

The factors that contribute to young people's attraction to, and retention in agricultural careers.

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Master of Education

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DECLARATION

I certify that except where due acknowledgement has been made, the work is that of the author alone; the work has not been submitted previously, in whole or part, to qualify for any academic award; the content of the thesis is the result of work which has been carried out since the official commencement date of the approved research program; editorial work, paid and unpaid, carried out by a third party is acknowledged; and, ethics procedures and guidelines have been followed.



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TABLE OF ACRONYMS

Acronym	Details
RIST	Rural Industries Skill Training Centre Incorporated
VET	Vocational Education and Training
NCVER	National Centre for Vocational Education Research
Parliamentary Inquiry/ Parliamentary Paper 135	'The Regional and Rural Committee of the Victorian Parliament –“Inquiry into the capacity of the farming sector to attract and retain young farmers and respond to an ageing workforce” Final Report May 2012

ABSTRACT

This research study investigated the major factors that encourage young people to pursue and maintain a career pathway in the red meat and wool sectors in agriculture. It was undertaken in response to industry commentary that suggested fewer young people in Australia are taking up careers in agriculture at a time when it has been predicted that agricultural production will need to double by 2050 to cater for world food requirements. The subjects were students from one training college undertaking a Certificate II, III, and IV in Agriculture, a small group of their parents, career teachers at local high schools, industry representatives and agricultural employers. The study identified that training providers, employers and parents provided the strongest positive influences on a student's decision to undertake a career in agriculture. Career teachers' influence was minimal, and in some cases negative. Students saw agriculture as a well-paid industry that was suited to people with high skill levels and provided good career pathways. Students and their parents were of the strong view that there was a lack of industry support for, and positive promotion of, agriculture. Feedback from industry representatives identified significant gaps in the provision of general career information on agriculture for career teachers. The early engagement of students (15 – 16 years of age) into an agriculture course was also identified by the study as a positive influence as was the encouragement of providers of agriculture courses at a vocational educational level to engage more with industry to provide practical workplace training.

CHAPTER ONE

INTRODUCTION

1.1 The Rationale for this Research Study

The continued maintenance and enhancement of Australia's food production industries are essential.

'The global demand for foods will more than double over the coming half-century, as we add another 4.7 billion people. By then we will eat around 600 quadrillion calories a day, which is the equivalent of feeding 14 billion people at today's nutritional levels. The central issue in the human destiny in the coming half century is not climate change or the global financial crisis, it is whether humanity can achieve and sustain such an enormous harvest' (Cribb 2010, p. 1).

'Agriculture is a vital part of the Australian economy and is likely to remain so. Its ongoing viability however depends on having a well-qualified workforce at all levels' (Pratley 2008, p. 27).

For Australian agriculture to keep pace with these rising demands for food production it is essential that young people are recruited and retained in this industry. Agricultural education in Australia is entering the crossroads with the numbers of students pursuing agriculture at a tertiary level rapidly declining and the demand out-stripping supply. The number of students graduating in agricultural science is around 800 per year whilst the industry demand ranges from 2,200 to 6,000 (Pratley & Hay 2010).

In the Australian Vocational Education sector the picture does not look much brighter. The NSW TAFE core training activity in primary industries fell by 22% between 2003 and 2006, and there have been even steeper declines since 2006 (Welsman 2008, p.15).

With this backdrop it is critical that Australia finds effective strategies that will:

- reduce the exodus of young people from regional and rural areas, and
- re-invigorate their interest in agriculture as a positive career for young people.

1.2 The Research Question

The research question that directed this study is:

What are the major influences that either encourage or discourage young people from being attracted to an educational and career pathway in agriculture?

The focus of this study was specifically on the Red Meat and Wool sectors, within the geographical boundaries of South-West Victoria (Appendix One). While the demographics of this study are reasonably confined, it can be argued that the findings and recommendations will have applicability across Australian agriculture as a whole and Australian agricultural education.

1.3 The Aims of the Research

The aims of this research study were to gain a more in depth understanding of

1. Why today's young people appear to be less interested in agriculture compared to those of previous times. This question will look at factors such as:
 - a. What external factors influence their decisions to pursue either an educational pathway or career in agriculture?
 - b. Whether educational experiences influence young people's decision to continue with a career in agriculture.
2. How young people and others currently perceive careers in agriculture. This question will be expanded to include:
 - a. What impact the industry profile of agriculture has on young people's decisions to pursue agricultural education or an agricultural career.

The outcomes of the study have been used to identify a number of strategies and make recommendations that the author believes will be of benefit to a range of stakeholders in both agriculture and agriculture education.

1.4 Background

1.4.1 The Industry

The current skill shortage in the red meat and wool sectors of agriculture is a serious challenge to the ongoing productivity and sustainability of this very important agricultural sector in the south west Victoria. This issue will become even more critical as an increasing number of people exit the industry over the next ten years. The average age of a livestock farmer/farm employee in Australia is 55 years (ABS, Land Management and Farming 2011).

‘Australian agriculture faces a range of challenges, including climate change and global food shortages, which are increasing the labour and skill needs in agriculture industries. Securing an adequate supply of suitably skilled labour is vital in optimising Australia’s agricultural productivity. Improving the skill level of the agriculture workforce is essential to enhancing innovation, strengthening competitiveness, boosting resilience and developing a larger capacity for the agriculture industry to capitalise on opportunities and contribute to global food security’ (Primary Industries Ministerial council (WTSI) 2010, p 4).

These challenges are of particular importance in the agricultural industry across the south-west of Victoria. Agriculture dominates land use in south west Victoria, occupying 72% of the region. Native forest and nature conservation occupy 17% and commercial forestry 5%. The total value of all agricultural production in the south west of Victoria is currently \$2.1 billion. This represents 20% of Victoria’s agriculture. 90% of farms are involved in livestock production with sheep, beef cattle and dairying the most common commodities. The total production from the wool, sheep and beef sectors is \$970 million per year, with the dairy industry contributing \$690 million and the cropping industry \$135 million (Mackinnon 2008).

Sheep and cattle are the dominant agricultural industries in south west Victoria with a total value of agricultural production of over \$2.1 billion per annum. The importance that primary industries in general, and livestock in particular, play in underpinning one in six jobs in provincial Victoria cannot be underestimated (MacKinnon 2008).

The lack of young people looking to pursue agriculture at the level of a farm owner, manager, or employee is posing a major challenge for farming operations in this area. Farming operations today need owners/employees who are highly motivated, educated, trained and multi-skilled. These are the key drivers for productivity growth in the agricultural sector. A recent report by the Productivity Commission into trends in Agriculture indicates that one of the key drivers for productivity growth will be appropriate tertiary training in the agricultural workforce (Productivity Commission 2005).

1.4.2 Demographics of the South-West Region of Victoria

The population of south-west Victoria (i.e. the Barwon South West Region) totals 355,000. The population aged 75 years and over in this region is projected to rise from 7.9% in 2006 to 15.4% in 2036 (Regional Development Victoria 2011).

The average weekly income within this region was \$537 compared with the Victorian Average Income of \$600 (2006 Census). This varies within the region with some parts of the region having a lower average income than others. For example, the Moyne region is \$530 while the Geelong region has an average weekly income of \$542 (Wiseman et al. 2006).

Unemployment in the Barwon-South Western region is 5.7% compared to Victoria's 5.4%. Glenelg Shire has the highest regional rate 7.3%; Surf Coast Shire 3.4% has the least amount of unemployed persons (Pope 2011).

There has been a significant net migration of people aged 15-24 out of the region between 2001 and 2006. This migration out is being compensated to a lesser degree by an inward migration of people aged 30- 65. The result of this imbalance of migration into the region is that the percentage of people aged over 65 is predicted to grow by 40% through to 2026 (Pope 2011).

1.4.3 The Education Providers in the South-West Region of Victoria (excluding the Greater Geelong area)

This region is well serviced by a wide range of education providers both at primary and secondary level (public, private and catholic schools), post-secondary level (TAFEs, Universities and private training providers), and a number of adult education providers. There are a number of agricultural training providers servicing the area. These include South West TAFE (with campuses at Warrnambool, Portland, Glenormiston and Hamilton), Goulburn Ovens TAFE with a campus at Terang, and the Gordon TAFE with a campus at Colac. There are two University campuses, Deakin University at Warrnambool and RMIT at Hamilton, but neither offer courses in agriculture.

There are five secondary schools in the region offering VCAL in agriculture. The number of students undertaking VCE agricultural and horticultural studies continues to decline across Victoria, putting at risk the state's capacity to provide a future workforce for the agricultural industries which are a major driver of wealth creation for the state. A comparison of students studying agriculture in Victorian schools indicates that the participation rate is less than 1% of the total students enrolled in tertiary education whereas in NSW in 2010 it was 2.3% of the students (Dullard 2011).

1.4.4 The Researcher

The researcher is the Chief Executive Officer of Rural Industries Skill Training Centre (RIST) and has been employed in this role since March 2003. RIST (formerly WRIST-Wool & Rural Industries Skill Training until 1998) is an entity created by a group of Wool Growers in 1992 in response to the lack of quality training within the wool industry. RIST is now one of Australia's largest independent agricultural training organisations providing vocational educational pathways from Certificate II in Agriculture through to the Diploma of Agriculture. It also specialises in short course training to the rural sector. The researcher has a substantial understanding not only of training in agriculture, but in agriculture itself, having been raised on the land and having a significant rural background in the wool and beef industries across most areas of Australia.

RIST, as one of the largest providers of training in Agriculture, is currently experiencing a strong demand for young people to fill agricultural vacancies at a farm hand or manager level. This trend is supported by feedback from employers and employment network providers who are unable to fill on- farm vacancies.

1.4.5 Industry and Government Involvement

State and Federal Governments have recognised the need to attract more people to agriculture and a number of Parliamentary Inquiries have been initiated in 2011 to investigate this issue. The Inquiries have focused on approaches to attract young people to agriculture, through to the quality of agricultural education and training and the reasons why young people are not attracted to agricultural education and training at a higher education level. The researcher made a submission to, and was invited to present to the Inquiry into rural skills training and research conducted by the House of Representatives Standing Committee on Agriculture, Fisheries and Forestry in February 2007.

Industry bodies such as the Agrifood Skills Australia, Rural Skills Australia, Primary Skills Victoria, Victorian Farmers Federation, the National Farmers Federation and The Primary Industries Education Foundation have also identified the growing skills and labour shortages and have been lobbying government for action (Agrifood Skills Australia 2009 & 2010).

1.5 Summary

This project was driven by the researcher experiencing first hand in his training organisation the lack of interest by young people in either pursuing an education or career pathway in agriculture in the south west of Victoria. In response to this issue the researcher undertook some preliminary discussions with people involved in the industry to gauge whether this was an issue specific to agriculture, and in particular to the red meat and wool sectors in the south west of Victoria. These consultations were with people employed by industry bodies, friends and associates involved in agriculture, employers and parents of young people off farms. The negative feedback the researcher

received from an address to year nine students at a rural school in south west Victoria confirmed the urgent need for further investigation of the issues around attraction and retention of young people to agriculture.

The importance of agriculture to the region's economic health, the ageing agricultural workforce, the exodus of young people from the region and the diminishing numbers of students interested in agriculture at school or at a vocational and tertiary level were additional reasons the researcher felt compelled to undertake this project.

What the researcher discovered in a brief literature review on the issue of young people's lack of interest in agriculture was not confined to the south west of Victoria, but was a national and international issue; providing a further reason for the researcher to undertake this project.

CHAPTER TWO

LITERATURE REVIEW

This literature review is an examination of research previously undertaken, and views put forward by key industry experts regarding the issues affecting the recruitment and retention (sustaining) of young people in agriculture and the influence education has on sustaining these people within that industry.

The literature review focused on the key issues within the research question, namely:

- The current issues and trends in attracting and retaining young people in agriculture.
- Young people's interest in agriculture as a career.
- Young people's perception of agriculture as a career.
- The key drivers for recruitment and retention of young people in agriculture.
- Whether these issues only pertained to the red meat and wool industry in the south west of Victoria?

The Researcher's findings were that there was a substantial amount of literature around these issues. However, much of it, whilst worthy and probably supported by the majority in the industry, is more a statement of the problem or an encouragement to action rather than an informative analysis of the situation. For example:

'A case is made that agriculture remains a vital part of the Australian economy despite its poor image and changing demography' (Pratley 2008, p. 27).

'I believe that since the 1980's, we have taken our eye of the ball and more trendy movements have taken our focus, agricultural education has languished' (Archer 2011, p. 11).

