employers were selected because they fall into the category of those who employed apprentices from both groups and are able to contrast the performance and attitude of apprentices who have and those who have not attended pre-trade programmes. Data was gathered from the three employers using single semi-structured interviews which took place at each firm’s depot or office. The interviews were designed to elicit information which assists in an evaluation to be made which
contrasts the performance and attitude of the two apprentice groups and what improvements could be suggested for the existing pre-trade programmes.

**Background information about the firms which participated in this research.**

To give an idea of the firm and the type and scope of the work they carry out employer No 1. stated that *We undertake to do all sorts of plumbing work. We do from Mrs Smith’s tap washer to the major construction work in Auckland. We have built a 24 storey building. We do gas work. We do most aspects of roofing. I’ve trained 200 apprentices.*

The second firm specialises in maintenance of commercial and multi-storey properties and avoids the domestic market. The second firm is mainly involved in maintenance work and roofing. The manager commented “*Basically we do a lot of service and commercial maintenance work. We do roofing. We try and do as much commercial industrial as we can. This firm employs 14 staff of whom 4 are apprentices*”.

The third firm is a firm which specialises in managed apprenticeships. After signing up the apprentices the organisation then locates a “host employer” who hires the apprentice for a set hourly rate. The “host employer” undertakes to train the apprentice for the duration of his apprenticeship whilst the firm is responsible for all administration, residential course, examinations and trade related courses such as first aid training.

**4.7.1 THE POSITIVE THEMES.**

**The pre-trade programme was valuable**

Because it shaped their expectations of the work that they would be required to do, and introduced tools and their uses the pre-trade programme gives students confidence and confirmed that they had selected the right trade for them. The
employers were conscious of the changes that happen when a person leaves school and enters the workforce, particularly plumbing and gasfitting which are complex trades that also include much hard physical labour. They agreed that in their view the pre-trade programmes allowed employers to assess potential apprentices to try and determine their worth and whether to ‘take them on’ for trade training which will last for four or five years. For example

Employer 1. *The pre trade programme, I think it’s a great idea. It’s great getting out there learning how to do this and do that. Until you actually get out on the tools you don’t really understand what its [the plumbing and gasfitting trades] about.*

Employer 2. *It [pre-trade] gives them work experience so they already know what to expect and gives them a little bit of skills along the way and this means skills with tools and knowing what tools are, not necessarily a noticeable one, but they could have picked up an understanding of the industry and also importantly made some contacts.*

Employer 3. *I think it does prepare them quite well for an apprenticeship because it still fills those expectations and perceptions that otherwise they would be going into a bit more blind. So yes I think the experience is a valuable one for them.*

**Placed with a potential employer**

The pre-trade programme students are placed with a potential employer which is a big advantage to both. The students are able to market themselves in seeking employment, and the employer can assess the potential apprentice before deciding whether or not to employ them. Employers agreed that a big advantage to pre-trade students is that they are doing their work experience with a plumbing firm which is operating within industry and the advantage to employers is that they have the opportunity to observe and assess the pre-trade student in terms of offering him/her an apprenticeship. The mutual advantage is that both parties know each other fairly well
at the end of the work experience period and they each have enough information to make sound decisions about the future. Typical responses were, Employer 1 “In particular a pre-trade programme gives them a foot in the door with an employer, and that’s a difficult thing to get in this present economic climate. It does give them a greater access to the world itself”.

Employer 2. We’ve got one here at the moment who came through pre-trade work experience. He did six months of coming one day a week and I think that was a great advantage. By the time the kid came out at Xmas time, after he’d finished school, he knew he wanted to be a plumber. It was to our advantage we knew the kid beforehand. He had some understanding what he could do. He knew the men when he got here and that was quite good.

Employer 1. We also do the pre-trade programme. Last year we had two kids come through and they’d come in on a Wednesday or a Friday and they would just basically go out with the guys and just learn. Two of the kids who came through the pre-trade programme are now working as plumbers.

Pre-Trade apprentices are generally better

The employers noticed a difference in the apprentices in that those who had done a pre-trade programme were usually better motivated and more productive than those who had not had pre-trade experience. The employers feel that apprentices who have pre-trade experience are generally better than those who do not. They are usually more motivated to learning and being good at the trades that those who have not done pre-trade courses.

They also perceived that the pre-trade apprentices had a universal commitment to being in the trade that was not always reflected in the others. This came through in various ways which the employers recognised and appreciated. Employer 3 “They
have a sort of a nature that they really want to be a plumber and they want ability and they've had a taste of it so they give it all then. They've had the experience”.

Employer 2 Because two things; one the kid comes through the pre-trade, you know he wants to do it. Two: it's going to make your life a lot easier because they want to establish the fact they want to do it. They know what it's all about, all they want to do is learn. I do think if a kid came here under it {pre-trade work experience} then decides plumbing is for him, he's going to be quite serious about it.

Employer 1 You already know that It's something that they want to do, otherwise they wouldn't have progressed any further, so the attitude is already there, whereas you're taking a bit of a chance on the attitude when you're taking someone straight from school that's not worked in that kind of field before.

The employers acknowledged that the requirements have changed and that in addition to a positive attitude and commitment, ability was also an important factor. In this regard it was felt that there was not much between pre-trade and non pre-trade apprentices. The research revealed that pre-trade apprentices are generally better but not always. For example

Employer 1. It's hard to say a percentage but I would say over half would be successful. It was their application of knowing whether they wanted to be a plumber or handy with their hands. Because plumbing really is about the two hands.

Employer 3. Yes I've certainly had quite a few that have come from pre-trade backgrounds and I've found that those particular apprentices have tended to be quite good apprentices for us to take on because they've already had that little bit of experience in the industry and we know that they like it, or they wouldn't have taken it on any further.
4.7.2 THE FINDINGS FROM THE NEGATIVE THEMES.

Trade work ethics and work application

The view was expressed that residential pre-trade courses conducted at technical institutes do not teach trade work ethics or work application and do not give future employers any in-sight into the suitability of candidate apprentices. It was felt that in the case with residential pre-trade courses potential apprentices were not inculcated with a good work ethic. The research revealed that this relates to quick, accurate and quality work. Although not present in all pre-trade students it had been noticed in some. It was felt that a cause could be that the pre trade training not really of a good standard, and that given the time spent that they [the students] should have been a lot further advanced. As explained by one employer

“Technically they were pretty good but no hands on and ability to work. The course does not give them how to put your head down and work. The work ethic was missing. Where I’d expect that piece of pipe to be fitted in two hours, at pre-trade they’ve allowed all day to put it in. Sure they installed it right, but they didn’t always have the application of speed or a sense of purpose, productivity” (Employer 1).

No set syllabus of work activities

The data from the programmes and the managers of them revealed that there is no set syllabus of work activities to be undertaken by the participants and no report or record of achievement, nor are any NQF credits awarded to them. The employers see this as a disadvantage to school leavers seeking work.

The research also disclosed that apart from the technical institute based programme, there is no consistency in what work experience students are shown nor what comprises their pre-trade experience which effect the value of what they take away
from the programme. The pre-trade programme managers agree that most of the pre-trade work experience is completely random and there is no guarantee that that the student will get an understanding nor good experience of the trade. The employers saw this lack of guidance as a drawback to the pre-trade programmes and the student experience on them as a big problem for students and employers alike.

Employer 1 *I think often when they’re [work experience firms] asked to take somebody on through that programme, they’re not really given any kind of guidelines as to what is expected of them. So they put him on site and they do what they think is best. Sometimes that can result in a really good training experience and sometimes it maybe won’t.*

Employer 2, *If there was some kind of check to say what sort of things the employer is expected to show them during that time and maybe they sign off to say yes I showed him how to fit pipe together etc. – it wouldn’t necessarily have to be anything in depth, but so that there was registered outcome for that time they were on site.*

In terms of students being given a report or record of achievement for their pre-trade the employers agreed that this would be a good thing for a potential employer and for a job seeker to include on a work experience resume. As reported by employer 3, *“It would be good for us because we could pass on to potential host employers exactly what work experience he’s been given and it would be good for the plumbers themselves.*

Employer 2 added *“I think the pre trade would be better if they said listen, you’ve got young Johnny for the next 26 weeks but in that 26 weeks we would like you to teach or to observe them fitting this, doing that and tick them off as you go. I think that would be a great advantage.”*
Career advisors and teachers

The employers agree with the pre-trade programme managers that a lot of career advisors and teachers have not got the right advice to give to students about career choices and that pre-trade programmes are only available to decile 1 – 6 schools which excludes many brighter students. The employers feel that this an important issue and also agree that there has been a tendency in the past to push people into trades that haven’t done so well in school and we’ve got to get away from that and start selecting candidates who are quite universally good at; yes good with their hand but good with their ability to carry out the required correspondence as well.

They all commented that the profile of a modern apprentice had to be quite different to that of fifteen to twenty years ago but it was the old profile that was still being used today. The employers were of the same view that in some cases the career advisors needed to revise their perceptions of what was required in today’s skilled trades.

Employer 1, commented that The modern day apprentice with technology is way ahead of what us jokers used to be. Modern technology and what I see they learn, boy they are advanced. I do think the modern apprentice is very technically advanced compared to us.

Employer 3, I think we are looking at more academic students now than we have in the past. Having those extra academic abilities is something we look at quite strongly. There’s still a strong perception out there [industry] that you don’t need to be academic to go into the trades.

Employer 2. I’ve got a theory too that the school advisers have the same old paradigm for apprentices, you know if you’re down in literacy and numeracy, then you’re for the trade because there’s nothing else for you but I think that’s changed now. You need numeracy, literacy and you need to understand a lot better theories and science of things.
**Family influence**

This theme reinforced the views of the pre-trade programme managers who also felt that families play a valuable role in their children’s future but sometimes give the wrong advice or influence to their young. The employers also perceive that family influence on children’s choice of employment is often clouded by their family’s background and experience. They believe that many do not understand that to a large extent the choice of trade is bounded by the individual’s levels of literacy and numeracy. For example **employer 2.** “A good kid but they’ve probably gone into plumbing because dad said go into a trade because you didn’t go very good at high school. No wonder they can’t achieve the exams. That’s my biggest frustration”.

**Employer 3.** I think we are looking at more academic students now than we have in the past, when there were a lot of opportunities when a lot more people got through that were at varied levels. Having those extra academic abilities is something we look at quite strongly, so we’re not going to take the ones that we don’t feel can keep up academically.