There is a significant amount of material written both nationally and internationally on the exodus of young people from rural areas and the skills shortages placed on the agricultural sector because of an ageing workforce. The following quotation succinctly states the current situation and some of the issues;

'There have been many reports and findings about the future of agriculture; skills and labour shortages, education and training needs and the promotion of agriculture to young people. Further research would confirm that reports and recommendations are often seen as an end in themselves, not as the next step to the future' (Tongs 2008, p. 55).

However so far nobody appears to have pulled the various threads together to develop a meaningful solution that addresses the issues of why agriculture is no longer an attractive career option for young people, and how to reverse this trend. Some of the factors that have been suggested and examined in the literature include:

- The role of education in agriculture.
- The poor image of agriculture.
- Lack of perceived career pathways in agriculture.
- Influences on Students;
 - Parents
 - Peers
 - Employers
 - Teachers/career teachers
- Whether young people not involved with agriculture share similar perceptions of the industry and experience similar influences to those involved in the industry.

2.1 The Role of Education in Agriculture

Dodd (2011) conducted a small research project on sustaining agriculture as a subject in NSW High Schools. In this study she explored the issues surrounding the decline in the availability of agricultural courses in NSW High schools, and she suggested a solution that involved developing opportunities to establish and promote subjects based around alternative agricultural systems in the syllabus for high school agriculture in NSW.

However, given the traditional nature of agriculture, the unconventional model she has proposed would probably inhibit its uptake.

The problem of recruiting students into Agricultural education programs, as perceived by the teachers at the schools across the United States of America was the focus of a study by Dyer and Breja (2003). These researchers concluded:

'The recruitment of quality students continues to be one of the most important and complex problems currently facing both secondary and university education programs' (Dyer and Breja 2003, p. 76).

They conducted extensive surveys of agriculture teachers in the United States to gain a better understanding of the key questions and problems involving the recruitment of students into agricultural education. There was a broad range of teacher responses, many could relate to any subject (e.g. scheduling difficulties, finding time to recruit, student involvement with other activities). There were, however, three points that related solely to agriculture:

- There is a lack of guidance counsellor support.
- There is a lack of interest in agriculture.
- Agriculture has a poor image.

2.2 The Poor Image of Agriculture

The poor image of agriculture appeared to be a strong theme in much of the literature reviewed. In some cases it was a bold unsubstantiated statement, in others the poor image was explored further.

In its Final Report, The Primary Industries Ministerial Council, (Workforce, Training and Skills Issues in Agriculture (2010)), working group states:

'One of the most significant impediments to attracting people to study and work in the agriculture industry is its poor image' (The Primary Industries Ministerial Council (WTSI) 2010, p 14).

Further support for this view comes from Greg Hallihan from Primary Skills Victoria who states that:

'Poor perceptions of this industry (agriculture) will be hard to turn around but it is essential that this be achieved to redress the low numbers of the younger age bracket in the industry in this state' (Scarlet Consulting 2005, p 71).

A Rural Futures Report (2007) detailed;

'The reality that we need to deal with is the perception of the industry (agriculture)' (Rural Futures Report 2007, p, 5).

These are very bold statements that are difficult to refute, but are equally difficult to substantiate. What contributes to a poor image?

- The perception of rural people as whingers.
- The perceived low wages and profits.
- The working conditions in agriculture.
- A lack of understanding of agriculture in the 21st century.

The challenge facing the agricultural industry is to counteract these perceptions so that it is not seen as a low skilled, poorly remunerated sunset industry.

2.3 Poor remuneration in agriculture

Poor remuneration has been raised by those in the industry, researchers and commentators (both within Australia and internationally) as one of the factors that contribute towards the poor image of agriculture. It has been argued that agriculture is perceived as a low-paying industry where workers are required to work long hours for minimum wages;

'The overwhelming influences of remuneration, opportunity, management relationships and working conditions are contributors to being unable to retain young people within the Agricultural sector' (Rural Futures Report 2007, p. 5).

This perception is in many cases sustained by the older agricultural workforce and farmers who often complain about having to work from dawn until dark. If you are not working those hours then you are not seen to be dedicated to the job.

However, in Australia the perception and the reality can often be diametrically opposed. A 2008 survey conducted by the National Farmers Federation into Labour Shortages in Agriculture identified that the actual pay rates for farm managers averaged \$84,911 per annum plus bonuses of between \$500 and \$20,000. They also found that the lower-end wages for jackeroos were still above most well-paid juniors across a large number of other surveyed industries (National Farmers Federation 2008).

2.4 Working Conditions

A recurring perception of careers in agriculture is that it inevitably involves:

‘Manual labour with limited (if any) skill requirements, that may not provide secure ongoing work or opportunities to develop and advance careers’ (The Primary Industries Ministerial Council (WTSI) 2010, p. 15).

Cummins (2009) made the following points in her study which investigated rural children’s perception of life in Canada:

‘However, while many of them spoke of working hard and enjoying this dimension of their life, this finding could suggest that we are socializing our children to be less devoted to hard work given that few of them desire to farm in their future—which they appear to ascribe directly to the hard labour involved. This may help to explain why the family farm continues to be disappearing as a lifestyle’ (Cummins 2009, p. 80).

‘The reality is that many of the operations of modern businesses across the agricultural sector reflect a broad spectrum of activities and high level skill’ (Cummins 2009 p. 80).

An example is in cropping enterprises where the use of computer technology is the norm both in machinery and in the management of cropping cycles, planting, weed and pest controls, through to the marketing of the commodity. In grazing enterprises many larger properties now use satellite technology to control water management, mustering of cattle. In the dairy industry, the operations of grazing livestock and dairy and milk management is very much controlled by technology.

Agriculture should also be seen not just as 'working on a farm' but as a wide-ranging collection of many complex industries that involve agricultural science, veterinary practices, banking, corporate management and animal health specialists.

The agriculture industry is also a very poor promoter of itself to young people and this is compounded by some of the media portrayals of farmers as being slow talking, unintelligent people:

'One of the most significant impediments to attracting people to study and work in the agriculture industry is its poor image' (National Farmers Federation 2008, p. 26).

2.5 Lack of a Career Path

'Many young people perceive agriculture as lacking any career pathway and therefore it is regarded as a dead end industry. There remains a common misconception that the agriculture industry offers plenty of job opportunities, but with the exception of farm ownership, limited opportunities for a career' (Dyer & Breja 2003, p. 75).

Ian Piggott, aged 39, and a former winner of the Farmers Weekly/NFU Farming Champion award in the UK has stated that;

'in sharp contrast to the way that our industry operates, our efforts to entice people to pursue careers in food and farming lack any entrepreneurial flair, lateral thinking or drive. I went to talk at a school careers fair last week, trying to encourage 17-year-olds to consider the opportunities that food and farming present. None of the pupils had considered it as a viable option and, like those at many of the schools I talk to, they had never previously had a careers talk from our industry' (Piggott 2010, p. 1).

In reality the agricultural industry does offer career pathways. For example, young people can begin as a trainee on a farm and progress through to being a manager. This may not necessarily be on the one farming operation but on a number of farms and locations. Young people can also begin employment in associated agricultural industries and then, if motivated, trained and up- skilled to progress through to be a senior manager in large corporations such as AA Co, Elders, Landmark or the major banks.

2.6 Influences on Young People

One of the greatest impediments to sustaining young people in agriculture is the negative influences of others on young people who begin to show an interest in agriculture as a career:

'The evidence suggests that this negative image arises from several sources, the most important of which is captured in a phrase heard frequently by the committee, 'farmers are their own worst enemies', in other words many farmers often talk down farming (Victorian Government, Inquiry into the capacity of the farming sector to attract and retain young farmers and respond to an aging workforce' (Victorian Government, Parliamentary Paper no 135 2012, p. 11)

2.6.1 Parents

'For most youth, parents are the primary source of help in preparing for further education and work. There is a strong positive relationship between academic achievement, and both participation in extracurricular activities and positive parent-child relations' (Rural Futures Report 2007, p. 4).

The views of their parents are highly regarded by students. In a study by Miller & Kollegger et al. (2011) that looked at the motivations and attitudes towards agriculture of first year science students at the University of Queensland:

'54% of students were influenced in their career/study choice by their parents, 36% were influenced by workers in the field of Science and 34% were influenced by friends' (Miller & Kollegger et al. 2011, p. 7).

This view was supported by the Rural Futures Report of young people aged between 15-25 years:

'Parents, family worldwide view, attitudes and values were primary influences on occupational choice' (Rural Futures Report 2007, p. 5).

Many parents have experienced difficult times in their farming operation. In the south west of Victoria a large number of farms were made up of 'soldier settler blocks' which were marginally viable. While there were some good years, the viability of the farming operations was governed very much by seasonal and market conditions. The south west

of Victoria was predominantly a sheep and wool growing area up until the last 15 years, and this industry was hit badly by the collapse in wool prices. Because of this collapse, many farming families suffered very poor financial returns, yet their work on the farm did not stop. As a result of this many parents advised their children to look elsewhere for employment because the farm was not viable. The children also saw first-hand the hardships on the farm and as a result were less interested in farming as an employment option.

This dynamic is supported by a study conducted by Miller & Kollegger et al. (2011) who found that:

'Only 4% of students who experienced low parent encouragement to attend college planned to enter a post-secondary program and major in a STEMM field (science, engineering, technology, mathematics and medicine). This compares to 41% of students whose parents strongly encouraged college attendance' (Miller & Kollegger et al. 2011, p. 7).

In 2007 the researcher spoke to 150 Year 9 students at a Career Day at the Hawkesdale Secondary School in south west Victoria about careers in agriculture. These students came from either a farming background or from a rural environment. The first question the researcher asked the students was 'who is going to undertake a career in agriculture?' Only one hand went up. Later in the day the larger group broke up into smaller groups and there was an opportunity to talk to the students about their intentions in relation to a career in agriculture, but only one additional student indicated that they were keen to choose this direction.

The reasons given for their lack of interest included: not wanting to experience the same difficult life as their parents had experienced; because farming was too hard and poorly remunerated; they couldn't see any future in farming; their parents were pushing them to do something else, and they wanted to move away from the local area. Young people may also be influenced by their peers and teachers.

2.6.2 Peers

Another negative influence possibly comes from the students' peer group who talk about going to Melbourne to go to University and/or to pursue other careers such as science, engineering, medicine etc. Agriculture is not often presented as a progressive and innovative industry.

Miller & Kollegger et al. (2011) found that:

34% of students recorded an influence by friends in their career choice (Miller & Kollegger et al. 2011, p 7).

2.6.3 Teachers/Career Teachers

Miller & Kollegger et al. (2011) found in their study of career motivations and attitudes towards agriculture, that career advisors, university and industry representatives each influenced;

'around 7% of respondents in their career choices. This is a very low influencing factor on students in their career choice for agriculture. The study also identified that one-third of students found the careers information from 'influencing groups' to be sufficient' (Miller & Kollegger et al. 2011, p 7).

Many teachers and career teachers within schools do not appear to promote agriculture as an option for the more academically able students. Those students that are not doing well academically or have behavioural problems are often told to 'go back on the farm'. The researcher had first-hand experience of this with his own children who were high academic achievers; a career opportunity in agriculture was never raised as a career option during career counselling sessions. Rather, they were advised to undertake university courses in professions such as medicine, science, dentistry, law etc.

Yet in its final report the Rural Futures Report stated:

'In addition, their teachers/career teachers and peer/reference group attitudes were also critical influences in their choice' (Rural Futures Report 2007, p 5).

The combination of all these influences on a young person has a vital impact on their career choice. Because of the issues raised above, agriculture as a career choice is not well understood or championed as a positive and exciting career.

2.7 The Exodus of Young People from the Region

The exodus of young people from rural and regional areas which includes the south west of Victoria is well known and can be seen first-hand in sporting teams, community groups and other local organisations where there are real problems keeping enough members to make these organisations viable:

'The low numbers of young people aged between 19 and 24 years of age is very noticeable to those people living in the south west. The net exodus of young people aged 15-24 in the period 2001 to 2006 was in excess of 10,000. This was the only age group in the Barwon South West to suffer a net loss of population over that period' (Pope 2011, p. 9).

At the national scene this situation is replicated:

'Several agrifood sectors and key occupations are on an unsustainable trajectory due to the ageing of its workforce' (Agrifood Skills Australia 2011, p. 7).

However this exodus is difficult to quantify because many young people leaving the area may still retain a postal address in the region (e.g. the address of their parents' house if they are away at University). The exodus of young people from a region can also impact negatively on those young people who are still living in the region, particularly those males left working in rural operations. Because most of their friends have gone away, and there is often a shortage of females in their age group, they can become socially lonely and this can influence them to also wanting to leave the region. There have been many initiatives across rural Australia that has picked up on the disproportionately large number of young males to females in rural areas. The TV Show "Farmer Wants a Wife" is probably the highest profile program targeted at this demographic.

2.8 Summary

When the researcher embarked on the literature review he was not aware of the extent of the issue surrounding the attraction and retention of young people in agriculture. The literature clearly showed this was not only an issue in his own region but was a far wider issue across Australia and the world. Even in third world countries where subsistence agriculture was integrated into the whole way of life they were experiencing similar issues.

'Today's generation of young people is the largest in history. In developing countries, young people, aged 15 to 24 years old, make up on average 20% of the global population and represent a huge potential resource to their countries. Yet ironically, rural areas are not benefiting fully from this resource (Globally, young people are three times more likely to be unemployed than adults). In fact, many rural communities are ageing rapidly precisely because, in the absence of incentives to remain, young women and men are leaving rural areas to seek employment opportunities elsewhere' (Lindiwe Majele Sibanda 2011).

There have been many articles, research papers and media releases which continue to paint a 'gloom and doom' picture of agriculture and its lack of attractiveness to young people.

The literature review identified a range of possible reasons that have been proposed to explain why young people are not attracted to a career or further study in agriculture. This research study will attempt to investigate some of these in more depth and recommend actions which might make a difference to attracting and retaining more young people in agriculture.

CHAPTER THREE:

RESEARCH METHODOLOGY

3.1 Introduction

The principle research question that directed this study was:

What are the major influences that either encourage or discourage young people from being attracted to an educational and career pathway in agriculture?

The specific focus of this study was the perspectives of young people about careers in agriculture and the positive and negative influences on their decision-making about such a career choice. There has been much media and industry commentary on the issue that is the focus of this research study, but there have been no research studies that have examined it in detail.

Having formulated the principle research question, the researcher then looked at how he would develop a research methodology to answer this question. He broke the principle question into three action steps with some smaller sub sets questions as follows:

1. To *explore* why today's young people appear to be less interested in agriculture compared to those of previous times. This question will look at factors such as:
 - a. What external factors influence their decisions to pursue either an educational pathway or career in agriculture?
 - b. Whether educational experiences influence young people's decision to continue with a career in agriculture.

2. To *describe* how young people and others currently perceive careers in agriculture. This question will be expanded to include:

- a. What impact the industry profile of agriculture has on young people's decisions to pursue agricultural education or an agricultural career.
 - b. How young people perceive careers in agriculture.
3. To *analyse and explain* the data in order to make recommendations about how this trend could be reversed so that more young people might be recruited into agriculture.

This applied research study employed a three-phase explanatory sequential mixed methods design and was underpinned by a pragmatic paradigm. It combined both quantitative methods (surveys) as well as qualitative methods (focus group discussions and individual semi-structured interviews).

3.2 Overview

The researcher's preliminary informal discussions with industry representatives in the agricultural industry prior to this study suggested that today's young people were less interested in pursuing an education and a career in agriculture than those of previous generations. The researcher then conducted a literature review which confirmed that such a trend was being identified both nationally and globally. From this information a research plan was developed that focused on addressing some of the gaps in community knowledge about this issue.

3.3 What is Research?

Research can be defined as a systematic and methodical process of enquiry and investigation that increases knowledge (Collis & Hussey 2009). It can be categorised according to the *purpose* of the research, the *process* of the research, the *logic* of the research and/or the *expected outcome* of the research (Collis & Hussey 2009). The four main purpose-based categories are exploratory, descriptive, analytical/explanatory and predictive (Collis & Hussey 2009).

This study is a combination of exploratory, descriptive and explanatory research. It is *exploratory* in that it seeks to identify some of the possible reasons behind a trend towards declining participation by young people in agricultural careers. The researcher felt that this was an appropriate choice when there had been few previous studies into the selected research issue (Collis & Hussey 2009).

It is also descriptive as it focuses on current and related issues (e.g. how young people perceive such careers) in order to understand the characteristics and dimensions of this trend (Collis & Hussey 2009). It is exploratory as the researcher has also analysed the data and attempted to identify and explain patterns within the data.

3.4 Research Paradigms

The idea that one's paradigmatic view of the world might be related to the way one went about researching the world was prompted by Kuhn (1996), while Lincoln & Guba's (1985) work on naturalistic inquiry contributed significantly to the "paradigm wars" of the '80s.

The concept of a research 'paradigm' has, according to Freshwater (2012) and Holloway (2011) been damaged as a result of imprecise definitions and uncritical overuse of the term. Thomas Kuhn (1996) conceptualised a paradigm as a set of practices that define a scientific discipline at any particular period in time. Mertens (2010) describes a paradigm as a set of philosophical assumptions relating to methodology, epistemology, ontology, and axiology that lead to a researcher's choice of methods. Guba (1990, p. 17) described it as a framework of ideas and beliefs through which an individual interprets the world and interacts with it i.e. a basic set of beliefs that guide action. Bogdan & Biklen (1998, p. 22) have defined it as; a loose collection of logically related assumptions, concepts, or propositions that orient thinking and research. A researcher's choice of paradigm is the major influence on their choice of methodology (Mackenzie & Knipe 2006).

The two main research paradigms that have been identified are the Positivist/Empiricist paradigm and the Interpretist/Constructivist paradigm.

3.4.1 The Positivist/Empiricist Paradigm

Positivism is sometimes referred to as 'scientific method'. Positivism assumes that the social world can be studied and explained in the same value-free way as the natural world (Mertens 2010). Healy & Perry (2000) argue that this approach is akin to seeing the world through a one-way mirror. Positivist researchers favour empirical approaches and quantitative methods and use their theory to deductively explain their data or their data to verify their theory (Creswell & Plano Clark 2011).

3.4.2 The Interpretivist/Constructivist Paradigm

The researcher who adopts an interpretivist/constructivist paradigm approaches research with the intention of fully understanding the world of human experience. This paradigm proposes that reality and its meaning are socially constructed by the people experiencing it (Mertens 2010) and endorses the view that no one truth exists. Constructivist researchers interact with the individuals who are being studied in order to obtain data, and inquiry is assumed to change both the researcher and the subject (Coll & Chapman 2000; Cousins 2002). A constructivist approach focuses on participants' views of the situation being studied (Creswell 2003) and constructivist researchers are more likely to choose qualitative methods or mixed methods. Constructivists inductively generate theory from their collected data rather than the other way around (Creswell 2003).

3.4.3 The Mixed Methods Paradigm

Several researchers have argued that the mixed methods approach constitutes a significant 'third paradigm' in social research (e.g. Denscombe 2008; Johnson and Onwuegbuzie 2004), one that has now developed enough credible and distinctive ideas and practices to be considered as a viable alternative to both the Positivist and the Constructivist paradigm. Creswell et al. (2011) have argued that mixed methods research represents an opportunity to transform the tensions between the Positivist and Constructivist paradigms into new knowledge. Denscombe (2008) has suggested

the term 'communities of practice paradigm' for mixed methods research, arguing that this term is consistent with the pragmatist underpinnings of the mixed methods approach, it can accommodate a level of diversity, and it can assist mixed methods researchers to understand their methodological choices.

3.4.4 The Pragmatic Paradigm

A fourth relatively new 'pragmatic paradigm' has also been proposed. Researchers who work within a pragmatic paradigm adopt the position that the best methodological approach to use is the approach or mixture of approaches that works best in a real world situation and best addresses the research question. The 'pragmatic paradigm' highlights the usefulness of a mixed methods approach that uses diverse methods 'that work' and places the main focus on the primacy of the research question, whilst valuing both objective and subjective knowledge (Cresswell et al. 2011; Morgan 2007). The nature, scope and purpose of the research questions determines whether qualitative or quantitative methods are used but it is not uncommon for researchers within this paradigm to use mixed methods (Tashakkori & Teddlie 2003; Somekh & Lewin 2005). As noted by Brannen (1992) a research study is usually a messy untidy business that rarely reflects a neat application of the chosen research model and pragmatic decisions sometimes need to be made, especially in applied research studies.

The researcher was very conscious of his background and rural experiences in both an educational and vocational environment and was concerned that his paradigmatic view, which appeared to be more consistent with a positivist paradigm, may influence the assumptions about the nature of the inquiry (ontology) and the means of generating this information (epistemology). Therefore he decided to investigate mixed methods research and this resulted in his decision to take an approach located somewhere between a mixed methods paradigm and a pragmatic paradigm. His investigation of mixed methods research also convinced him that this type of research would both strengthen the study by adding many of the benefits of both qualitative and quantitative research but also minimise the limitations of both methods.

3.5 Quantitative and Qualitative Research

Prior to developing his research plan, the researcher conducted an extensive review of both the positive features of quantitative and qualitative research as well as their limitations.

Both quantitative and qualitative approaches to research have in common that they seek to identify useful data and good practice (Nothdurfter & Lorenz 2011). Most authors (e.g. Cameron 2011; Carr 1994, Silverman 2001) agree that neither approach is superior to the other. Carr (1994) has argued that for every strength that can be identified in both quantitative and qualitative research there appears to be a corresponding weakness.

3.5.1 Quantitative Research

Researchers working within a positivist/ empiricist paradigm typically use quantitative research methods. Quantitative research has also been called 'scientific research' or 'empirical research'. The researcher takes an objective position and their approach to phenomena is that it is 'real' rather than 'constructed'. The process of quantitative research starts with a theory or hypothesis and then data is generated and collected to confirm, validate or extend that theory/hypothesis. The process used is one of predominantly deductive reasoning to test theories or hypotheses, collect descriptive information, or examine the relationships among different variables. (i.e. it uses theory to explain the evidence). Quantitative research produces numeric data that can be statistically analysed for significance of outcomes as well as for reliability and validity. Typical quantitative methods include surveys, experiments, randomised controlled trials and time-series designs. In the design of the student survey questionnaire the researcher developed questions around the smaller research questions outlined in the early part of this chapter. He developed a series of survey questions that could be classified as quantitative as they would produce numeric data.

3.5.2 The Strengths and Advantages of Quantitative research

- Quantitative research, with its emphasis on standardisation and control of other variables, is considered by many to be more reliable than qualitative research (Duffy 1986).
- Quantitative measures have always been more influential (Nothdurfter & Lorenz 2011) and they are often required by decision-makers to justify their investment in interventions.
- Quantitative research is not limited by specific contexts and uses representative samples of people to study so that generalisation to a broader situation is possible.
- In quantitative research the investigator remains detached and, in some cases, the methods used may require no direct contact with subjects at all (e.g. an online survey) (Duffy 1986). This independence and detachment can help the researcher to guard against personal bias.

3.5.3 The Limitations and Disadvantages of Quantitative research

- Quantitative research has been criticized as being too narrow and rigid to enable a deep understanding of social phenomena. It is also both inappropriate and insufficient to use quantitative research within many of the complex and variable naturalistic social contexts that are studied (Gray & McDonald 2006; Otto, Polutta & Ziegler 2009). For example, educational research is concerned with exploring and understanding social educational phenomena.
- A quantitative approach can only measure the aspects of social phenomena that can be made 'visible' and hence measurable and therefore it misses a lot of significant information (Gray & McDonald 2006; Nothdurfter & Lorenz, 2011; Otto, Polutta & Ziegler 2009). Carr (1994) asserts that although quantitative research, when compared to qualitative data, may have more of a claim to reliability, it has less of a claim to validity.
- Quantitative research has been criticised for being;

'Overly simplistic, decontextualised, reductionist in terms of its generalisations, and failing to capture the meanings that actors attach to their lives and circumstances' (Brannen 2005, p. 7).

- In reality many quantitative studies use a convenience sample and this reduces the validity of generalisation (Duffy 1985).
- Random selection, if used in a quantitative research study, can be difficult and time-consuming for the researcher.
- Some quantitative researchers may become overwhelmed by the large quantity of the data collected and may only analyse the smaller more manageable parts of it (Bryman 1988).

3.5.4 Qualitative Research

Researchers working within an Interpretist/Constructivist paradigm typically use qualitative research methods. Qualitative research has no pre-determined theory or hypothesis at the start of the research. It most often moves from the specific to the general. Data is collected and then the researcher seeks to identify and analyse the patterns and themes that emerge through a process of inductive reasoning. Theory can then be developed from those patterns and themes (Patton 2002; Strauss & Corbin 1998).