**Employer 2.** I think there’s been a tendency in the past to push people into trades that haven’t done so well in school and we’ve got to get away from that and start selecting candidates who are quite universally good at; yes good with their hand but good with their ability to carry out the required correspondence as well.

### 4.8 EVALUATION OF THE EFFECTIVENESS OF THE PRE-TRADE PROGRAMMES

The information presented thus far in this chapter demonstrates that the majority of the participants believed that the pre-trade programmes are a necessity preliminary to the commencement of a plumbing and gasfiting trade apprenticeship. Skills such as the use of hand tools, numeracy, literacy sound thinking were rated as important by all participants as were motivation to succeed, confidence in their ability to master the
trades, and certitude that they had made the right career choice were important to the apprentices.

**The pre-trade programme evaluation criteria.**

To fulfil the overarching intent of this research each pre-trade programme was to be evaluated on its performance in whether it meets the criteria that have been identified and if it fulfils its purpose, and finally, whether it achieves its own aims and objectives. Once the essential criteria were identified by the participants during the data gathering phase it was a matter of sorting the information and identifying the criteria. I was then able evaluate each according to how successful they have been.

**Programme Criteria**

As a result of the single interviews with each of the pre trade course managers, differences between the programmes became very apparent. At first glance, in the literary review, it appeared that all of the programmes were very similar to each other but as the research progressed it became apparent there are some quite significant differences between them. The following criteria were distilled from the themes which emerged from the data a review of the programmes using each of these criteria will allow us to evaluate the pre-trade courses.

C1. To profile students for their levels of literacy and numeracy to assess whether they were suitable for the plumbing and gasfitting trades.

C2. To provide a suitable choice of trades for Pre-trade work experience.

C3. To have a set programme of work or experience that the Pre-trade student should be exposed to during their pre-trade experience.
C4. To note and record the work experience activities completed by students during their pre-trade experience.

C5. Students should be exposed to trade tools, trade work and trade culture during their pre-trade experience.

C6. Students should be introduced to the real world of the industry on job sites and to the trade work ethic during their pre-trade experience.

C7. The programmes should be widely available across New Zealand.

C8. The programme should provide a suitable number of new apprentices each year.

To profile students for their levels of literacy and numeracy to assess whether they were suitable for the plumbing and gasfitting trades.

The academic levels for the plumbing trades have been set by the NZQA as level 2 – level 5. These equate to a level of educational ability which is needed if apprentices are to pass their trade National Certificate and Registration examinations successfully and then move onto the Craftsman Certifying plumber and gasfitter. Two apprentice participants said that they had been profiled by their school careers advisor when they went for industry work experience. The others chose where they wanted to go and no effort was made to assess whether they were at suitable levels of numeracy or literacy to be able to successfully complete their trade qualifications.

One pre-trade manager commented: *The major problem with kids not completing apprenticeships, we looked at issues and a lot of it falls back on literacy. They can’t cope with distance learning packages. And if you can’t cope with reading and writing you’re not going to do it.*

Another issue that emerged in the interviews with the school based programme manager and the employers was that the socio economic level of the student’s family,
quite often influenced the choice of trade or career on the basis of the family’s perception of its place in the social hierarchy. Often students who have the ability to do well in other occupations or professions are actually held back by family who are using their own perception of their place in society or abilities to formulate to be the arbiter of where the school pupil in question would seek employment.

The third employer, when asked whether he believed that the model apprentice needs to be a bit more intellectual than the old paradigm said;

*Yep we’re actively going down the path of getting more involved in appliances; hot water dispensers, pumps, because basically if we stop learning we’re just going to be a labourer, so yes we do, we try to attract those kids and say one day if you’re quite intelligent you’re going to be in a classroom learning all about electrics, control boards and things like that.*

Neither the industry organisation nor the urban technical institute programmes include profiling their students to assess what occupation would be suitable for them. As revealed previously, the only programme that includes the processes by which students are profiled for their ability and career choices is the school based one.

**To provide a suitable choice of trades for Pre-trade work experience.**

In terms of this criteria the participants were satisfied with all of the pre-trade programmes and felt that they all offered a range of trades for students to try and choose which best suited them. The participants also believed that the schools were doing a very good job of coordinating the work experience for students, in particular the schools based programme.

One of the points that was raised by the pre-trade managers and employers was that the selection of career is often directed or influenced greatly by family and that depending on the socio economic position of the family, they are quite often – if they come from a ‘working class’ background then the family do influence them to take up a
trade. Manager C said that this sometimes means that young people with the ability to perhaps do tertiary or academic studies are steered into the trades. *The other thing is that they also might be a good kid, but they've also been influenced in going into the plumbing trade because they didn't do very well at high school but they're not actually suited to the work – in that they have difficulty with numeracy and literacy.*

**To have a set programme of work or experience that the Pre-trade student should be exposed to during the course.**

Of the three pre trade programmes, the course at the urban technical institute is the only one which has a set syllabus and a planned sequence of training in the four trades which the students are exposed to. This programme does lay down a series of practical skills and theory lessons which students must complete and also has a series of assessments in each of the subjects that are taught. To pass the course a student must complete all four trades and pass the final summative tests.

The current system with the school based and industry organisation programmes is that the work experience is completely random and the students’ pre-trade experience cannot be organised nor pre-prepared. This has the potential for the trades to be shown in a poor light and create the opposite effect that that which is sought. The pre-trade managers accept that this as an area which should be clarified. Manager A commented,

*Some of the students with host employers are involved in multi storey work and all they do is wipe glue off plastic pipes, whereas others working with smaller firms get to experience a whole range of practical plumbing, such as roofing, working on hot water systems, houses, apartments and so on. So it is completely random in terms of what you’re going to learn and what the firm that is your work provider is actually going to be doing.*
The school-based programme is also different because it only has a small practical component to it, or directly linked to it. Although this programme includes some technical skills it’s more concerned with assessing students’ abilities in terms of literacy and numeracy and scholastic ability and then introducing them to different career options available to them and then organising expos which put them in contact with firms or organisations that will be able to offer them perhaps employment in the career area that they have chosen.

To note and record the work experience activities completed by students.

At the time of this research the urban technical institute course was the only pre-trade programme which provides a written report at the completion of the course.

As explained by Employer 1 *The technical institute guys I have taken probably in the last three years, maybe about three or four who have done the multi skill programme and they again have tended to be good, because by the time they get to the applicant stage, they have filtered through those four or five trades that you did in multi skill and know that this is what they want to do, so that breaks that barrier of taking someone straight from school who thinks they want to be a plumber and then find that its not for them.*

Students should be exposed to trade tools, trade work and trade culture during the pre-trade experience.

One of the employers had obtained feedback from host employers as to what problems they had identified with new apprentices. Employer 3 tstated:

*I think that one of the things that host employers quite often tell me is that the apprentices when they first start have very little knowledge of what the tools are, how to care for tools and even what the products are. So for me I feel that if they had some kind of workshop given to them whereby they could look at identifying the tools, knowing how to care for them, being able to identify the fittings and things that are being used would be great.*

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The practical side of plumbing and gasfitting and the best use of tools and equipment is part of the National Certificate assessments. The trade examinations consist of both practical and theory topics and are supervised by the trade training institutions. A fact that is overlooked by many apprentices is that to become qualified an apprentice must pass both the theory and practical components of the trade assessments. One or the other is not enough.

Students are introduced to the real world of the industry on job sites and to the trade work ethic during their pre-trade experience.

The Industry based programme has now incorporated two unit standards, both to do with the work place; one is on site safety and another to do with working at heights. However, apart from these, the actual work that the individual students are exposed to when they are working with their host employer is entirely random. There is no syllabus laid down by the Industry-based programme for the pre trade students to have to achieve or to be exposed to.

Of the three pre-trade programmes, two of them actually include practical work and practical work experience within their programme period and the third one offers information, assessment, guidance, advice and then puts people in touch with the various organisations that can offer them employment.

The programmes should be widely available across New Zealand.

The school based programme is available predominantly in Auckland and North Auckland and is represented in 35 secondary schools.

The industry based programme is available in secondary schools throughout New Zealand and is operating in 127 schools.
The urban technical institute multi-skills programme is only taught in Auckland.

The above facts clearly reveal that the industry based programme is the pre-eminent programme in New Zealand as it is available in all secondary schools in the country.

**The programme should provide a suitable number of new apprentices each year.**

The schools based programme is available schools in the upper North Island but there are no records available as to how many of them gravitate to the plumbing and gasfitting trades.

The industry based programme is available in secondary schools throughout New Zealand and currently has 1,089 plumbing and gasfitting apprentices throughout New Zealand (Industry Newsletter December 2010). If these are divided into the different levels of training then the ITO would increase its apprentice base by over 200 new apprentices a year.

The urban technical institute programme has a through-put of approximately 80 persons a year of which about 10 – 12 go on to plumbing and gasfitting apprenticeships (Multi-Skills course report and results November 2010).

It is obvious that the industry based programme has a far greater effect on apprentice numbers in New Zealand that do the others. It could well be argued that any of the defects in the industry based programme is more than made up for by its through-put of apprentices Nation wide, and it would be hard to deny this assertion.

Table 4.5 shown below displays the three pre-trade programmes and their performance against the criteria which is shown as C1 for the first criteria listed, C2 for the second criteria listed and so on. This is a preliminary diagnostic to provide an indication of where the pre-trade programmes sit in relation to each other.
The Managers believe that the strength of the school and industry based programmes lie partially in the fact that they do have a wide range of trades to choose from which then lead to work experience by the students or potential apprentices involved. The Urban technical institute course follows along this line, but differs in that only four trades are represented in the 16 week course.

Another issue is that the industry based programme provides work experience but there is no set (according to the pre trade manager) prescription or no set practical activities, trade wise, which are laid down for the work experience or for the students to actually be exposed to during work experience. This also applies to the school based programme.

**Table 4.5 The combined results of the pre-trade programme evaluation.**

<table>
<thead>
<tr>
<th>Programme</th>
<th>C1</th>
<th>C2</th>
<th>C3</th>
<th>C4</th>
<th>C5</th>
<th>C6</th>
<th>C7</th>
<th>C8</th>
<th>Overall Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>School based programme</td>
<td>✓</td>
<td>✓</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>2</td>
</tr>
<tr>
<td>Industry based programme</td>
<td>X</td>
<td>✓</td>
<td>X</td>
<td>X</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>5</td>
</tr>
<tr>
<td>Urban technical institute programme</td>
<td>X</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>4</td>
</tr>
</tbody>
</table>

The results indicate that that the industry based programme scores higher than the others and is therefore the most effective (in terms of numbers) programme of them all.
So although there is a wide choice of trade and people are steered to the trade that best suits them, in terms of work experience there is no set prescription and it is inconsistent.