Qualitative research can be viewed in a number of different ways. For example, whereas Seale (1999) perceives it a 'craft skill', Merriam (1998) depicts it as detective work in which the researcher searches for evidence, develops an understanding of that evidence, systematically eliminates alternative explanations and finally draws a series of conclusions that are beyond a reasonable doubt. The process used is one of predominantly inductive reasoning i.e. the theory or hypothesis emerges from the data rather than the other way round. Qualitative research tends to produce textual rather than numeric data. Typical qualitative methods include focus groups, case studies, interviews and observations. A good qualitative research design, according to Willig (2008) is one in which the chosen method of data analysis is appropriate to the research question, and where the method of data collection generates data that are appropriate to the method of

analysis (Willig 2008, p. 21).

3.5.5 Strengths and Advantages of Qualitative research

- One of the main strengths of qualitative research is that it often involves 'naturalism', that is, the study of people in their natural settings and on their own terms (Kirk & Miller 1986; Pope & Mays 2006).
- Another strength of qualitative research is that it focuses on the contexts and meaning of human lives and experiences (Cresswell et al. 2011).
- Qualitative research can be especially useful for studying a limited number of cases in depth or describing complex phenomena.
- Dynamic processes can be studied more easily by the qualitative researcher. They can document sequential patterns and change that occur during the life of the study and, in response, have the option of altering the focus of their investigation (Carr 1994).
- The findings from qualitative studies are usually reported in the language employed during the research process, making them more understandable to the reader (Leach 1990).
- Since smaller samples are mostly used in qualitative research, the researcher may find the process of recruitment less time-consuming and easier to achieve (Cormack 1991).
- Duffy (1986) argues that the interactive relationship that is typical of qualitative research studies makes it more likely that the first-hand experience of participants will provide meaningful data. The more time that the researcher spends with a participant, the more likely it is that the respondent will be open and honest (Bryman 1988).
- Qualitative research provides an opportunity for participants to raise useful and interesting issues & questions that might not have been considered in the initial structured research design.

3.5.6 Possible Limitations or Disadvantages of Qualitative Research

- The process of gaining informed consent from research participants may be more difficult in some qualitative research studies in which aspects of research direction 'emerge' and are not always clear in advance (Ramos 1989). Munhall (1989) argues that under such circumstances informed consent can be renegotiated at a later stage. However this may place a lot of responsibility on the researcher (Carr 1994).
- Ramos (1989) has warned that since qualitative researchers and participants often develop close trusting relationships there is a danger that these may, in some cases, develop into a pseudo-therapeutic relationship with the potential to distort the research process and place additional responsibility onto the researcher (who may not have the necessary skills to deal with the situation). Similarly there is a greater risk of enmeshment and some researchers may experience difficulty in separating their own experiences and views from those of the participants (Sandelowski 1986).
- Qualitative research may have lower credibility with organisational decision-makers (Carr 1994).
- The knowledge produced from a qualitative study may not generalise to other people or other settings and the findings might only be typical of the small group of participants (Carr 1994).

3.5.7 Trustworthiness in Qualitative Research

The credibility and validity of qualitative research (i.e. its trustworthiness) can be considered from three perspectives (Johnson 1997):

- **Descriptive validity:** This refers to the factual accuracy of the results as presented by researcher.
- **Interpretive validity:** This refers to the degree to which the researcher has accurately understood and communicated the participants' viewpoints, responses and experiences.

- Theoretical validity: This refers to how well the study's theoretical explanation fits the data.

Some of the strategies that have been suggested for enhancing trustworthiness include:

- The use of mixed methods for data collection.
- The use of a recording device and/or a dedicated or second note-taker (Johnson 1997).
- The taking of notes that are very close to what each participant actually says and the use of direct quotations (Johnson 1997).
- The use of multiple researchers in both the collection and interpretation of the data (Johnson 1997).
- Reducing bias by using what McMillan & Wergin (2010) have called 'cross-examination'. This process involves discussion with other people about the researcher's findings, analytical logic and conclusions and asking them to take a 'devil's advocate stance' (Johnson 1997; McMillan & Wergin 2010).
- The use of critical self-reflection by the researcher in an attempt to identify any biases or predispositions that may have influenced the findings, their interpretation or conclusions at any stage of the research process (Patton 2002; Srivastava & Hopwood 2009).
- The use of triangulation i.e. using multiple data sources and/or multiple periods of data collection to demonstrate similar findings (Fontana & Frey 2005; McMillan & Wergin 2010).
- Johnson (1997) and McMillan & Wergin (2010) have also suggested that researchers meet for a second time with the research participants to discuss the researcher's notes and findings for the purpose of verification or validation and gaining additional insight. McMillan & Wergin (2010) refer to this as 'member checking'. Harrison, MacGibbon & Morton (2001) have also endorsed asking participants to give feedback on data collected and initial analyses and have depicted this as a form of reciprocity.

3.5.8 Analysing Qualitative Data

Qualitative analysis uses an inductive approach in which patterns and themes emerge from the data rather than being imposed before the data is collected and analysed (Patton 2002; Strauss & Corbin 1998). However, as Srivastava & Hopwood (2009) have noted, in reality those patterns and themes, don't simply 'emerge' on their own. They are driven by the reflections of the researcher and what he/she wants (Bruce 2007; Harper 2003; Mauthner 2003). The process is like a loop with the researcher continually revisiting the data (and sometime collecting more data) as additional questions and insights emerge & new connections are identified (Srivistava & Hopwood 2009). The researcher used a 'loop' process in this study and continually reflected on themes and insights as they emerged through the surveys and initial focus group discussions. This process resulted in more questions being raised and the researcher conducting one additional survey and additional focus groups, as outlined in Chapter 4. In analysing the data within this research project the researcher took steps to address some of the limitations of the quantitative approach through seeking feedback from a range of participants on the initial findings from the surveys that had been conducted.

Patton (2002) has suggested that the following three categories of reflexive questions can be effectively used for triangulation during the various stages of the research process:

- Questions for self-reflection (e.g. What do I know? How do I know what I know?)
- Questions for reflection about the people studied (e.g., How do those studied know what they know?)
- Questions for reflection about the audience (e.g., How do those who receive my findings makes sense of what I give them?)

3.6 The Use of Mixed Methods

Mixed Methods Research (MMR) has witnessed a rapid rise in popularity in the last 10 years (Cameron 2011). Cameron has noted that the discipline fields that are particularly accepting of mixed methods research are those related to education, health, social and behavioural sciences and business. Researchers have been using mixed methods since the concept was first proposed by Campbell & Fiske in 1959, but only in the last 20 years has the idea of mixed methods research emerged as a new and respectable field of research (Kettles et al. 2011 & Creswell 2011). It is now regarded by many as a third paradigm (Doyle et al. 2009; Kettles et al. 2011 & Creswell 2011).

Creswell & Plano Clark (2007) have identified four key stages in the historical development of mixed methods research and have identified a key researcher who was associated with each stage:

- *The 'formative' period:* Campbell & Fiske (1959) identified (and advocated for) multiple methods as part of quantitative methodology.
- *The 'paradigm debate' period:* Bryman (2006) reviewed the overall debate and also identified connections between quantitative and qualitative methodologies.
- *The 'procedural development' period:* Bamberger (2000) provided an international policy focus to mixed methods research.
- *The 'advocacy as separate design' period:* Tashakkori & Teddlie (2003) provided a comprehensive handling of many aspects of mixed methods research.

3.6.1 Mixed Methods Research Designs

Creswell et al. (2010) has identified the following four mixed methods research designs;

- *The Convergent Parallel – Concurrent Design.* This was previously called the 'triangulation approach' and is probably the most well-known of the designs.

In this design the researcher collects both quantitative and qualitative data concurrently and then compares the two sets of data to ascertain if there is convergence, divergence or some combination in the results.

- *The Embedded – Sequential Transformative Design.* This involves distinct phases in the research, with one phase following the other phase in a distinct sequential flow.
- *The Explanatory – Sequential Design.* This design involves the collection and analysis of quantitative data in each phase of the research followed by the collection and analysis of qualitative data that builds on the outcomes or results of the initial quantitative data.
- *The Exploratory – Sequential Design.* This design involves the collection and analysis of qualitative data in each phase of the research followed by the collection and analysis of quantitative data that builds on the outcomes or results of the initial qualitative data.

The research design used in this study most closely reflects an explanatory-sequential design. However as Cresswell et al. (2011) have noted, although some mixed methods studies are 'fixed' in that the data collection methods to be used are planned beforehand, others are best described as 'emergent', in that the most suitable methods to use, only become clear during the process of the research (Cresswell et al. 2011). The methods used in this study also have some emergent characteristics e.g. the decision to use a modified survey with a small sample of students enrolled in non-agricultural tertiary courses emerged as a logical response to the results from the main survey as it enabled comparisons with the perceptions of agriculture as a career for students undertaking Certificate II and III in Agriculture at RIST. The decision to conduct a series of individual semi-structured interviews with a small number of parents was made to counter the smaller than expected number of parent responses to the parent survey.

3.6.2 Research problems suitable for mixed methods

Cresswell et al. (2011) have stressed that the researcher needs to select the methods that best fit the research problem or question. A mixed methods approach is particularly suitable when either a quantitative approach or a qualitative approach doesn't have enough power by itself to enable multiple perspectives and a complete understanding about a research question. This is the main reason for the use of mixed methods in this research study. The researcher made the decision to adopt a mixed methods research approach for this research study to minimise the limitations of both the quantitative and qualitative approaches as well as to maximise their advantages.

For example, one limitation identified by the researcher was the difficulty encountered in recruiting large samples of subjects to complete the student survey and hence the sample sizes were smaller than anticipated. The use of follow-up focus group discussions enabled the researcher to gain more data as well as more in-depth information and insight to offset the relatively small numbers of survey responses. Another reason for the researcher's selection of a mixed methods approach in this study was to enhance the trustworthiness and rigour of the data. For example combining interviews and focus groups with the responses to the questionnaire enabled further validation of the findings.

Cresswell et al. (2011) endorses the view that a final research report should always explicitly describe the contribution that the mixed methods approach made to the overall quality of the research and its outcomes. This has been completed in Chapter 6.

3.6.3 Integrating Different Forms of Data

One of the most difficult challenges in the analysis of data from a mixed methods approach is deciding how to integrate different forms of data. Creswell & Plano Clark (2011) have described three different approaches to this integration. These are: merging data, connecting data, and embedding data.

- *Merging data*: this involves combining the qualitative data (e.g. as text or images) with the quantitative (e.g. numbers).
- *Connecting data*: This involves connecting the analysis of results from one phase with the data collected in another phase of the research.
- *Embedding data*: this consists of embedding a smaller dataset of a lower priority within the larger main design.

This study incorporated two forms of data integration, namely *connecting data* and *embedding data*. The data from the surveys was *connected* with the data from the focus group discussions and was also used to develop questions to use in those discussions. Data was *embedded* when respondents in the student survey were encouraged to complete not only the formal structured questions but also several open-ended questions.

3.6.4 The Advantages of a Mixed Methods Approach

- Studies using qualitative and quantitative approaches have the potential to reach a wider audience than those restricted to one method, because they are written up in a way that includes both words and numbers (Brannen 2005).
- By using multiple methods, the researcher strives to decrease the limitations and flaws that attach to any single method (Mitchell 1986). Using only one method of research can lead to a corruption of the findings because of a small sample size or the nature of the selected sample group. By using a mixed methods approach, different data sources and separate data collection methods can strengthen the integrity of the data and as a result the findings.
- Mixed methods research can provide an opportunity for skills enhancement for the researcher in both the short term and longer term (Brennan 2005).

- Using a mixed methods approach can also encourage researchers to think more creatively instead of narrowly focusing on traditional discipline-based methodologies.

3.6 5 Challenges and Limitations of Mixed Methods Investigations

Many authors (e.g. Creswell & Plano Clark 2011; Teddlie & Tashakkori 2009) have identified some limitations and challenges associated with mixed methods investigations:

- Mixed methods research is often more time-consuming, both to collect and analyse, because several forms of data are being used.
- A strategy for resolving differences needs to be considered in advance in case the findings conflict or are contradictory. A strategy for this purpose might be the collection of additional data that could clarify or enlighten.
- The design of the research needs to be clearly defined to alleviate any confusion between 'mixing methods' and 'mixed methods' approaches. The researcher needs to be clear in the design of the research to detail.
- It can be difficult for a single researcher to carry out both the quantitative and qualitative research and in some cases teams of researchers may be required in the research phase (especially if it is to be undertaken concurrently). In this study the researcher undertook the research independently but in a sequential manner thus alleviating such pressures. However the planning, recruitment, organisation for availability of respondents and the implementation were all time consuming and labour intensive.
- The researcher may need considerable prior knowledge in the use of the 'mixed methods' approach to research before undertaking such an option. While the researcher in this study came to this research with little prior knowledge of the mixed method approach, he had previous knowledge of both qualitative and quantitative research theories and there was extensive literature available which provided a good background on mixed methods.

3.7 Triangulation

The concept of triangulation was first applied to a research context research by Campbell & Fiske (1959). It is a process more likely to be employed by researchers working within a predominantly constructivist paradigm or a mixed-methods paradigm (Denzin 1970). Triangulation is a process of putting together the outcomes from several different methods of data collection to confirm or disconfirm the findings and to provide repeated verification of a possible conclusion. Miles and Huberman (1984) have suggested that detectives use a parallel process in their investigation of a crime: they collect a variety of relevant data (e.g. witness statements, evidence from forensic analysis, documentation and a suspect's alibi) and then put them together to see if they all point to the same conclusion.

Thurmond (2001) has summarised the different ways in which triangulation can be achieved. These include:

- Triangulating data collected by a variety of methods, i.e. using a mixed-methods approach (Barbour 1998).
- Triangulating data collected by the same method but at different points in time (Denzin 1970).
- Triangulating data collected by the same method but using different participants.
- Triangulating data collected by a variety of investigators all of whom used the same methods (Denzin 1970).

In this study the process of triangulation was achieved through the use of a mixed methods approach.

3.7.1 Issues Related to Triangulation

Barbour (2008) points out the difficulty of explaining discrepancies or contradictions, as there is no hierarchy of evidence i.e. no one method is given higher 'trustworthiness' status. The highest status in the range of qualitative methods, according to Silverman (1992) is often given to individual interviews. Barbour (2008)

however has argued that focus group discussions, with their greater real-life social construction of meaning have the stronger claim to higher status, but she also advocates that focus groups and one-to-one interviews are best viewed as delivering parallel datasets.

Thurmond (2001) has urged researchers to remember that the use of triangulation strategies does not strengthen a study that is flawed, that it should only be employed if it can genuinely contribute to understanding what is being studied, and that a researcher;

'must articulate how it is being used and how it enhances the study' (Thurmond 2001, p. 257)

Richardson and St Pierre (2005) have suggested that the term 'triangulation' be replaced by the term 'crystallisation' as a crystal (with its three-dimensional and multi-faceted nature) is a more appropriate metaphor than a triangle (with its two-dimensional fixed design).

3.7.2 Triangulation Theory

Concurrent Triangulation Design is a concurrent mixed model design classified on the basis of purpose of the study. In this design findings from one method are cross-checked against the results of the other e.g. qualitative and quantitative methods are used to confirm, cross-validate, or corroborate findings within a single study. (Creswell 2003).

In this study the findings from the quantitative study were cross checked against the qualitative responses within each phase of the research and across the two phases of the project.

3.8 Using Survey Research

Draugalis et al. (2008) has pointed out that the terms *survey* and *questionnaire* are not simply interchangeable. Whereas the term *survey* describes the research

approach that is used, the term 'questionnaire' or 'survey instrument' refers to the data collection tool.

Survey research is one of the most commonly used approaches to data collection (Desselle 2005; Kelley et al. 2003), possibly because it is often the only practical way to conduct a specific type of investigation (Draugalis et al. 2008).

Many authors and organisations (e.g. Aday & Cornelius 2006. Buckingham & Saunders 2004 ; Kelley et al. 2003; University of Wisconsin, Office of Quality Improvement 2010; Visser et al. 2000) have suggested guidelines for using survey research. These include:

- The language used should be plain and simple but with a warm and friendly tone.
- Short sentences are more effective.
- Researchers should avoid the use of: jargon, passive voice, abbreviations/shorthand, leading questions that encourage a specific type of response, ambiguous questions, double-barrelled questions and questions that contain double negatives.
- Terms and concepts that have the potential to create ambiguity should be clearly defined in simple language.
- Response options should be included that allow a respondent to indicate they are either 'unsure' or 'don't know' for 'don't know'.
- If a questionnaire is used, it should be pre-tested before it is used in the research study so that necessary changes based on feedback received can be made.

3.8.1 The Strengths of Survey Research

- Survey research can be a convenient approach to research as large amounts of data can be collected at the same time, especially if the researcher uses an online questionnaire (Barribeau et al. 2005; Kelley et al. 2003; Owens 2002).

- Many different aspects of an issue can be covered in a survey and this makes it a very flexible tool (Barribeau et al. 2005).
- All respondents respond to standardized questions and therefore subjectivity significantly reduced and similar data can be collected from different groups and compared comparatively (Kelley et al. 2003).
- When a questionnaire is anonymously completed, there is less likelihood of bias arising from interpersonal interactions and relationships e.g. respondents are less likely to feel a desire to 'please' the researcher or present themselves in a positive light. They are more likely to express their own views more honestly (Manual for Educational Media Researchers, n.d).
- Respondents can complete the questionnaire at their own time and pace, especially if it is online (Visser et al. 2002).
- In written questionnaires, respondents are able to read the through the whole questionnaire being asked to gain an overview of the nature and scope of the questions before they reply to them (Commonwealth Educational Media Centre of Asia n.d p 35-64).

3.8.2 The Limitations of Survey Research

- Survey research may not be suitable for providing in-depth understanding of an issue (Marsland et al. 2001).
- Since the questions in a survey tend to be relatively simple, respondents' answers may lack depth and the resultant data may be relatively superficial (Kelley et al. 2003).
- The need for standardization results in questions that have to be general enough to be minimally appropriate for all respondents and this may result in the researcher's missing what may be most appropriate questions for some respondents (Barribeau et al. 2005).

- Conducting survey research is actually quite challenging although many researchers have an incorrect assumption that it is relatively easy (Draugalis et al. 2008).
- All respondents must have an appropriate level of reading ability in order to complete a detailed questionnaire.
- If a respondent misinterprets questions or leaves some questions unanswered, there is nothing that the researcher can do about it (Aday & Cornelius 2006).
- If questionnaires are used, the process of implementation and data analysis can be very time-consuming and expensive (Marsland et al. 2001). This may be less true if an online questionnaire is used (Owens 2002) but there can be potential problems when it is possible for a questionnaire to be accidentally forwarded to (or brought to the attention of) inappropriate or unintended subjects (Draugalis et al. 2008).
- Ensuring a high response rate to a survey can be hard to control, especially when it is not conducted face-to-face (Kelley et al. 2003).

3.9 Question Formats in Questionnaires

There are three main 'question formats used in questionnaires: closed questions, open-ended questions and rating questions.

Closed Questions: The typical closed question poses a question and provides the range of possible answers for the respondent to select from.

Open-ended Questions: A typical open-ended question poses the question but does not provide any response options from which to select. Such questions are useful if the researcher is unsure of the range of possible responses that may be given about complex problems. Open-ended questions are more likely to elicit respondent's feelings and viewpoints, but only in so far as the respondents can express themselves well and are prepared to take the time to do so effectively. Therefore

some respondents may be less likely to respond to open-ended questions, especially if they ask the respondent for more detailed comments about a closed question that they have already completed. Open-ended questions produce a variety of responses that may prove difficult to analyse and draw conclusions from. They may also produce a wide range of answers and the researcher may have difficulty in analysing them.

Rating Questions: These questions indirectly ask respondents how much they agree with a specific viewpoint by asking them to select their level of agreement using a rating scale format. The most widely rating scale format for measuring attitudes and viewpoints is the Likert Scale, developed by Likert in 1932. An ordinal Likert scale item asks respondents to respond to a series of fixed-choice statements about a topic to indicate the extent to which they agree or disagree with each one (Bowling 1997, Burns & Grove 2005). There are usually either 5 or 7 response alternatives to enable respondents to express how much they agree or disagree. The most commonly used 5 options are:

1. Strongly agree
2. Agree
3. Don't know (or Unsure)
4. Disagree
5. Strongly disagree

The strength of a Likert scale item is that respondents have more options than simple Yes or No and can express degrees of opinion or no opinion at all. Data from these scales can be analysed to obtain the median response and the frequency of responses in each category. However, because it is an ordinal scale and not an interval scale, the 'average' response is not valid. Results can also be presented as a bar graph.

The researcher used a Likert scale in the design of the rating type questions. The survey design also incorporated closed questions and provided several opportunities for respondents to provide more detail in their responses through the strategic

placement of open ended questions. Consultation was held with staff at RMIT who had the expertise in survey design to ensure the rigour of the questions and to provide feedback on the clarity of questions within the draft survey.

After the researcher developed the items for the questionnaire, it was pre-tested in a written form with five young people who were not part of the sample of young people who were being surveyed.

Survey Monkey was used to assist with the design, distribution and data collection for this research project. Survey Monkey, is a web based 'survey tool' which is easy to use, has many features to assist the researcher collect data either anonymously or identified, has email and physical questionnaire capabilities. The software is either subscription based or free for limited use. The researcher chose this survey tool because of its ease of use, his familiarity with the program and the company he is employed by has an annual corporate subscription.

The researcher appraised the advantages (ease of use, getting responses quickly from a larger more diverse group of respondents, provision in the product to analyse data) vs the limitations (the anonymity of respondents meant that it may not be completed accurately or by the targeted survey group), some respondents may be resistant to completing surveys online and the limitations in how questions can be structured) however the researcher believed that the advantages outweighed the disadvantages and the use of Survey Monkey would add the quality of the data collected.

3.10 Using Interviews

Interviewing is the most common method of generating research data (Gubrium & Holstein 2002; Kvale & Brinkmann 2008; Seidman 2006; Willig 2008). Interviews have been defined as;

'a purposeful conversation in which one person asks prepared questions (interviewer) and another answers them (respondent)' (Frey and Oishi 1995, p. 1)

Individual interviews can be conducted in person, by phone or online Interviews can potentially provide in-depth data about participant's experiences and viewpoints (Creswell 2007). Several different interview formats have been identified (Gall, Gall, and Borg 2003; McMillan & Wergin 2010)

The informal conversational interview allows for the spontaneous generation of questions in a naturally occurring context. The researcher does not prepare any specific questions beforehand and relies on the interaction with the participants to guide the process (McNamara 2009). Questions tend to be constructed as the conversation moves forward. One advantage of this structure is the degree of flexibility available, the inconsistency in the interview questions can make it difficult to code and categorise the data produced.

The general interview is more structured than the informal conversational interview in that the same general questions are asked of each interviewee in order to provide more focus and the researcher leads the process. The researcher selects questions that could be used in the interview but not necessarily in a specific order. This structure still provides some degree of flexibility and adaptability (Gall et al. 2003; McNamara 2009) but lack of consistency can also be a limitation (McNamara 2009).

The semi-structured open-ended interview is the most common interview structure used (McMillan and Wergin 2010; Willig 2008). It is 'standardised' in the sense that the same open-ended study-specific questions that have been created by the researcher are usually asked of each participant (Gubrium & Holstein 2002). One of the strengths of this interview format is that interviewees can decide the degree of depth and detail with which contribute their experiences and viewpoints. An additional strength is that researcher bias is reduced (Gall et al. 2003). However the time that is needed to sift through and code the very detailed data can be more burdensome (Creswell 2007).

The researcher conducted individual semi-structured open-ended interviews with industry representatives, parents and career teachers. The questions for the

interviews were partially structured but also open-ended to ensure the question asked and answers provided were relatively standardised. The researcher was very conscious not to try and direct the interview and allowed ample time for interviewees to respond to questions in their own words. The researcher used:

- Interviews with industry representatives (semi structured open ended) to discuss the findings and seek additional responses to the feedback from phase one of the research.
- Interviews with the three career teachers (semi structured open ended) to discuss the findings and seek additional responses to the feedback from phase one of the research.
- Interviews with parents were used to access a wider range of parent's views as the number of respondents to the parent survey was also not as large as expected. Interviews were also used to validate and verify the findings (Barbour 2001) of the parent survey conducted in phase one of the study.

3.10.1 Interpreting the data

Interpreting data collected during interviews is a process of trying to sort it into bundles of similar comments in order to find themes that make sense and meaning of it (Creswell 2003, 2007). These themes emerge from the identification of phrases, expressions, or views that were frequently communicated by the participant(s) (Kvale 2007). Creswell (2007) has suggested that someone other than the researcher (e.g. an independent colleague) reduces bias by also looking for themes within the data. The researcher asked a colleague in the same workplace to look at the first draft of the themes identified by the researcher and then sift through the researcher's notes of interviews and discuss (and if necessary, challenge) the researcher's thematic categories.