Some apprentices told of how they thoroughly enjoyed their pre-trade programme, especially as they were doing something different each day while others were given boring repetitive labouring jobs to do which took away any enthusiasm for joining the trades. This is a serious problem for the pre-trade managers because with the wrong work experience employer the whole purpose of the programme is negated and it fails in its intent.

This concludes the themes that were revealed and the perceptions of each participant group in relation to them. The research has indicated that one of the single most desired effects of the pre-trade programmes is whether the school leaver or other can obtain employment as an apprentice and whether an employer is prepared to extends an offer of an apprenticeship to them.

4.9 SUMMARY

The components of the pre-trade programmes in New Zealand and the participants have all added to the fund of knowledge about the advantages and defects the pre-trade programmes create. The three programmes that we have examined call have one thing in common and that is to assist in the transition of student from school to work and to enter suitable employment. The positive themes which emerged from the research are:

- The pre-trade programme was valuable because it shaped their expectations of the work that they would be required to do, and introduced tools and their uses. This gave them confidence and confirmed that they had selected the right trade for them.
• The pre-trade programme students are placed with a potential employer which is a big advantage to both. The students are able to market themselves in seeking employment, and he employer can assess the potential apprentice before deciding whether to employ them or not.

• Pre-trade programmes are well run and resourced where students gather experience of a variety of trade environments and the trade culture and behaviours. This gives them the opportunity to understand the trade environment and choose the trade that offers the best career for them.

• The pre-trade programmes are affiliated to secondary schools all around New Zealand whose staff co-ordinate the local programme and arrange and monitor the firms which provide students with one days work experience each school week.

• The employers reported that apprentices who have pre-trade experience are generally better than those who do not. They are usually more motivated to learning and being good at the trades that those who have not done pre-trade courses.

• The non pre-trade apprentices felt that it would have been beneficial to be exposed to the trade culture and type and variety of work to which they would be performing during their apprenticeship. This would have helped to shape their expectations of the work that they would be required to do and would have confirmed their choice of career and built confidence that they were going into the right type of work.

The negative themes which emerged from the research were:
• There is no set syllabus of work activities to be undertaken by the participants and no report or record of achievement nor are any NQF credits awarded to them. This is a disadvantage to school leavers seeking work.

• Residential pre-trade courses conducted at Technical institutes do not fully teach trade work ethics or work application and do not give future employers any insight into the suitability of candidate apprentices.

• Family influence on children’s choice of employment is often clouded by their family background and experience. To a large extent the choice of trade is bounded by the students levels of literacy and numeracy.

• A lot of career advisors and teachers have not got the right advice to give to students about career choices and Gateways is only available to decile 1 – 6 schools.

Overall the findings reveal that there were no current profile or list of the attributes that the modern apprentice should have in order to succeed in becoming qualified in the complex trades which plumbing and gasfitting have become and will continue to be. The single critical finding was whether the school leaver can demonstrate suitability to be employed as an apprentice, and whether an employer is prepared to extend the offer of work on the basis of the school leaver’s perceived suitability to do well as an apprentice and thereafter qualify as a trades-person.
CHAPTER FIVE

DISCUSSION

5.1 INTRODUCTION

This chapter discusses the research findings (Chapter Four) in relation to the issues highlighted by the literature review in Chapter Two. The findings were presented from three perspectives: (i) being the pre-trade managers, (ii) the apprentices, and (iii) the employers. This chapter will start with a discussion of the issues related to the state of VET in New Zealand, the stages in vocational development. Trade training and the pre-trade programmes in New Zealand will then be reviewed and the activities and benefits of those programmes will be raised. This discussion chapter will conclude with a discussion on the evaluation of the three pre-trade programmes that were examined. Throughout this chapter where the data supports or adds to the similarities and differences in relation to the literature will be discussed in some detail.

As indicated, the aim of this research was to gather data which will provide information on the three research question that were presented for this project. This chapter demonstrates that the research was successful in addressing the questions shown below which are the focus of this project. The limitations of the research will be discussed further in the last chapter of this thesis. The research questions are:

(1). What theoretical and practical knowledge do the pre trade programmes provide to school leavers who plan to enter the plumbing and gasfitting trades?

(2). How effective is the pre-trade programme experience and what benefits accrue to school leavers preparing to integrate into the plumbing and gasfitting trades?

(3). What could be done to improve the current pre trade experience to better prepare students to be successful in their trade training?
Evans and Gruba (2002) observe that in the synthesis stage of theses the researcher’s contribution to the state of knowledge about the topic will usually contain a discussion in which the results are examined and evaluated to produce conclusions. This chapter uses the literature reviewed in Chapter Two plus the themes and information gleaned from the questionnaires, focus groups and interviews from Chapter Four to form the basis of the discussion. In relation to the discussion on research questions one and two, it was possible to use the data obtained from all of the participant groups, but for research question three, the apprentices and employers were considered to be in the best position to be able to pass meaningful comment on what improvements could be made to the existing pre-trade programmes.

Examination of the data revealed that the themes which emerged from the findings in Chapter Four were collectively important to this research but did not apply fully to each of the participant groups. In addition to this it was apparent that some themes were shared by two of the participating groups who had similar views and opinions of the theme’s relevance within the industry, whilst other themes had no relevance to them at all. To avoid confusion it was decided to only discuss the themes which were relevant to each section and which applied to the particular group(s) involved in that part of the discussion. The following perspectives are discussed in relation to the research questions.

- Perspectives of the pre-trade programme managers.
- Perspectives of the apprentices.
- Perspectives of the employers.

5.2 THE STATE OF VET IN NEW ZEALAND IN RELATION TO THE PLUMBING AND GASFITTING TRADES.

In terms of the holistic trades situation the pre-trade managers and employers all agree that the plumbing and gasfitting trades have become very technical and very complex
with new technologies, particularly gas fitting, requiring far more complex systems for the efficient operation of all services. They also agreed that the plumbing and gasfitting trades in New Zealand required a wide range of theoretical knowledge and physical trade skills. There is also an acknowledgement by Ridout (2008) that the trades are becoming more complex as technologies continue to improve and that 'a new type' of trades-person who is able to operate in a complex world is needed. This is what Hoong (1999) referred to as the 'new age customer' and links back to the literature about the fundamentals of trade training and the pathways to trade registration in New Zealand’s plumbing and gasfitting trades contained in Chapter Two.

From the literature from Chapter Two and the findings reported in Chapter Four, professional knowledge and training are vital for trades-peoples’ performance when operating in the current plumbing and gasfitting environment. From the reports of the employers and the comments of the apprentices it is obvious that the modern trade environment requires more than practical training for a trades-person to be able to compete and operate in today’s trade environment.

**The growing complexity of the plumbing and gasfitting trades.**

The employers and managers emphasised that those working in the trades need to have higher levels of literacy and numeracy than previously needed because of the amount of theory that they need to learn and also that they have to be able to understand complex technology to complete safe and efficient installations. This supports the literature in Chapter Two which highlights the growing needs of the modern society and what Hoong, (1999) refers to as the 'new age customer.

The employers agreed that the modern day apprentice is well ahead in modern technology and learn a lot more about different things than apprentices in previous years because those technologies weren’t around in those days, and she believes that the modern apprentice has to be very technically advanced. This raised the issue of whether there has been a perceptible shift in the scope and demands of modern VET
which render previous definitions of VET inadequate for today’s environment. Arguably, Green’s (1991) view that vocational training is to teach an individual skills while vocational education is to explore a career and education for life has become blurred and that the historical definitions are no longer clear cut today and that the boundaries between vocational education and training are starting to blur and in some trades to merge together. It begins to align with Thompson’s (1973) view of vocational education which he describes to be concerned more with developing an individual’s knowledge, abilities, and potential in the wider aspects of a career. This perception is shared by the pre-trade managers as well as the employers, one of whom declared that the plumbing and gasfitting trades are far more complex than they were 30 years ago. This view is supported by the employers. For example Employer 1 reports that

*The modern day apprentice with technology is way ahead of what us jokers used to be. We were very good practically, we knew how to do things. Modern technology and what I see they learn, boy they are advanced. They learn a lot more about different things than what we learnt, because they weren’t around in those days. I do think the modern apprentice is very technically advanced compared to us.*

The literature review revealed that the overarching trade and industry situation in most countries appears in many ways to closely parallel the situation in New Zealand in terms of the impact of the economy on the trades and apprenticeships, and that there also appears to be a changing attitude towards working in the trades. The literature also disclosed that there were many similarities in the national strategies which the Australian and New Zealand Governments, and trade organisations, have put in place to improve the collection of suitable candidates for trade apprenticeships and trade training. An important initiative in both Australia and in New Zealand consists of showcasing trades in the schools to attract suitable school leavers and, in Australia, there were also financial inducements offered to trade trainees while they were undergoing their apprenticeships (Ridout, 2008).
The stages in vocational development

The literature in Chapter Two revealed that the most formative stage in vocational development occurs during the exploration stage which is believed to be between the ages of 15 to 24. Chapter Two further revealed that this stage is further broken down into the Tentative stage which occurs between the ages of 15 – 17 years, followed by the Transition stage which occurs between the ages of 18 – 21 years and finally the Trial stage which occurs between the ages of 22 – 24 years (Thompson, 1973).

The findings from the apprentice participants indicates that in the main their experiences closely conformed to this timetable. The apprentices agree that one of the most valuable part of pre-trade programmes was that the choice of trade made by the school leavers was able to be confirmed as the best one for them. One plumbing and gasfitting apprentice reported “I did joinery pre-trade for 10 weeks then decided I didn’t want to do it. Its pretty basic and boring really….I’m glad I didn’t take that joinery apprenticeship now”.

This was a common theme amongst the apprentices who had taken a pre-trade programme and must be considered as a very important one. The choice of profession and career is very important and often is difficult to make. The benefits of having a programme where an applicant can try out any number of different career options before having to decide which one they prefer is hard to quantify but they must be considered to be many.