3.11 Using Focus Groups

Focus groups were first used in the 1940's within the broadcasting and marketing context and have since enabled significant insights into a range of research questions across a great variety of disciplines such as Psychology, Health, and Business Studies

(Barbour 2008). Barbour (2008) locates focus groups methodology somewhere between observational fieldwork and one-to-one interviews and Powney & Watts (1987) has described it as a form of 'structured eavesdropping'.

Powell et al. (1996) has described a focus group as a small group of selected people that has been convened by the researcher for the purpose of discussing and focusing on their personal experiences and viewpoints related to the issue of interest to the researcher.

'The use of focus groups is a qualitative methodology designed to produce insights into process rather than outcome' (Barbour 2008 p. 30).

Focus groups can be used as a stand-alone method of data generation or as part of a mixed methods approach.

Barbour (2008) has argued that is almost impossible to define 'pure' focus group research. There has been significant confusion around the definition of the term 'focus group' and terms such as 'group interview', 'focus group interview' and 'focus group discussion' are often used interchangeably (Barbour 2008). Perhaps the simplest and broadest definition of the term 'focus group' is that of Barbour & Kitzinger (1999).

'Any group discussion may be called a focus group as long as the researcher is actively encouraging of, and attentive to, the group interaction' (Barbour 2008, p. 20).

'Focus group discussion' is the preferred term for this research study, as 'focus group interview' implies that the 'group' has a consensus view (Barbour 2008) and the assumption in this study was that the individuals in the focus groups would not necessarily all have the same viewpoints.

3.11.1 Strengths of Focus Group Discussions

There are many advantages to focus groups.

- The flexibility of focus groups to build in some structure gives them an edge over naturalistic observations (Barbour 2008). Focus groups can be used in many different types of research contexts. They can help bring to the surface participants' concerns that might otherwise not be raised (Barbour 2008).
- Focus group discussions can be used to provide directions for the development of questions to be used in questionnaires or to investigate the meaning of survey results already obtained (Barbour 2008; Bloor et al. 2001; Kreuger 1988).
- Focus groups can be particularly useful for exploring issues about which the participants do not yet have clear views.
- Focus groups can also be used within a mixed-methods approach for the purpose of triangulation.
- Wilkinson (1999) suggests that focus group discussions can highlight issues that might otherwise not be identified as participants and researcher collectively make meaning of what is being said.

3.11.2 Limitations of Focus Group Discussions

- Focus groups may be less suitable for some of the more sensitive areas of research e.g. research into aspects of sexuality, mental illness etc. Barbour (2008) argues that if sensitive topics are the focus there must be adequate reflection and preparation given to the research design and the relevant ethical considerations.
- Focus groups can be difficult to put together, as it may not, at a practical level, be easy to identify a reasonably representative, accessible and available sample of participants. It may prove to be difficult to recruit the preferred type of participants if the issue/topic is not seen by them as interesting or beneficial.

- Since focus group discussions are relatively open-ended discussions, the researcher may have limited control over the interaction and hence the data generated (Morgan 1988).
- Less articulate participants may feel intimidated in a focus group context and make only a limited contribution.
- Focus group discussions may raise issues of trust for some participants and discourage them from discussing personal, sensitive or political information or viewpoints.

3.11.3 Issues to be Considered When using Focus Groups

- There may be ethical issues around the use of the time and energies of participants in focus groups if the decisions and outcomes that are at the centre of the discussion are not likely to be of some personal benefit for those particular participants, either directly or indirectly (Barbour 2008).
- Kevern and Webb (2001) have cautioned researchers not to simply apply the 'focus group' label to an impromptu discussion in a group context.
- The size of the focus group is an important factor in the effective use of this methodology. Bloor et al. (2001) advises that researchers in the field of social science work with a smaller size (e.g. 6-8 participants) because of practical issues, more complex topics and participant characteristics (Bloor et al, 2001). Some authors (e.g. Albrecht et al. 1993; Wilkinson 2003; Willig 2008) endorse the view that six participants produce a better result and make it more likely that all participants remain actively involved in the group discussion. Accurately transcribing a group discussion of more than six participants can be very challenging.
- There is an ethical issue in relation to the awareness of the participants about how their comments and interactions will be recorded and reported. The researcher needs to be explicit about these processes and reassure participants that they will not be identified in the write-up, they can

withdraw from the discussion at any stage and they can ask at any stage for specific contributions to be removed.

- The role of the researcher/ facilitator is an important one in focus group discussions. The researcher should facilitate and encourage discussion rather than dominate them.

3.11.4 The Focus Groups Used in This Study

This study incorporated two focus groups in which participants were convened as a group rather than accessing a naturally occurring group such as a student study group:

- The student focus group discussion was used to gain both a broader and deeper understanding of the issues and perceptions as well as validation of the findings from the student questionnaire used in phase one of the study (Barbour 2001). The number of respondents to the student survey was not as large as hoped and the focus group participants added to the perceptions of the students who had completed the survey.
- The industry employer's focus group discussion was used to seek their responses to the findings from the student survey and the parent survey as well as the findings from the student focus group discussion.

3.11.5 Managing the Influence of the Researcher

The researcher as Chief Executive Officer of the organisation where many of the respondents surveyed (students, employers, industry representatives and parents) had some varying types of relationships. He was very aware of the influence his position may have in the qualitative data collection responses and to reduce this potential for bias he included the following strategies:

- Advising the people being interviewed that this was for his research project which was separate from his role in the organisation and that unbiased contributions was important to the ultimate findings of the project

- Where students and parents were involved having another independent person present in the focus group meetings.
- Inclusion of qualitative survey questions in the anonymous surveys.
- In interviews with industry representatives the researcher believed that his familiarity with the respondents increased the quality of responses as they were very open and frank with their responses.
- The use of a mixed methods approach to the research provided a cross reference of qualitative responses with quantitative responses to ensure validity.

The researcher while acknowledging that his influence may have had the potential to influence responses put in place specific strategies which mitigated the impact of this influence and the data collected was valid and reliable.

3.12 Thematic Analysis

Thematic analysis is a widely-used qualitative analytic method (Howitt & Cramer 2009; Pope & Mays 2006; Roulston 2001) and the search for meaningful themes is considered by many (e.g. Holloway and Todres 2003) to be a key generic skill across most forms of qualitative analysis.

Simply defined, thematic analysis is a categorising strategy for qualitative data. Similarly Boyatzis (1998) describes thematic analysis as a general tool to use across a range of different methods and not a specific type of methodology per se and Braun & Clarke (2006) define it as;

'a method for identifying, analysing and reporting patterns within data' (Braun & Clarke 2006, p. 79).

Pope & Mays (2006) describe it thus:

'Thematic analysis moves iteratively through stages of data management, description and explanation via a series of 'platforms' from which the researchers can reflect on what they have done and move forward. This process

is fluid and, crucially, non-linear; the researcher develops the analysis by moving backwards and forwards between the original data and the emerging interpretations' (Pope & Mays 2006, p.67).

Thematic analysis is an inductive method for identifying themes and patterns in a large amount of qualitative data in a relatively systematic fashion (Marks & Yardley 2004). It enables a researcher to use a wide variety of types of information in a systematic manner that increases accuracy and sensitivity in understanding and interpreting data about people, situations, and organizations (Boyatzis 1998). It enables inferences to be made that can be supported by other kinds of data.

One of the strengths of thematic analysis is its flexibility (Braun & Clarke 2006) but the lack of transparency as well as the lack clear and concise guidelines around its application can be problematic (Mays et al. 2005). The researcher seeks to identify a limited number of themes that adequately reflect their (often complex) data and Howitt & Cramer (2009) stress that a researcher must be very familiar with all of the details of the data in order to use thematic analysis well. This is more likely to occur when the researcher is also the person facilitating and recording/transcribing discussions and interviews.

The process starts, after a preliminary examination of all the data, with the coding of data. This is done by systematically going through the data and attaching brief verbal descriptive labels to small chunks of data that contain consistent phrases, issues and viewpoints. The overall aim is to identify themes that can integrate substantial sets of these coding (Howitt & Cramer 2009). A number of broad potential categories are then identified to help group the data. These are then applied more closely to the data to identify those themes that appeared to be clear and recurrent, a similar process to that which occurs with content analysis (Stemler 2001). At every stage of the analysis, the researcher must be prepared to adjust and modify the coding's and the analysis (Howitt & Cramer 2005). When the themes have been finalised and labelled, defined and defined, examples (often direct quotations) are selected that illustrate each theme. The themes are most commonly presented in a textual form

but a researcher can also indicate numerically the incidence and prevalence of each theme in their data. The themes are usually reported and discussed from the strongest to the weakest.

Thomas and Harden (2008) developed a process called 'Thematic Synthesis' that has three stages:

- The coding of text 'line-by-line'.
- The development of 'descriptive themes'.
- The generation of 'analytical themes'.

'While the development of descriptive themes remains 'close' to the primary studies, the analytical themes represent a stage of interpretation whereby the reviewers 'go beyond' the primary studies and generate new interpretive constructs, explanations or hypotheses' (Thomas & Harden 2008, p.1)

The use of computer software can facilitate this method of synthesis; detailed guidance is given on how this can be achieved. The researcher has utilised Survey Monkey for the majority of the structured questionnaires both on line and paper based (where respondents could not complete the questionnaire online). The handwritten surveys followed the online template and were input manually into Survey Monkey. Survey Monkey has an analysis function which produced an analysis of responses to all the questionnaires.

3.13 Summary

The research methodology utilised in this project was based on a mixed methods design where the combined strengths of qualitative and quantitative data collection were used to provide the researcher with more robust and trustworthy data. The researcher initially designed the research phase of this project around semi structured interviews with a number of identified groups, he however soon discovered the limitations of the semi structured interviews and looked at additional data collection tools such as online questionnaires and focus groups.

The researcher was also concerned at the smaller than expected responses to a number of the online surveys so he put in place a second phase to this research project where additional interviews and focus groups would be used to collect additional data and to assist in validating the data collected in phase one.

This research design while more complex and time consuming than the initial design will provide a robust and reliable data set on which the researcher can develop sound and well supported finding.

The researcher's next step is in gathering the data through the research design process identified in this chapter. This methodology identified a number of different data collection tools that will be utilised in the data gathering process which includes online surveys (questionnaires), interviews and focus groups. The data gathered will be both quantitative and qualitative and the researcher will triangulate the responses from both the quantitative and qualitative responses to ensure that the findings detailed are reliable and robust.

CHAPTER FOUR:

DATA COLLECTION

4.1 Introduction

Prior to commencing the data collection phase the researcher obtained Human Ethics Approval through the RMIT Human Ethics committee to undertake this research. This approval was given – Approval (HRESC AB-174-11-08). As the researcher had also planned to interview career teachers from Victorian government schools an approval to approach Victorian government schools and/or early childhood settings to conduct a research project was required from the Department of Education and Early Childhood Development. This was subsequently granted.

4.2 Methodology

This research study employed a mixed methods approach to data collection and analysis based on a three-phase plan. In the first phase quantitative and qualitative methods were used to gather data from a range of respondents who had been identified as important sources of information in relation to the research questions. In the second phase additional quantitative and qualitative data was gathered to obtain a more in-depth understanding of the collected data in phase one. In phase three further qualitative data was gathered in order to validate the data collected in the first two phases. Figure I summarises these three phases.

Figure 1: The Phases of Research

<p>PHASE 1 Initial Data Collection</p>	<p>Agricultural students Online survey</p>	<p>Parents of agricultural students Online survey</p>	<p>Career teachers Individual interviews</p>	<p>Agricultural industry representatives Individual interviews</p>
<p>PHASE 2 Additional Data</p>	<p>Non-agricultural students</p>		<p>Agricultural employers</p>	
<p>PHASE 3 Data Validation</p>	<p>Agricultural students Focus group discussion</p>	<p>Parents of agricultural students Individual interviews</p>	<p>Career teachers Individual interviews</p>	<p>Agricultural industry representatives Individual interviews</p>

4.3 Phase One

The researcher identified the following groups as important sources of information and developed a research plan to gather information from these groups in the first phase of the study:

- Students studying agriculture.
- Parents of students studying agriculture.
- Representatives from major industry bodies.
- Career teachers in the local area.

Students studying agriculture were the main subjects in this study. Students who met the criteria (students undertaking RIST courses) were invited to participate in the survey through the distribution of promotional letters of the survey and through links (to the questionnaire) on the RIST web site and Facebook page. Respondents self-selected whether to participate in the survey or not.

Parents of students studying agriculture were also of interest in this study. The researcher had first-hand experience, both as a child and a parent, of the influence parents can have on their children's career choices and the positive influence of parents on their children's education and careers. This has also been identified in the literature review (Miller & Kollegger 2011). Therefore the researcher was also interested in the perceptions of these parents. An emailed invitation to participate in this research project (with a link to the online survey) was sent to all parents on the RIST data base who either had children currently enrolled as students or previously enrolled in the past twelve months (2011 – 2012) in training at Certificate II, Certificate III, Certificate IV or Diploma levels at RIST.

Representatives from major industry bodies were of interest in this study as they are major stakeholders in the recruitment into, and retention of young people within agriculture.

Selected representatives were identified through the researcher's awareness of the key industries involved in the agriculture sector and invited to participate. The three interviewees included a representative from each of the following groups:

1. AgriFood Skills Australia.
2. Rural Skills Australia.
3. Primary Skills Victoria.

Career teachers were recognised as important stakeholders in this project. Career advice is a core part of every secondary school's curriculum. The researcher wanted to gain an understanding of the impact a career teacher could have on a student's career choices or future educational pathways. Anecdotal evidence was that career

teachers had a significant influence on student's educational and vocational pathways. Individual interviews were conducted with three career teachers in three separate schools in the south west region of Victoria.

- The first teacher was a full time career teacher in a local independent school which offered agriculture as a course of study.
- The second teacher was a part-time career teacher at a local government school which did not have agriculture in their curriculum offerings.
- The third teacher was a part-time career teacher at another local school which did offer agriculture.

4.3.1 Survey Method

The students were surveyed using an online questionnaire that was designed to investigate the perceptions of young people about agriculture as a career and the factors that had influenced their choice or rejection of an agricultural career. The parents were surveyed using a modified version of this questionnaire but focusing on similar issues.

The researcher selected a survey approach to minimise potential bias and distortion in the results, provide confidentiality for respondents and allow for a greater potential response rate than other approaches. The questionnaires comprised mainly structured questions but also some open-ended questions inviting further comments.

The researcher initially formulated questions for inclusion in the two questionnaires (one for students and one for parents) based on information gained from the literature review and industry and media commentary. A number of reasons had been put forward as an explanation for why young people might not be interested in pursuing an education/career in agriculture. These included:

- It is too low paying.
- It does not have a career pathway.
- It is a dangerous industry.

- It does not require high skill levels and is more suited to people with low educational qualifications.
- Careers in agriculture are promoted poorly by industry so it is not attracting the younger generation.

The researcher also formulated some of the questions based on his own personal experiences in managing a large agricultural training organisation and his interactions with the students undertaking courses in that organisation.

Several draft versions of the questionnaire were developed and feedback was sought from colleagues until a final draft of each questionnaire was ready to be uploaded.

Students who were undertaking or had undertaken either Certificate II or Certificate III in Agriculture at RIST were invited to participate in the survey. The researcher also sought to widen the scope of distribution of the questionnaire through up loading links to the survey on the RIST web site and RIST Facebook page and providing RIST students with promotional information on the online questionnaire to distribute to friends who lived in south west Victoria and were not enrolled at RIST. 'These young people living in the south west of Victoria are the next generation of people likely to consider the pursuit of an educational or employment pathway in agriculture'. Students were invited to participate in the study in several ways:

1. A general invitation to participate in the study was placed on the RIST web site and Facebook page.
2. RIST students were told in several of their classes about the study, provided with a letter containing the online link to the questionnaire and encouraged to complete the questionnaire.
3. Students were provided with a hardcopy of the questionnaire for completion.

4.3.2 Interview Method

Individual semi-structured interviews were used to collect information from three agricultural industry representatives who were known to the researcher and were

involved in key management positions within their organisations and career teachers who were recruited through the staff contacts RIST has with the schools in the region. The interview format was deemed more appropriate for the industry representatives and career teachers because of their lower numbers and the need to gather more in-depth qualitative information. A series of questions were formulated prior to the interviews to provide some consistency to the approach.

Interviews with representatives from the agriculture industry

The core questions that directed the initial individual interviews with the three representatives from the agriculture industry were:

1. What involvement does your organisation have in promoting agriculture to young people?
2. Do you see the promotion of careers in agriculture as a priority area?
3. If so, what are your organisations plans in the future?
4. If not, what are the reasons for not prioritising the promotion of agriculture as a positive career to young people?
5. Where do you see future opportunities exist for careers in agriculture?

Interviews with career teachers

The core questions that directed the initial individual interviews with the three career teachers were:

1. Do you regularly receive information and support on careers in agriculture from industry and key employers?
2. What are your perceptions of agriculture as a career for young people?
3. What is the demand from students for information on careers in agriculture?
4. What do you believe are the key drivers/barriers for young people pursuing a career in agriculture?

5. Do you actively promote agriculture as a preferred career for your students? If not, what are the reasons for not promoting agriculture as a career opportunity?
6. Where do you see future career opportunities in agriculture?

4.4 Phase Two

The second phase of the research was undertaken following the analysis of the data generated from phase one. Having collected the responses from the two sets of interviews and the two questionnaires, the researcher reflected on the responses from both the student and parent surveys. The following three issues were identified and plans were made to conduct further research to address them:

1. After analysing the questionnaire responses from the students, the researcher became curious as to why most of the responses from students and parents were inconsistent with perceptions that were being put forward (*e.g. in the media, the wider community and articles and research studies*) to supposedly explain young people's loss of interest in agriculture as a career. The researcher questioned whether the response he was getting from the agriculture students might be biased because they were young people who were already actively involved in the agriculture industry through RIST. To look more closely at this possibility, the researcher sought the assistance of some established contacts at both the University of Sydney and ANU University in Canberra in recruiting a group of students (enrolled at these universities) who did not have a background in agriculture, were not studying agriculture and could be invited to complete a modified version of the online questionnaire provided for the agricultural students. The online link to the survey was sent to a group of students who had been selected as described above.
2. Results from the questionnaire completed by the agricultural students suggested that their involvement with their agricultural employer had

made a positive impact on their career choices and their retention in an agriculture career and the researcher wanted to gain a greater understanding of this influence. Therefore the researcher organised and conducted individual semi-structured interviews with three agricultural employers selected through the RIST database.

3. Twenty-four agricultural students completed the online student questionnaire and seven parents completed the online parent questionnaire. Although the number of respondents was not as high as had been expected, the findings did suggest some clear patterns. However, because of the low number of respondents, the researcher decided to undertake additional research in order to further validate the data collected to date. A third phase was added to the research plan to provide an additional source of validation of the data gathered in phase one and phase two.

4.5 Phase Three

Phase three of the research was conducted after the data from phase one and phase two had been collated and analysed. The purpose of this round of data collection was to validate the findings from data collected in phases one and two. Phase three was more limited by time and accessibility and therefore the researcher decided to focus his efforts on a relatively small number of participants. This third phase involved the use of one focus group discussion with agricultural students (who had not participated in the online survey) and individual semi-structured interviews with career teachers, parents of agricultural students and the same representatives from agricultural industry who had been interviewed in phase one. The process involved interviewing each of the participants individually, asking for their responses to the key findings from the first two phases (presented to them in both a verbal and written form), and seeking any additional information that they felt was relevant.

- A focus group was conducted with six students studying agriculture at RIST to discuss the findings and seek additional responses to the data collected in the first two phases of the research. The researcher identified a convenient sample of six students who had undertaken either Certificate II or Certificate III in Agriculture who had not completed the original online questionnaire.
- Individual semi-structured interviews were conducted with three agricultural industry representatives who were the same people who had participated in the original interviews.
- Individual semi-structured interviews were conducted with the same three career teachers who had been initially interviewed in phase one.
- Individual semi-structured interviews were conducted with three parents of students studying agriculture at RIST. These parents had completed the online questionnaire for parents and the researcher sought to ascertain their responses to the overall findings from phase one of the research. These were identified by their initial feedback to the researcher when they completed the online survey in phase one.

4.6 Summary, Triangulation of the Data

The researcher undertook sequential triangulation of the data within this mixed methods approach, cross checking the results of phase one data, with the phase two data and then validating or cross checking the results of phase one and phase two data with the responses to phase three data collection.

In this study the findings from the quantitative responses were cross checked against the qualitative responses both within each phase of the research and this combined data was then validated and cross checked across the three phases of the project.

It was recognised by the researcher that the cross checking of data through the sequential data collection phases would strengthen the findings within this study as the data from questionnaires was cross checked against responses from one

on one interviews which was further cross checked with a focus group findings and then validated through a process of one on one interviews. This data triangulation strengthened the findings contained within this survey.

CHAPTER FIVE:

FINDINGS

The collection of data was undertaken by the researcher through the three phases of the project and the results and findings of the questionnaires, focus group discussions and interviews are presented (as below) in five sections.

Section One: Student Perceptions

Table 1: Age and Gender of agricultural students who completed the online survey

Table 2: Educational status of agricultural students who completed the online survey

Table 3: Employment status of agricultural students who completed the online survey

Table 4: Vocational courses being undertaken by agricultural students who completed the online survey

Table 5: Industry sectors represented by agricultural students who completed the survey

Table 6: Agricultural students' responses to the survey questions about the influence of specific factors on their decision to study agriculture

Table 7: Agricultural students' perceptions of careers in agriculture

Themes identified from the focus group discussion with agricultural students

Table 8: Non-agricultural students' perceptions of careers in agriculture

Key Themes identified in the student focus group

Section Two: Parent Perceptions

Table 9: Parents responses to the survey questions about the influence of specific factors on their children's decision to study agriculture

Table 10: Perceptions of careers in agriculture by parents of agricultural students

Themes identified in the interviews with parents

Section Three: Views of Career Teachers

Themes identified in interviews with career teachers

Section Four: Views of Industry Representatives.

Themes identified in Interviews with industry representatives

Section Five: Views of Employers

Themes identified in the focus group discussion with employers

5.1 Section One: Student Perceptions

Refer to **Appendix Two** for a copy of the survey for agricultural students.

Table 1: Age and Gender of agricultural students who completed the online survey

Age group	Males	Females	TOTAL
15–18 years old	5 (42%)	7 (58%)	12 (100%)
19–22 years old	8 (62%)	5 (48%)	13 (100%)
TOTALS	13 (52%)	12 (48%)	25 (100%)

Table 1 indicates that there were slightly more male respondents at 52% than female respondents at 48%. All respondents were between 15 and 22 years of age, which aligned with the selected profile of students identified by the researcher as appropriate for the purpose of the study.

Table 2: Educational status of agricultural students who completed the online survey

	Yes	No	TOTAL
Attending Secondary School	10 (40%)	15 (60%)	25 (100%)

Table 2 indicates that 60% of student respondents were not attending school whilst 40% were still at school. This aligned with the selected profile of students identified by the researcher as appropriate for the purpose of the study.

Table 3: Employment status of agricultural students who completed the onlinesurvey

In Full-time Employment	In part-time employment	In casual employment	Not in employment	TOTAL
12 (48)%	8 (32%)	3 (12%)	2 (8%)	25 (100%)

Table 3 shows that the majority at 92% of students were employed of these. 48% were employed full time, 32% part-time and 12% worked on as casual employees.

This profile provides the researcher with respondents that are in either full time employment or part time employment (still attending school). In an open-ended question, respondents were also asked to indicate the nature of their employment. 48% were employed as a farm hand, 13% as a station hand, 9% as a manager, and 9% as a trainee and 11% were either doing other duties or were not employed.

Table 4: Vocational courses being undertaken by agricultural students who completed the online survey

Agricultural Courses	Number
Certificate II in Agriculture	2 (8%)
Certificate III in Agriculture	16 (64%)
Certificate IV in Agriculture	7 (28%)
Total	25 (100%)

Table 4 indicates that students that responded to this survey question were undertaking courses at RIST and covered courses between Certificate II and Certificate IV in Agriculture.

Table 5: Industry sectors represented by agricultural students who completed the survey

Industry	Total
Wool/Prime Lambs	11 (44%)
Mixed Farming	8 (32%)
Beef	6 (24%)
Total	25 (100%)

This profile fits within the red meat and wool sectors with 68% having as their main enterprises prime lambs, beef and wool. 92% of respondents also indicated that their residence was in the South West of Victoria which aligns within the parameters of this research project.