The issue here is that the organisational structure and time-lines of the New Zealand secondary school system is in sync with Thompson's (1973) theories of the stages of vocational development. The literature identified that the exploratory stage occurs between the years of 15 – 24 with the tentative stage being between 15 – 17 years and the transition stage at 18 – 21 years. However, the main issue is that the research data obtained from the apprentice participants identifies that they first began to consider their careers at the tentative stage ages and consolidated their choice of
trades in the end of the tentative stage and the beginning of the transitional stage, which in all cases conforms to Thompson’s Model presented in the literature review in Figure 2.2.

5.3 Q1. WHAT THEORETICAL AND PRACTICAL KNOWLEDGE DO THE PRE TRADE PROGRAMMES PROVIDE TO SCHOOL LEAVERS WHO PLAN TO ENTER THE PLUMBING AND GASFITTING TRADES?

From the apprentices who took part in the research it was obvious that they were exposed to a variety of experiences during their pre-trade programmes which strongly influenced their impression and perception of the plumbing and gasfitting trades. Many admitted that they were attracted amount of money that they could earn and the secure future that it would provide once they had completed their apprenticeships. The literature from the United kingdom and Australia also emphasised that the financial rewards for successful trade trainees can be great. In support of the literature twenty-nine out of the forty-three apprentice participants said that they had been advised by family or friends that there was good money to be made out of plumbing and gasfitting and that it was a good trade in which to be involved.

These students clearly believed that as a means of creating personal wealth, plumbing and gasfitting were more appropriate trades to learn. Furthermore, even though they admitted to some knowledge that it was hard work, physically difficult and dirty at times they were prepared to accept the hard parts of the trade in return for good money and perhaps wealth. This information did not figure in the intent of the pre-trade programmes which were to provide trade knowledge but was a great motivator for students to take on the plumbing and gasfitting trades.

To what extent this reinforced the need for the pre-trade programmes cannot be determined but it would have to be acknowledged that it would have been quite persuasive to young persons about to commence working life, particularly that they
would have to endure some hardships before reaping the benefits of being a tradesperson. Another difficulty highlighted by the Plumbing and gasfitting Registration Examinations is that individuals who do not have the required abilities are attracted to the plumbing and gasfitting trades and although most are good workers they fail their qualifying theory examinations. This supports the literature in Chapter Two, in particular that these trades have become very complex in parts and will continue to do so.

**Pre-trade programmes in New Zealand**

Although there appears to be a lack of literature relating to pre-trade programmes in New Zealand, the literature and finding reveal that pre-trade programmes are designed to give some knowledge and some work experience of the various trades and to provide school leavers with selection of trades or potential careers to choose from, and assist to confirm to the participant that the trade they had chosen was the right decision.

The details of the pre-trade programmes were partially revealed in the literature review in Chapter Two and later in more detail in the findings of Chapter Four. From this information it was apparent that of the three programmes only the Urban technical institute programme has a set curriculum that is followed in its pre-trade course. It must however be borne in mind that these courses are only run five times a year with 16 students in each. Another factor for consideration was identified by the managers and also by the employers and relates to the concerns that due to the constant developments in trade technology and standard of workmanship that is required to meet the demands in plumbing and gasfitting, "*We need to take the time to train these people otherwise in four or five years where are we going to find our tradesmen?*".

The pre-trade managers saw themselves as primarily providing a co-ordinating role and assisting with resources. They provide work experience, profiling and Expo opportunities or, in the case of the urban technical institute, a multi-trades course.
According to the managers, two of the programmes have been operating for over 12 years without review of the course activities and the third is only available in decile 1 – 6 schools. This suggests that the managers are not fully conversant with changes within the industry over the past decade nor the growing complexity in both technology and theory in the plumbing and gasfitting trades.

An inference which can also be made comes from the apprentices themselves, that the majority of those who had been on the pre trade course understand the nature of the work that they would be required to undertake and they really want to be a plumber. They also believed that they had the ability to be able to do the work. They admitted that they were reassured and confident because even if it was one day a week while still at school they had some experience of what they were going into and were committed to their choice of career. With the exception of the urban technical institute course, the pre-trade programmes do not indicate whether the students have the attributes to pass the trade theory examinations.

In terms of the schools-based and industry based programmes it must be remembered that although they are focussed on an intent with broad outlines of performance and of the consistency of the pre-trade student experience, they are based on local secondary schools; are represented over large areas of New Zealand; are dependent on private businesses for the student work experience activities; but most importantly they have a large throughput.

Dessinger (2008) described the German ‘Dual System’ whereby school leavers are timetabled to go out into industry one day a week while at school and if they do not find employment when they leave school they are given state funded trade training. This is not quite the system used in New Zealand but there are similarities. In all fairness it must also be acknowledged that the New Zealand industry-based programmes are dependent on outside work experience providers at no cost and that as a result, the type and scope of work that students are exposed to is dependent on the type of work carried by the individual firms. This means that unfortunately the schools based
programme co-ordinators have no control over this quite critical element of their programmes.

The research has shown that both the pre-trade managers and the apprentices all agree that the school careers advisors and work experience co-ordinators do a very good job in arranging pre-trade work experience firm for pupils. This they said, involved the school staff arranging the student’s work experience with a local firm which is followed up by taking the student to the place of work and introducing them to the work experience employer and checking to see that the work experience is going well and the student is enjoying it.

Although the industry-based programme provides work experience but there is no set (according to the pre trade manager) prescription or no set practical activities, trade wise, which are laid down for the work experience or for the students to actually be exposed to during work experience. So, although there is a wide choice of trades and people are steered to the trade that best suits them, in terms of work experience there is no set prescription and it is inconsistent. This has already been identified as a weakness in the programme.

Another factor is that there is no set minimum time period that must be completed for the pre-trade work experience to be acknowledged. Some apprentice participants reported that they attended pre-trade for the whole school year while other only attended for a few weeks. This obviously creates an inconsistency in terms of the validity of the pre-trade experience in that some school leavers would have experienced the full benefit of the pre-trade while others had been barely introduced to the trade experience to the extent that it could be viewed as irrelevant. It can reasonably be argued that this issue has the ability to skew the overall results of the pre-trade programme in relation to the intent of providing school leavers with sufficient exposure to trade work to allow them to make a value judgement on their choice of trade career. In essence, apart from the Urban technical institute course, the current situation is that although there is a wide choice of trades and people are steered to the
trade that best suits them, in terms of work experience there is no set prescription and it is therefore random and inconsistent. Some apprentices told of how they thoroughly enjoyed their pre-trade, especially as they doing something different each day while others were given boring repetitive labouring jobs to do which took away any enthusiasm for joining the trades. This is a serious problem for the pre-trade managers because with the wrong work experience employer the whole purpose of he programme is negated and it fails in its intent. The Managers believe that the strength of the school based and industry programmes lie partially in the fact that they do have a wide range of trades to choose from which then lead to work experience by the students or potential apprentices involved.

In contrast to the others the Urban technical institute (multi-skills) course does have a set curriculum which consists of theory and practical sessions with a set programme and outcomes and four trades are represented in the 16 week course. Unlike the others this programme does provide a prescribed series of activities with consistent levels of instruction and includes assessment events and a final course report. The difficulty with this course is the lack of student throughput. With only five courses of sixteen students conducted annually, the upshot is that although the course is structured and consistent its throughput is small compared to the school and industry based programmes.

In summary, the data gathered indicated that two of the three pre trade programmes (schools and industry based) used secondary schools as the vehicle by which they conduct their programme. These programmes are run nationally from a central location and the pre trade programme material packs are provided by the programme managers to the National secondary schools. The use of secondary schools allows the pre trade programme to have a national coverage in the matter of Gateway and in the Auckland wide area for Pathways. The third programme at the urban technical institute conducts all of the administration, management and also the lecturers/instructors for the work skills internally. This is a self contained pre trade programme which has previously been conducted either at local secondary schools but is normally conducted
in the fully equipped workshops of the institute. The points of difference are a set curriculum or lack of it and the number of students going through the pre-trade training.

5.4 Q 2. HOW EFFECTIVE IS THE PRE-TRADE PROGRAMME EXPERIENCE AND WHAT BENEFITS ACCRUE TO SCHOOL LEAVERS PREPARING TO INTEGRATE INTO THE PLUMBING AND GASFITTING TRADES?

This research question has two parts which are how effective is the programme and what benefits accrue to the participants. The first part is the most intriguing as it too can be argued to have two relevant parts. These have been examined from the aspects of ‘How effective is the pre-trade experience in meeting the needs of the individual school leaver?’, and the other of ‘How effective is this in meeting the needs of Industry?’. One could argue that clearly the most important factor of pre-trade programmes must be which of them best meets the needs of industry. In an industry that is attempting to reverse a shortage of trade trainees the pre-trade programme that has the greatest through-put must be the most effective in the pre-trade experience it provides. It also follows that to meet industry needs, the industry would be better served if it provided the schools career advisors and pre-trade programmes with the attributes and profile for a plumbing and gasfitting trade person.

The research findings revealed that from the perspective of apprentices there were four main themes. Three of these relate to those who took part in a pre-trade programme and the final one relates to those apprentice participants who did not. These findings are introduced and discussed separately beginning with those relevant to the pre-trade participants. They centre on exposure to the type of work which confirms the student’s choice of future career, the introduction and knowledge of tools and their uses and that it is often easier to obtain work through the pre-trade programmes. These were considered to be very valuable to the apprentices who did pre-trade and also recognised as such by those who did not. In relation to selection of career one non pre-trade apprentice declared that had he done a pre-trade course he
would never have started an apprenticeship in plumbing and gasfitting. The main findings are discussed below.

The students had the opportunity to understand the trade environment and choose the trade that best suited them.

An important finding of the research was that some of the pre-trade students doing work experience had initially decided upon a different trade to the plumbing and gasfitting which they finally settled on. One recounted that he had started in the automotive pre trade programme but realised that was not for him and then he tried plumbing and gasfitting which he found was to his liking. Another had started off in joinery and was doing his pre trade with a host employer in a joinery factory and after three months of this decided that he did not want to be a joiner and he went back to the work experience coordinators at his college and they suggested plumbing to him and he found that was his niche in terms of a career. A third one had started doing a farming pre trade course and found after a year that he wasn’t suited to that and also converted to plumbing and gasfitting. These recollections support the literature in terms of the exploration stage in vocational development being the most significant. It is viewed as important by the participants that an effective pre-trade programme should ideally offer a wide selection of trade choices so that students have the opportunity to gain experience in their favourites and finally choose the one that best suits them. As one employer remarked

*In terms of the pre-trade programme it gives them work experience so they already know what to expect and gives them a little bit of skills along the way and this means skills with tools and knowing what tools are, not necessarily a noticeable one, but they could have picked up an understanding of the industry and also importantly made some contacts. I think it does prepare them quite well for an apprenticeship (pre trade courses) because it still fills those expectations and perceptions that otherwise they would be going into a bit more blind, so yes I think the experience is a valuable one for them also.*
The fact that the pre trade programmes are a confirmatory waypoint is extremely important as it saves a student wasting time when they leave school and it counter-balances the weight if familial opinion which may well have led the student into the wrong trade of profession for them. The data indicates that the industry based programme does fulfil this requirement and so, to a lesser extent do the urban technical institute courses. An employer in support of the industry based programme observed that:

_They go into the pre-trade programme first, then come into pre trade and then get the apprenticeship because why it’s good is two things. One, the kid comes through the Gateway so you know he wants to do it. Two, it’s going to make your life a lot easier because they want to establish the fact they want to do it. They know what it’s all about, all they want to do is learn about what they want to learn about it. When they start their apprenticeship they’re basically running._

The employers also agreed that people who have done pre trade previously fit into the trade faster than guys who’ve just come in straight off the street. However, it should be emphasised that there is no evidence as to whether the advantage of having taken part in a pre-trade course accrues throughout the whole of the four year of apprenticeship training or whether it gives them an edge for the first year or so and this may be a topic for future research to look into. Obviously factors such as length of the pre-trade work experience and the type of work the student is involved with are very significant to the degree of benefit derived. That said, overall the research findings confirm the value of pre-trade programmes to industry both from an employer and apprentice perspective and support the literature relating pre-trade initiatives.

Another finding was that the majority of apprentice participants agreed that they enjoyed the type and variety of work they were doing, and that they were never on the same job for more than a few days. They also revealed that they knew that the work would be often hard and physical. This suggests that despite them being demanding
trades the students believed that plumbing and gasfitting were the better trades to be involved in from a both a work and a remuneration point of view. Arguably these are desirable qualities of any profession.

The students are able to market themselves in seeking employment, and the employer can assess the potential apprentice before deciding whether to employ them or not.

The employers maintained that a steady flow of apprentices was important to sustain the trade and to meet current market needs. There is however conflict between their perceptions that a benefit of the pre-trade programme is that the students are able to market themselves in seeking employment, and the employer is able to assess the potential apprentice before deciding whether to employ them or not. Both the pre-trade managers and the employers thought that this was a good arrangement as long as the pre-trade student was going to be employed by the work experience firm. If not then there was a residual benefit in that the pre-trade student could use the work experience employer as a reference or referee.

One employer reported that Some of the ones we've had come through have put the plumber as a referee on their CV and I've been able to ring them and say you had this guy as a Gateway student, how did you find him, was he reliable, punctual, how were his hand skills, paperwork etc, so we've been able to get a verbal reference from some of them.

Another employer remarked about a pre-trade work experience student they took for work experience and later ‘took on as an apprentice confirmed this.

It was to our advantage we knew the kid beforehand. He’s had some understanding of what he could do, he knew the men when he got there and that was quite good. Another employer said ‘Another advantage of the programme (pre-trade) is having someone who they know is committed as it saves the employer time and money’.
These comments by employers support the literature in Chapter Two by indicating clearly that the benefits not only accrue to the pre-trade student but also to prospective employers in that the student gains knowledge and experience of the trades as well as being able to confirm that they like the work whilst the employer is able to assess the student in terms of a apprentice. Research question 2 is aimed at benefits that accrue to students and for the research to present evidence that benefits also accrue to employers is an unexpected bonus.

The employers confirmed that a major advantage of pre-trade courses is that they provide certitude that they have looked at the trades and this is the one that they’ve settled on as their choice for a future career. On the part of the employers it also gives them the opportunity to observe the potential apprentice while he’s doing work experience with their firm and be able to assess whether they are suitable for the firm to take on as an apprentice.

**Family influence on children’s choice of employment**

One of the important findings that came to the fore is that the selection of career is often directed or influenced greatly by family and that depending on the socio economic position of the family, they are quite often – if they come from a ‘working class’ background then the family do influence them to take up a trade. Employers and managers alike remarked that sometimes young people with the ability to perhaps do tertiary or academic studies are steered into the trades and in cases those who are not suitable for work in complex trades are. Another important finding that emerged in the research was that there is a strong presumption by schools and parents alike that school leavers who didn’t do very well at school should take up an apprenticeship in the plumbing and gasfitting trades.

The finding that families have a great influence on the type of work that their son or daughter takes up, does ring true but often it doesn’t have the desired result in terms of
the young person making the most appropriate choice of employment can have serious repercussions in later years. This is demonstrated by the fact that it is not uncommon to see plumbing and gasfitting apprentices who are aged in their late twenties, or early thirties and sometimes forties who have already spent a considerable time working in another career before finally deciding that they did not like the work that they were doing and opted for change. This does not include those who were forced to seek another career due to economic reasons. To effect this change they must accept a drop in pay during their four year apprenticeship which most find difficult to manage.

The employers commented that it sometimes happens when they take on a person as an apprentice that they show that they aren’t really committed and that they don’t appear to be particularly interested in plumbing. One employer related that finally when it becomes clear that the apprentice probably didn’t have their heart set on the job that he has a talk to them.

I just tell them that basically I don’t think that this is their career path. They leave. Generally its because he’s not practical, he’s not good with his hands. I just sit them down and sort of say do you really want to do this and nine times out of ten its because they’ve been pressured to do it and generally this is family.

The Urban technical institute course does prevent this happening because unsuitable students were identified and reported upon whereby the error of well meaning parents can be rectified easily and the student advised in the areas where their work abilities could be best utilised. Unfortunately this does not apply to the school and industry based programmes because no reports or summaries are provided on the results of the work experience period and the unsuitability or otherwise of work experience students goes largely un-noticed apart from word of mouth.
5.5. Q 3. WHAT COULD BE DONE TO IMPROVE THE CURRENT PRE TRADE EXPERIENCE TO BETTER PREPARE STUDENTS TO BE SUCCESSFUL IN THEIR TRADE TRAINING?

The three groups of stakeholder participants understood the need and utility of the pre-trade programmes but differed somewhat in why they thought as they did. In terms of the apprentice group this may well have been the result of attending different pre-trade programmes or that their work experiences differed greatly in content and benefit. Despite this a majority view emerged by all participants that some of the elements of the pre-trade programmes could be improved. The majority feeling was that pre-trade courses were advantageous to both the employers and the apprentices, and also served a wider purpose and that was bringing the subject of suitable candidates for trade training to the fore in the education system.

The Industry based programme is only available to decile 1 – 6 schools.

The findings indicated that the industry participants believed that the school based pre-trade programmes should be available in all schools due to the changing nature of the trades under discussion. The research shows that the school based programme is only open to decile 1–6 schools which limits the pool of trade applicants in terms of intellect.

One ex-pupil from Auckland Grammar made the point that the industry-based programme should be introduced there so that pupils such as himself who want a trade career can have the benefit of prior pre-trade training. This sentiment was shared by another focus group apprentice from Kings College who said that pre-trade would have been of benefit before he joined the trade.

This limit on the provision of Gateways to any schools from 7–10 deciles clashes with the advent of more complex technologies and many of the trades; in particular electrical, plumbing, gas fitting, auto mechanics whereby the standard paradigm of an apprentice in terms of mental abilities and educational standard were no longer
sufficient to support the trades which were becoming increasingly more complex and increasingly more technologically advanced. This was identified by Hoong (1999) and confirmed by the employers. This is not to say that students from the lower decile school are unsuitable for the trades but rather that pupils from the upper decile schools are also suitable for trade careers. Finlay, Niven & Young (1999) write that many Governments had become aware of the looming shortages in skilled trades and implemented change with the assistance of the VET stakeholders those being individuals, institutions, employers and Governments. Keating (1998) and more recently Ridout (2008) provide much information on the efforts by the Federal and State Governments in Australia to simulate trade training there.

The findings revealed that although the strategies that were employed by the various governments to stimulate interest in trade training, the problem was developing that the normal paradigm of the trade apprentice was not suitable for the more advanced training requirement and of course on going operational requirements of some of the trades. As expressed by one employer

\textit{I think we’re looking at more academic students now than we have in the past when there were a lot of opportunities when a lot more people go through that were at varied levels, whereas now there are lesser opportunities available so we’re taking the cream of the crop, having those extra academic abilities is something we look at quite strongly. I actually had one prospective candidate say to me “What does my schooling have to do with becoming a plumber?” and so there’s still a strong perception out there in industry that you don’t need to be academic to go into the trades.}

**Residential pre-trade courses conducted at Technical institutes do not fully teach trade work ethics or work application**

Another employer believes teaching apprentices to be good efficient tradesmen with high work skills and standards is paramount. He has employed apprentices to have not done a pre trade course before starting work with him and others who have. One of
the issues he raised is that the apprentices that have come through the residential pre-trade courses conducted at trade training schools did not always have what the employer in question called the application of speed or a good work ethic. He expanded on this by adding that yes they did the job right but they didn’t always have the application of speed and this employer believed that that was a major detraction or flaw in some of the pre trade training. He also made the point which amplified this theme from the apprentices themselves, that those who had been on the industry based pre trade course whereby they worked out on jobs in the industry better understand the nature of the work, even if it was one day a week while still at school. In terms of discussion the issue of a worker earning their pay and making a profit for their employer is another factor that cannot be discounted.

From the discussion it is clear that the residential pre-trade courses conducted at trade training institutes provide an artificial environment quite different to that found on a job site. The trade training institutes provide knowledge of trade work but do not convey the realities of the work place nor the cultural aspects that are part of working in the trades. It could be argued that the trade training institutions provide education which is their responsibility but bearing in mind that a business owner does, the element of work ethic and trade application should also be introduced during these courses.

**There is no set syllabus of work activities and no recorded outcomes of school based pre-trade programmes.**

It was agreed by the employers that a pre-trade work experience report listing what the student achieved during his course would be helpful to them, in particular when making the decision whether to employ them or not. From the remarks of one employer it would appear that some schools are providing some paperwork along the lines of a report. The employer remarked,

*It seems to be quite variable. Others I’ve seen like a little report that’s come out of Gateway with a brief almost like a performance appraisal. But they don’t always seem to come with that so it does seem to vary.*
In confirmation another employer made the point, “The final thing that I would look at is their school qualifications; to see how well they have progressed through school”. We would be looking for English, mathematics and either Science or Technology’.

These comments support the literature from Chapter Two by confirming that the employers also perceive that the plumbing and gasfitting trades have become more technologically advanced and require a new type of tradesperson to do a lot of the work. The school based and urban technical institute both have some form of profiling or screening but the industry based one does not, although there is evidence that the career advisors do try to assist students in this regard. Despite no profile of the ideal person to go into trade training in plumbing and gasfitting there are school reports which would be of some utility in ascertaining the scholastic ability of the individual concerned which will offer some clues as to the student’s potential. Another theme with the employers was that they admit that the trade in the last ten to fifteen years has become far more technical than previously. However, in terms of them fitting into the trade faster, one employer said

 Yeah I think they understand it a lot better. We haven't taken on a first year for a number of years which is a bit remiss but it’s only because we’ve got four on now and basically we’re up to four. Usually I try to bring a new one in each year, but until the last one leaves I’m not going to take on another young fellow.

The employers felt that deciding whether to employ a person to work in your business is a big decision and it is usual to have some real life knowledge of hat person and their potential before committing to employment. Similarly the apprentices wanted to know as much as possible before committing themselves to a career. The pre-trade programmes can provide for the needs of both.

The findings also indicate that although there are many good aspects to the existing pre-trade programmes there are some other areas that could be improved.
An evaluation of the three pre-trade programmes that were examined.

From the findings it is clear that the pre-trade programmes have similar overall strategic intent which is essentially to highlight trade training and to steer students into a career in the trades in order to help alleviate the shortage of suitable apprentices. It is also clear that although their programmes differ in a number of ways, particularly in the approaches that they have adopted to achieve their aims, their programmes are similar in some regards. It was found that because their programme design and implementation are different, this made it difficult to evaluate them against each other using the same evaluation criteria. This prompted the decision to use participant data by each programme should be evaluated in relation to how well its performance matches the requirements of pre-trade programmes.

The evaluation of the pre-trade courses using the criteria set out has resulted in the Industry based programme meeting most of the pre-trade programme criteria points followed by the urban technical institute course and finally the school based programme. The main strengths of the industry based programme is that it is a nation-wide programme, is based on work experience with an operating plumbing and gasfitting firm, and it has a greater through-put than the other programmes.

5.6 SUMMARY

The literature in Chapter Two disclosed that the three pre-trade programmes have the same aims but that they differ in their objectives and intents by which they seek to achieve those aims. Unfortunately there was no literature found which describes similar programmes overseas. In reality it could be argued that there is not a trade wide requirement for those of good intellect, merely enough to conduct business and be capable of supervising the remainder who will comprise the bulk of the work force. This is probably a more realistic scenario but the issue still remains that the average
plumber and gasfitter must be smarter than his forerunner of twenty years ago to be able to work competently and efficiently have done pre trade previously fit into the trade faster than guys who’ve just come in straight off the street. There’s no evidence to see whether the advantage accrues throughout the whole of the four year of apprenticeship training or whether it gives them an edge for the first year or so and this may be a topic for future research to look into.

What did emerge strongly is the need for the industry and the ITO to collaborate in defining the essential profile of the plumbing and gasfitting apprentice so that a more focussed approach can be made by the school career advisors and the pre-trade programm managers in identifying suitable candidates for these trades.
CHAPTER SIX

CONCLUSIONS and RECOMMENDATIONS

6.1 INTRODUCTION

In Chapter Four the findings from the literature review in Chapter Two and that data analysis of information obtained from industry and education sources were presented. In Chapter Five these findings were discussed. Chapter Six summarises this thesis and will present the conclusions and recommendations from this research.

This chapter will firstly present the conclusions that can be drawn from the research based on the objectives listed in Chapter One. Secondly it identifies the limitations of this research project. Thirdly the recommendations that have emerged from this research and which will assist in taking measures to improve the pre-trade programmes are presented. Lastly the possibilities for further research which could be conducted on this topic are outlined, particularly concerning the pre-trade process.

6.2 CONCLUSIONS

This research set about to describe and examine the experiences and perceptions of the participants into the concepts and practical implementation of pre-trade programmes for the plumbing and gasfitting programmes in New Zealand. As previously shown the research questions which formed the focus of this research were:

1. What theoretical and practical knowledge do the pre trade programmes provide to school leavers who plan to enter the plumbing and gasfitting trades?

2. How effective is the pre-trade programme experience and what benefits accrue to school leavers preparing to integrate into the plumbing and gasfitting trades?
3). What could be done to improve the current pre trade experience to better prepare students to be successful in their trade training?

The research questions have been addressed in turn and the results were presented as findings which were presented and discussed in chapters four and five of this thesis. The following sections focuses on the most significant themes of this research that may play an important part in the future design and practice of plumbing and gasfitting pre-trade programmes in New Zealand and else-where.

All of the participants agreed on the need for pre-trade programmes in order to stream suitable trainees into the plumbing and gasfitting trades which all participants acknowledged has become more complex in terms of technology whilst retaining their requirement for hard physical work. The research also revealed that the stakeholders realise that the historical profile of a plumbing and gasfitting apprentice has changed and that higher levels of literacy, numeracy, and intellect are required. It disclosed that the basic standard of a trade apprentice was normally lower than those going into vocational education, such as teaching, nursing etc and of course well below the standard of academics. This clashed with the advent of more complex technologies and many of the trades; in particular electrical, plumbing, gas fitting and automotive whereby the historical paradigm of an apprentice in terms of mental abilities and educational standard were no longer sufficient to support the trades which were becoming increasingly more complex and increasingly more technologically advanced.

The research data disclosed that there were as many negative perspectives on the topic as there were positive ones. After analysing the findings of this research there were seven points that came out strongly which have been discussed in detail in Chapter Five. The following passages highlight their significant points. The findings that are presented in this final chapter underline the importance of pre-trade programmes and the issues which are critical to them if they are to sustain the
plumbing and gasfitting trades in what is becoming an increasingly complex and technology based industry.

The pre-trade programmes are valuable

The most important finding of this research was that in the opinion of all participants, including those who had not attended a pre-trade programme, the pre-trade programmes were valuable because they revealed the plumbing and gasfitting working environments and the type and variety of work involved. This shaped the students' expectations of the work that they would be required to do, introduced them to the tools, equipment and their uses. In addition, pre-trade programmes gave them confidence that could do the work and confirmed that they had selected the right trade for themselves to pursue. The benefits of confirming the choice of career was widely regarded by the apprentices as a major hurdle crossed and took away a lot of the anxiety which they had about their transition from school into the work force. It was particularly important for the older apprentices who went into the trades later in life and had families to support. One described his uncertainty in the proposed change as he explained that 'with his commitments he only had one shot at a career change and he couldn't afford to get it wrong". Although this is an extreme example the fact remains that to one extent or another the apprentice participants admitted to some misgivings before they started full time work.

The positive attitude of the apprentices was matched by the employers who saw great benefit to both the individual apprentice but also the ongoing sustainability of their businesses and the trades as a whole.

The positive attitude of the apprentices who experienced the pre-trade courses as students is an encouraging outcome for the Industry and the pre-trade programmes themselves because the apprentices are the future leaders of the industry. In terms of the pre trade programme, we could also deduce that by working one day a week with a plumbing firm and going out on jobs with tradesmen and being given tasks in support
of the work the tradesmen were doing, that they become familiar with the hand tools, they become familiar with the safety on the job and they do small tasks such as measuring materials, cutting, digging, a bit of hard labour, they also learn how basic components work, and also to a large extent culture within the trades. If pre-trade courses are able to lift the level of those who enter the trades as apprentices and help develop the ethos and attitudes which the trades rely upon the future supply of suitable trade trainees will be more achievable and sustainable.

The pre-trade programmes are well run and well resourced

The managers and students agree that the pre-trade programmes are well set up and resourced to allow students gather experience of a variety of trade environments and to be exposed to the trade culture and behaviours. This gives them the opportunity to understand the trade environment and choose the trade that offers the best career for them. The managers and employers raised the issue that family influence will sometimes misdirect students into trades or careers for which they are not truly suited. They agree that the pre-trade programmes are able to negate some of these influences by revealing the trades and vocations for what they are and help guide the students to a more informed choice of career path. The other advantage that cannot be ignored is that those conducting the work experience or pre-trade courses are neutral parties whom the students are able to use as ‘sounding boards’ and who are well qualified to provide information on the trades concerned and also advice.

Unfortunately as related in chapter four, this does not always apply and some pre-trade students have less encouraging experiences. In these cases it is not the trade which is unsuitable, but the work experience supervisor who is to blame as well as the pre-trade co-ordinator for not checking that the pre-trade experience was fulfilling its function and the student was being given a good view of the trade work and environments. This was an aspect of the non residential pre-trade programmes that the students and employers found needed improvement and will be expanded upon in a later section.
In the pre-trade programme students doing work experience are placed with a potential employer

This was seen as a big advantage to both the pre-trade student doing one day a week with a work experience provider who is also a potential employer, and the employer him/her self. Predictably the students found it very valuable are able to market themselves in seeking employment, and the employer can assess the potential apprentice’s suitability before deciding whether to employ them or not. This does not apply to those attending the Unitec Multi-Skills course which is a residential course but there is the advantage for these students of a course report which can be added to their job applications.

The concept of providing work experience for the Gateways to Industry is gaining impetus within the industry as many of the employers and business owners see this as a cost effective system of vetting potential employees at no cost to themselves and being in the position of having a preferential selection. One employer remarked

You already know it’s (plumbing and gasfitting) something that they want to do, otherwise they wouldn’t have progressed any further, so the attitudes already there, whereas you’re taking a bit of a chance on the attitude when you’re taking someone straight from school that’s not worked in that kind of field before.

Another employer described is as the apprentice getting one foot in the door and if they were not offered a job with their work experience employer they were able to use them as a contact for a reference.

In terms of attitude the employers felt that this is an important factor for them, not only in deciding whether to employ someone but also in terms of the advantages to their business. They employers feel that apprentices who have pre-trade experience are generally better than those who do not. They believe that they are usually more
motivated to learning and being good at the trades that those who have not done pre-trade courses.

All but one of the non pre-trade apprentices felt that it would have been beneficial have attended a pre-trade programme as by doing so they would have been exposed to the trade culture as they would have had the opportunity to experience the type and variety of work to which they would be performing during their apprenticeship. They felt that this would have prepared them mentally for the transition from school or other career to a trade apprenticeship and helped to shape their expectations of the work that they would be required to do. Just as important they felt that the pre-trade would have confirmed their choice of career and built confidence that they were going into the right type of work.

There is no set curriculum of work activities and no report or record of achievement

Both the apprentices and the employers felt that this was a major flaw in two of the pre-trade programmes, these being the Pathways to Employment and the Gateways to Industry. As previously revealed in the research, the third programme, Unitecs Multi-Skills programme does provide a curriculum and a course report. With the other programmes there is no set series of activities to be undertaken by the participants and no report or record of achievement nor are any NCEA credits awarded to them. The lack of a report and NCEA credits is a disadvantage to school leavers seeking work.

Residential pre-trade courses conducted at Technical institutes do not fully teach trade work ethics or work application and do not give future employers any in-sight into the suitability of candidate apprentices.

Although this issue was mentioned by only one of the employers the problem must be recognised as valid and largely the result of the residential courses being conducted in an educational/teaching setting which arguably consists of an artificial environment. In
contrast the work experience pre-trade programme is conducted at the workplaces of the in industry and is real world learning.

A lot of career advisors and teachers have not got the right advice to give to students about career choices and Gateways is only available to decile 1 – 6 schools.

According to the research all sectors of the trades and industry see much value in the pre-trade programmes and the results they achieve. That aside, the issue of confining the Gateways to Industry programme to decile 1 – 6 school has been raised and seen to be a limiting factor in that it has the effect of ‘dumbing down’ trade applicants. If this is the case, it could be argued that the effect this rule creates, when viewed in relation to the technology and trade science becoming more complex, is the opposite of what is needed, i.e. apprentices who are capable of achieving learning levels 3-6.

6.3 LIMITATIONS OF THE RESEARCH

In terms of the long-term effects of the pre trade course, this research did not explore the success rates between those who did complete the pre trade programmes and the students who did not. So there is, at this stage, no information available as to the longer term benefits, if any, that may exist. A recommendation is that this research project could form the basis of further research into the long terms benefits and otherwise and the differences between the pass rates of both the National Certificate examinations and Registration examinations and also the success and retention of the two groups of students as they progress through their trade training and also their industry training providers and national examinations.
There were a number of limitations to this research which will be discussed below and suggestions which may mitigate them are offered. I do not believe that these have meaningfully influenced the research findings.

- No industry based programme co-ordinators or school career advisors were included in this research and therefore the perspectives of the pre-trade programme managers and to an extent the employers could not be fully representative of the pre-trade programmes.

- Although the focus group question guidelines were followed and completed the fact that apprentice focus groups were held during the lunch breaks of residential courses did impose a time constraint. This may have had the effect of limiting some addition observations from the participants.

- The student focus group interview questions and the apprentice questionnaires were designed at the . An attempt was made to try and anticipate what themes may same time. It is now obvious that if the focus group interview guides were designed after the questionnaires had been completed and examined, it would have possible in the focus groups to further explore any unanticipated themes revealed such as students’ experiences in how they set about choosing the best trade for them.

### 6.4 RECOMMENDATIONS

The third research question seeks information on how the pre-trade programmes could be improved. This section presents the recommendations from this thesis.

**Providing a check list or work guide to work experience firms.**

A checklist or work guide should be integrated into the school based and industry based programmes so that school leavers know what they will be doing during their
work experience and the owners of those firms are fully aware of their responsibilities in terms of the work experience that the school leavers should be exposed to.

Based on the request by participants for some measurable outcomes to be achieved by the pre-trade programmes this would provide consistency and a system that could be used to determine the suitability of the students for a career in the plumbing and gasfitting trades and increase the awareness of the usefulness of the pre-trade programmes within the Industry.

**Full integration of the pre-trade programmes with all schools**

The issue of the pre-trade programmes only extending to decile 1 – 6 schools should be reviewed so that all school leavers have direct access to quality information about a career in the trades from members of industry. The realisation that the normal paradigm of the trade apprentice was not suitable for the more advanced training requirement and of course on going operational requirements of some of the Industry could indicate that the trades should have access to the decile 7 – 10 schools.

Based on the principle of integration, Industry could design a standard pre-trade programme package which would be made available to all schools. In this way the school leavers from the lower decile schools would still have their access to the trades as a career but so would those from the higher decile schools which would provide potential trade personnel for all levels of the future Industry.

**Create an industry profile of the required attributes for those entering the plumbing and gasfitting trades**

It would be favourable if the Industry and ITO provided a plumbing and gasfitting trade profile for the use of the work experience firms, and for the assistance of the school co-ordinators and career advisors. As each district in New Zealand has a Master
Plumbers and Gasfitters organisation this network could be the vehicle for the profile or similar to be created.

**Provide NCEA credits and a Programme Report**

In terms of the pre trade programme, we could also conclude that by working one day a week with a plumbing firm and going out on jobs with tradesmen and being given tasks in support of the work the tradesmen were doing, that they become familiar with the hand tools, they become familiar with the safety on the job and they do small tasks such as measuring materials, cutting, digging, a bit of hard labour, they also learn how basic components work and the job site safety routines. They are introduced to these and another logical conclusion is that they are comfortable with the trade in terms of what they are expected to do, also to a large extent culture within the trade, the disciplines within the trade and the work routines that they will be expected to do. The question then arises of who would record this and prepare the report. The employers and apprentices agree that such a report would be beneficial and recommend that they be provided and that NCEA credits be incorporated into the plumbing and gasfitting pre-trade programmes at the conclusion of a suitable performance of work experience.

### 6.5 FUTURE RESEARCH

This section presents one area that the research did not explore which deals with the longevity or transitional nature of the benefits accrued by the apprentices from the pre-trade programmes. It is as yet unknown what long term effects if any the pre-trade programmes have and whether the pre-trade apprentices were better than their non pre-trade associates for the full term of their apprenticeships or whether this was a temporary state of affairs. Future research carried out in relation to pre-trade programmes in New Zealand could focus on this topic.
The nature of the benefits accrued from Pre-Trade programmes

A recommendation is presented that this research project could form the basis of further research into the long terms benefits or otherwise and the differences between the pass rates of both the National Certificate examinations and Registration examinations and also the success and retention of the two groups of students as they progress through their trade training and also their industry training providers and national examinations.

6.6 SUMMARY

This chapter summarised the findings of this case study evaluation and the conclusions that can be drawn from it. To achieve it's aim this research has explored three pre-trade programmes and the activities and experiences of the school leavers who attend them as well as the perceptions of the pre-trade managers and plumbing and gasfitting employers. In addition this research examined the advantages that students accrue from attending pre trade programmes prior to starting their trade training as opposed to those who did not. The greatest advantages were in the areas of a) identifying to the student where their true interest lay in terms of a future trade career and b) to confirm that the choice they have made is actually correct and that this is indeed the employment path they wish to follow and c) they felt confident and that they were capable when they started their apprenticeship and they had been exposed to the work ethic and the trade culture and they felt confident and obviously slightly apprehensive but still confident when they started work.

In contrast, those students who had not done pre-trade courses were the exact opposite. They did not feel confident that they were doing the right thing and they did not feel confident, in fact quite apprehensive when they first started work, because
they knew nothing and they realised they were of limited use perhaps. They had a steep learning curve which took some time for them to master.

In terms of the pre-trade experience, particularly the industry-based programme and to a lesser extent the urban technical institute course, the pre-trade students were inculcated into the knowledge that there was a lot of theoretical work and exams to be passed if they wished to be qualified. These programmes both have theoretical components in terms of learning and assessment and these are basic elements of the trade but nonetheless we can conclude quite comfortably that it gives the potential apprentice a very good insight into the level of theoretical learning that they must be able to achieve.

This research has shown that pre-trade are important for the future sustainable numbers of those successfully undertaking trade training. This research also highlighted that the pre-trade programmes are deficient in some aspects and it has identified areas in which they can be improved. From the research findings it would have to be concluded that these courses do assist in confirming to the potential apprentices that the work in the selected trade was within their ability; that the trade was one that they were comfortable with; that the work discipline was introduced to them. Further more the pre trade programme gave them the ability to be able to clarify their view as to whether this was the trade they wanted and also give them information on the type of work and the difficulty of work as well as the input from their fellow workers as to the rewards to be gained from the trade. Today’s apprentices are the future of the New Zealand trade system and those who took part in this research are very supportive of pre-trade opportunities and acknowledge the advantages and benefits which pre-trade programmes bestow to school leavers.
REFERENCES

Berridge, J. (2008). *Graduation speech, the state of trade training in New Zealand.* Speech presented for the Apprenticeship training Trust graduation ceremony at the North Harbour Stadium, New Zealand.


Appendix A

Employer Interview Guide

Date_________________________

Interview conducted by_______________________________________________

Time Interview began_____________.  Time Interview finished______________

Interview recorded on____________________________________________________

Q1. What type of business do you run?  Tell me the kinds of work that you do.

Q 2. How long ago did you begin to employ apprentices?

Q 3. Before you started taking on your apprentices, what appealed to you most about the idea of having them in your business?

Q 4. What criteria do you use and what do you look for when selecting an apprentice? Tell me about the problems that you have encountered with apprentices.

Q 5. What were your expectations of your apprenticeships?  Can you tell me how these expectations were formed.

Q 6. I understand that you have employed apprentices who have had pre-trade experience and those who have not.  Is this true?

Q 7. How many of each have you employed?

Q 8. Was there any difference in attitude and ability between those apprentices who had some pre-trade work experience in the Plumbing and Gasfitting trades before you took them on and those that did not?  Tell me about the differences that you noticed.

Q 9. Did you have any knowledge or involvement with any of the pre-Trade Programmes before you started taking on apprentices?  Tell me about this.
Q 10. From your experience do you think that the pre trade experience is a valuable experience before a person joined the trades? Tell me why you think this.

Q 11. How effective do you think the pre trade programme experience was in preparing people for an apprenticeship? Tell me why you think this.

Q 12. From your experience is there anything that you think could be done to improve the current pre-trade programme experience to better prepare people for trade training?

Q 13. Do you have any other comments on any matters relating to pre trade experience and its advantages to a person considering taking up an apprenticeship in the plumbing and gasfitting trades?

UREC REGISTRATION NUMBER: 2009-997
This study has been approved by the UNITEC Research Ethics Committee from 9 September 2009 to 9 September 2010. If you have any complaints or reservations about the ethical conduct of this research, you may contact the Committee through the UREC Secretary (ph: 09 815-4321 ext 6162). Any issues you raise will be treated in confidence and investigated fully, and you will be informed of the outcome.
Appendix B

Student Focus Group Interview Guide

Date __________ Time started_____________ Time finished_____________

Interview recorded on ________________________________________________

Q 1. What made you want to become an apprentice in the Plumbing and Gasfitting Trades?

Q 2. Before you started your apprenticeship, what did you know about the types of work that would be involved in the Plumbing and Gasfitting trades?

Q 3. What were your expectations of the type of work you would be required to perform in the Plumbing and Gasfitting trades before you started your apprenticeship? Tell me how these expectations were formed.

Q 4. What pre-trade work experience in the Plumbing and Gasfitting trades did you have before you started your apprenticeship and who provided it and how long did you do it for?

Q 5. Tell me about the pre-trade work experience. Who arranged it and what did it consist of?

Q 6. In relation to pre-trade Programme you went on before you started your apprenticeship tell me what you did on the programme and how long it lasted.

Q 7. Do you think a period of pre-trade training would have been beneficial to you before you joined the trades? Tell me why you think this.

Q 8. Do you think that the pre trade experience was a valuable experience before you joined the trades? Tell me why you think this.

Q 9. How effective do you think your pre trade programme experience was in preparing you for your apprenticeship? Tell me why you think this.

Q 10. What aspects do you see as the strengths of the pre trade programme you attended?

Q 11. Having heard about the pre-trade training programmes, and knowing what you know now about entering the trades without pre-trade, what advice would you give someone who wanted to start trade training. Why would you give this advice?
Q 12. Are there aspects that you believe could improve the current pre-trade programme experience to better prepare students for trade training? Tell me what they are.

Q 13. Do you have any other comments on any matters relating to pre trade experience and its advantages to a person considering taking up an apprenticeship in the plumbing and gasfitting trades?

UREC REGISTRATION NUMBER: 2009-997
This study has been approved by the UNITEC Research Ethics Committee from 9 September 2009 to 9 September 2010. If you have any complaints or reservations about the ethical conduct of this research, you may contact the Committee through the UREC Secretary (ph: 09 815-4321 ext 6162). Any issues you raise will be treated in confidence and investigated fully, and you will be informed of the outcome.
Appendix C

Pre-Trade Programme Manager Interview Guide

Location______________________________________________________________

______________________________________________________________

Time Interview started_____________Time Interview finished_____________

Interview recorded on______________________________________________

Q 1. What is the span of trades that your pre-trade course covers?

Q 2. How long have your pre-trade courses been running?

Q 3. What activities do students get to undertake during your pre-trade programme?

Q 4. Who or what has the most influence in preparing students/school leavers for a career in the trades or industry?

Q 5. What partnerships with other organizations do you have in order to be able to provide your programme to school leavers?

Q 6. Does your organisation provide training itself or is this provided entirely by partnership firms.

Q 7. If I was a student who has just joined up for the plumbing and gasfitting pre-trade programme, what activities will I take part in throughout the course.

Q 8. Is there a set series of work/trade activities that students are to complete on their pre-trade courses?

Q 9. How is the programme organized and how long does it run for per student?
Q 10. What do you think are the strengths of your programme?

Q 11. What if anything could be done to improve your pre-trade programme? Tell why you think that?

Q 12 Do you receive external funding or material support to run your programme?

Q13. Do you have any other comments you would like to add?

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Appendix D

Student Questionnaire (Pre Trade)

Reference_______________________

Name_________________________________________________________

Trade / s_______________________________________________________

1. In which city or town did you attend College or Secondary school?

2. What was the name of the College or Secondary school that you attended?

3. What year did you start College or Secondary School ?______________

4. What year did you finish College or Secondary School ?______________

5. What year did you start your apprenticeship ?______________

6. Circle the appropriate response. What made you want to start an apprenticeship in the Plumbing Trade; family, parents, friends, school career adviser, Newspaper adverts, Trade Publications, Other?

___________________________________________________________________

7. Circle the appropriate response. What made you want start an apprenticeship in the Gasfitting Trade; family, parents, friends, school career adviser, Newspaper adverts, Trade Publications, Other?

___________________________________________________________________

8. Before you started your apprenticeship what did you like most about Plumbing and Gasfitting? Please give details.___________________________________________________________________

9. Before you started your apprenticeship, what did you know about the type of work you would be required to do in the Plumbing and Gasfitting trades? Please explain.___________________________________________________________________

10. What pre-trade work experience in the Plumbing and Gasfitting trades did you have before you started an apprenticeship? Please
11. Who arranged for your pre-trade work experience in the Plumbing and Gasfitting trades before you started an apprenticeship. Was it your parents, school or college, or someone else?

____________________________________________________________________

12. Did you any involvement with The Gateways Programme, or the Pathways Programme in the Plumbing and Gasfitting trades before you started an apprenticeship? If so which? Please give details and explain what this consisted of.

____________________________________________________________________

13. What were your expectations of the type of work you would be required to perform in the Plumbing and Gasfitting trades before you started your apprenticeship? Please explain how these expectations were formed.

____________________________________________________________________

14. (Please circle your most appropriate response) Do you think that the pre trade experience accurately shaped your expectations of the type of work you would be required to perform in the Plumbing and Gasfitting trades?

   Definitely not - Not very - Not sure - Probably - Yes. Please explain why.

____________________________________________________________________

15. (Please circle your most appropriate response) How effective do you think your pre trade programme experience was in preparing you for your apprenticeship?

   Not at all - very little - Not sure - quite effective - very effective.
   Please explain why.

____________________________________________________________________

16. What could be done to improve the current pre-trade programme experience to better prepare students for trade training?

____________________________________________________________________

17. Do you have any other comments on any matters relating to pre trade experience and its advantages to a person considering taking up an apprenticeship in the plumbing and gasfitting trades?

____________________________________________________________________

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Appendix E

Student Questionnaire (No Pre-Trade)

1. What year did you finish College or Secondary School

2. What year did you start your apprenticeship?

3. Circle the appropriate response. What made you want to start an apprenticeship in the Plumbing Trade; family, parents, friends, school career adviser, Newspaper adverts, Trade Publications, Other

4. Circle the appropriate response. What made you want to start an apprenticeship in the Gasfitting Trade; family, parents, friends, school career adviser, Newspaper adverts, Trade Publications or other?

5. Before you started your apprenticeship, what did you like most about the Plumbing and Gasfitting trade?

6. Before you started your apprenticeship, what did you know about the types of work that you would be required to do in the Plumbing and Gasfitting trades? Please explain what you did know and how you knew this.

7. What experience in the Plumbing and Gasfitting trades did you have before you started your apprenticeship? Please explain.

8. What were your expectations of the type of work you would be required to perform in the Plumbing and Gasfitting trades before you started your apprenticeship?

9. Who or what had the most influence in creating your expectations and why was this?

10. (Please circle your most appropriate response) Do you think that a period of pre-trade experience would have been helpful in giving you some idea of the type of work you would be required to perform in the Plumbing and Gasfitting trades?
11. (Please circle your most appropriate response) If you had have had pre trade experience of the type of work you would be required to perform in the Plumbing and Gasfitting trades would you have started your apprenticeship?

Definitely not - No - Not sure - probably - yes. Please explain why.

12. (Please circle your most appropriate response) Do you think that it would useful if you had some pre trade experience in order to help clarify your expectations of the type of work you would be required to perform in the Plumbing and Gasfitting trades?

Definitely not - No - Not sure - probably - yes. Please explain why

13. Do you have any other comments

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Appendix F

RESEARCH INTO PRE-TRADE PROGRAMMES CONSENT FORM.

I, the undersigned hereby acknowledge that I have read and understand the contents of the information sheet which is attached to this consent form. I further acknowledge that I consent to become a participant in the research project relating to an evaluation of plumbing and gasfitting pre-trade programmes in New Zealand that is being undertaken by Anthony Wareham, a lecturer at Unitec.

I understand and give my consent that any information I give in this project which relates to the research may be used as data for the evaluation of plumbing and gasfitting pre-trade programmes in New Zealand. I understand that I am able to withdraw from this research up to 2 weeks after data collection.

I consent that transcripts of any information I give may be kept as a permanent record of the research data that was collected during this research project. I affirm that I fully understand the part that I am expected to play as a participant and that no duress or inducements were used to make me agree to give the consents detailed above. I also declare that I have no conflict of interest associated with this research project.

Signed_________________________________________

Name __________________________________________

Dated___________________________________________

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Appendix G

PARTICIPANT INFORMATION FORM

My name is Anthony Wareham. I am currently enrolled in the Master of Education degree in the School of Education at Unitec New Zealand and seek your help in meeting the requirements of research for a Thesis course which forms a substantial part of this degree.

The aim of my project is: To evaluate the effectiveness of pre-trade programmes in preparing people for trade apprenticeships.

I request your participation in the following way: To take part as a current plumbing and gasfitting apprentice in answering a questionnaire and to take part in a focus group, or if an employer or pre-trade course manager to take part in an interview.

Your consent to participate is voluntary and may be withdrawn within 2 weeks after data collection. Neither you nor your organisation will be identified in the Thesis. To protect your identity a coded system will be used to reference the sources of data and/or information. The results of the research activity will not be seen by any other person in your organisation without the prior agreement of everyone involved. You are free to ask me not to use any of the information you have given, and you can, if you wish, ask to see the Thesis before it is submitted for examination. Your right to terminate or alter the conditions of your participation in this research project will be respected and you may, withdraw consent for information already obtained to be used in the research project.

The location of interviews will be away from the Building Services Department in order to further protect the identity of those taking part in this research.

I hope that you will agree to take part and that you will find your involvement interesting. If you have any queries about the research, you may contact my principal supervisor at Unitec New Zealand. My supervisor is Melanie miller, phone 815 4321 ext. 8176 or email mmiller2@unitec.ac.nz

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