Table 6: Agricultural students' responses to the survey questions about the influence of specific factors on their decision to study agriculture

Factors	Encouraged Me	Neither encouraged nor discouraged Me	Discouraged Me	TOTALS
Parents	12 (48%)	13 (52%)	0 (0%)	25 (100%)
Career Teachers	6 (24%)	18 (72%)	1 (4%)	25 (100%)
Friends	7 (28%)	15 (60%)	3 (12%)	25 (100%)
Employers	15 (60%)	10 (40%)	0 (0%)	25 (100%)
Industry promotion	6 (24%)	19 (76%)	0 (0%)	25 (100%)
The Training I have received	23 (92%)	2 (8%)	0 (0%)	25 (100%)

Table 6 shows that 92% of students reported that the strongest influence on their decision to undertake an agricultural career was the training they received. Employers were rated by students as the second strongest influence with 60% followed by parents at 48%. Only 24% rated their career teachers as a positive influence and 4% indicated that their career teachers had been a negative influence. 24% of students indicated that industry promotion had influenced their decision.

Friends were rated as a positive influence by 28% and as a negative influence by 12%.

An additional open-ended question asked respondents to comment on any other factors that had either encouraged or discouraged them to undertake an agricultural career. In terms of positive influences, eight responded that they had a passion for the industry; six commented that they were from a farming family and three wanted to learn new skills. In terms of negative influences three identified weather and drought, four were discouraged by the hours of work and one commented that the inability to invest in a farm was a barrier. Although there were only a small number of additional comments the researcher noted that the effects of seasonal conditions and hours of work may be important factor which may have an impact on the retention rate of young people in agriculture. An additional open-ended question asked respondents to comment on what further support could be provided to encourage more young people into agriculture. Three students commented that there should be more agricultural education in schools; three indicated that more industry promotion of agriculture was needed and one thought there should be higher trainee wages.

Table 7: Agricultural student's perceptions of careers in agriculture

Statements	Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree
Agriculture is promoted strongly to young people	0 (0%)	5 (20%)	5 (20%)	14 (56%)	1 (4%)
The language used in agriculture promotes a progressive and innovative industry	3 (12%)	8 (32%)	8 (32%)	6 (24%)	0 (0%)
Agriculture is a low paying career	1 (4%)	3 (12%)	5 (20%)	15 (60%)	1 (4%)
Agriculture is a dangerous industry	2 (8%)	13 (52%)	1 (4%)	9 (36%)	0 (0%)
Agriculture offers limited career opportunities	1 (4%)	2 (8%)	1 (4%)	12 (48%)	9 (36%)
Agriculture requires high skill levels	5 (20%)	14 (56%)	4 (16%)	2 (8%)	0 (0%)
Agriculture is most suited to people with low educational qualifications	0 (0%)	0 (0%)	1 (4%)	9 (36%)	15 (60%)

Table 7 shows that students, overall, had a very positive perception of agriculture as a career. 96% percent either disagreed or strongly disagreed with the view that agriculture is a career most suited to people with low educational qualifications, 84% either disagreed or strongly disagreed with the perception that agriculture offers limited career opportunities, 76% either agreed or strongly agreed with the view that agriculture requires high skill levels and 64% either disagreed or strongly disagreed that agriculture is a low-paying career. On the other hand more than half of the respondents endorsed the view that agriculture could be promoted more strongly as a career, with 60% either disagreeing or strongly disagreeing with the statement that agriculture is promoted strongly to young people. Table 7 also shows that 60% of students perceived agriculture as a dangerous industry. Opinion was divided on whether or not the language used in agriculture promotes a progressive and innovative industry.

The Focus Group discussion with Agricultural Students

In summary, the two strongest themes that emerged from the focus group discussion with six agricultural students (*all of whom were currently enrolled in the Certificate*

IV in Agriculture and had all completed the Certificate II or Certificate III in Agriculture) were very similar to the trends in the online survey and validated the following findings from the survey: quality of agricultural training is a very strong influence on the retention of young people in careers in this industry and that employers and parents also have a strong influence on their children's decision about whether or not to pursue a career in agriculture. A second strong theme was their disappointment with the career teacher's advice on career pathways in agriculture and this also validated the survey findings. A weaker theme was the positive role of friendships.

The quality of agricultural training is important

All the students voiced their strong support for the training organization. Given that the researcher was the CEO of the organisation he was aware of possible bias of the student's opinion so he asked them to clarify what was so good about the training organisation and the training that was offered. The students explained that it was the extra support and time that the trainers and staff gave to the students. Two students commented that this had not been their experience in other training organisations. The group was also unanimous in identifying the trainers as a key positive in the training experience - *'they really knew their stuff'* and that the training was in a workplace where they learnt real job skills. Students saw the qualifications they were obtaining through the training organisation as vital to their future career opportunities in agriculture. As one student said, *'to get a good job we need to know the skills required and to progress we need to be trained properly'*. They perceived that without this training they may not get employment in the agricultural sector and may have to look elsewhere.

Employers and parents are a significant influence

Employers and parents were a significant influence on them remaining in the industry. As one student commented *'if I was not treated right, I would look to either another employer or maybe try a job in another industry'*. All participants indicated that parents were a significant influence. One student said that his father had encouraged him to undertake an agriculture course rather than drop out of school.

Disappointment with Career Teachers

The lack of effective career guidance at school was another strong theme. A number of participants commented that agriculture had not been mentioned in their career advice sessions at school. One student went on to say that when he indicated he wanted to undertake a career in agriculture he was told by his career teacher to '*get a trade first*'.

The Positive Role of Friendships

Reference was made by several students to the friendships that they had formed with other students undertaking similar courses. They perceived that these friendships had influenced their career decisions as they enjoyed and valued the association with like-minded people.

Please refer to **Appendix Six** for a copy of the survey for non-agricultural students.

Table 8: Non-agricultural students' perceptions of careers in agriculture

Statements	Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree
Agriculture is promoted strongly to young people by the agriculture industry	0 (0%)	0 (0%)	5 (42%)	5 (42%)	2 (16%)
My Career Teacher promoted agricultural careers at school	0 (0%)	1 (8%)	0 (0%)	7 (58%)	4 (34%)
The language used in agriculture promotes a progressive and innovative industry (e.g. farm hand, shearer, shed hand)	0 (0%)	1 (8%)	2 (17%)	8 (67%)	1 (8%)
Agriculture is a low paying career	0 (0%)	2 (16%)	5 (42%)	5 (42%)	0 (0%)
Agriculture is a dangerous industry	0 (0%)	3 (26%)	1 (8%)	7 (58%)	1 (8%)
Agriculture offers limited career opportunities	0 (0%)	6 (50%)	1 (8%)	5 (42%)	0 (0%)
Agriculture requires high skill levels	0 (0%)	10 (83%)	0 (0%)	2 (17%)	0 (0%)
Agriculture is most suited to people with low educational qualifications	0 (0%)	3 (25%)	2 (17%)	6 (50%)	1 (8%)
I have little knowledge of the career opportunities in agriculture	4 (33%)	5 (42%)	1 (8%)	2 (17%)	0 (0%)
Agricultural careers are about farming	0 (0%)	6 (50%)	0 (0%)	6 (50%)	0 (0%)

A comparison of Tables 7 and 8 reveals that there were some differences in the responses by the students who had no connection with agriculture compared to students studying agriculture. There were two clear differences; 75% of non-agricultural respondents thought that language used for position descriptors did not promote a progressive and innovative industry compared with only 21% of agricultural students and the second difference was in the lack of understanding by the non-agricultural students of the agricultural industry with 75% indicating they had little knowledge of the career opportunities in agriculture and 50% indicating that agriculture was about farming. 92% of the respondents either disagreed or

strongly disagreed with the statement that their career teachers had promoted agricultural careers at school.

5.2 Section Two: Parent Perceptions

Please refer to **Appendix Three** for a copy of the survey for parents.

Table 9: Parents responses to the survey questions about the influence of specific factors on their children’s decision to study agriculture

Factors	Encouraged Them	Neither encouraged nor discouraged Them	Discouraged Them	TOTALS
Parents	4 (57%)	3 (43%)	0 (0%)	7 (100%)
Career teachers	3 (43%)	4 (57%)	0 (0%)	7 (100%)
Friends	4 (57%)	3 (43%)	0 (0%)	7 (100%)
Employers	4 (57%)	3 (43%)	0 (0%)	7 (100%)
Industry promotion	2 (29%)	5 (71%)	0 (0%)	7 (100%)
The Training your child has received	7 (100%)	0 (0%)	0 (0%)	7 (100%)

The sample size in the parent survey was small and lower than expected. However the results are interesting and support the trends from the other surveys and are very similar to the more detailed comments made in the individual parent interviews. 57% of parents perceived that they had encouraged their children to undertake agricultural careers. This perception that parents have a significant influence on their children’s career choice was also apparent in the both student surveys and the student focus group discussion. Parents believed that the influence of career teachers was more significant than did both groups of students, but their perception that the employer had a significant positive influence at 57% was in line with perceptions of both groups of students who completed the questionnaire and feedback in the student focus group discussions. There was a high level of agreement between the parents and the agricultural students about the important influence of the training that the students received.

An additional open-ended question in the survey asked parents to indicate any other factors that had encouraged their child to pursue study or a career in agriculture. Their responses provided further support for the notion that children living on a farm are more likely to pursue a career in agriculture and stay in agriculture. Some of the parents' responses focused on the probability that their children would probably inherit the family farm, their children's enjoyable experiences of the farm lifestyle and their love of the animals and the way of life. There were also several positive comments made about the high quality of the training organisation and the support from friends. One respondent commented that good seasons and commodity prices had encouraged their child's interest in agriculture. This supports similar comments made by four respondents in the student survey.

An additional open-ended question in the survey asked: *'What other factors have at times discouraged your child to pursue study or a career in agriculture'*. Three commented that the main discouragement was the financial risk associated with agriculture through fluctuations in commodity prices and seasonal conditions. This reflects similar comments made by several respondents in the student survey. Two cited the lack of career information available to their children on agriculture, again supporting the response by both the agriculture students and non-agriculture students.

Table 10: Perceptions of careers in agriculture by parents of agricultural students

Statements	Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree
Agriculture is promoted strongly to young people	0 (0%)	3 (43%)	1 (14%)	2 (29%)	1 (14%)
The language used in agriculture promotes a progressive and innovative industry	0 (0%)	1 (14%)	2 (29%)	4 (57%)	0 (0%)
Agriculture is a low paying career	0 (0%)	2 (29%)	0 (0%)	5 (71%)	0 (0%)
Agriculture is a dangerous industry	0 (0%)	3 (43%)	1 (14%)	2 (29%)	1 (14%)
Agriculture offers limited career opportunities	0 (0%)	0 (0%)	0 (0%)	5 (71%)	2 (29%)
Agriculture requires high skill levels	2 (29%)	4 (57%)	0 (0%)	1 (14%)	0 (0%)
Agriculture is most suited to people with low educational qualifications	0 (0%)	0 (0%)	0 (0%)	1 (14%)	6 (86%)

There was very strong parent disagreement with the statement that agriculture was best suited to people with low educational qualifications, with 100% either disagreeing or strongly disagreeing. There was also quite strong agreement with the statement that agriculture requires high skill levels at 86% either agreed or strongly agreed). 71% disagreed that agriculture was a low paying career. There was less agreement by parents than the agricultural students with the statement *'that Agriculture is promoted strongly to young people'*.

Themes identified in interviews and focus group discussions:

Comments made by the parents during the individual interviews and in response to being presented with the overall findings, were very similar to the responses in Tables 9 and 10. This would be expected since the survey respondents were the same parents who participated in the individual interviews. All agreed with the overall findings from the study thus far with one exception. One parent commented

that he felt that the low level of influence attributed to career teachers by students might be more a reflection of the poor perceptions of the industry held by young people than the quality of the career teacher's advice and guidance. He had found his children's career teacher to be passionate about promoting agriculture.

One parent had noticed a significant improvement in their child's motivation because of the friendships he had developed in their course in agriculture.

There was only one strong theme that emerged from the interviews with parents. This was positive influence of high quality training and the acquiring of good skills. All parents commented on the high quality of the training and the training organisation and confirmed that this factor did have an influence over their child's choice of careers. Several parents commented that skills learnt at training were real workplace skills that the students could use every day in their work practices.

They commented on the support both they and their children received and felt that it was the training providers influence and capabilities that made the agriculture courses so attractive to the students and to the parents/employers. One commented that it was a good idea for young people to undertake tertiary studies as agriculture was getting so technologically advanced that it required tertiary educated people to manage larger rural operations. Another parent commented that it was really important for young people to finish their schooling even if they wanted to return to agriculture. The training in work place skills was seen as very important by the parents. This immediately improved the student's productivity and made them a valuable asset to the farm. One parent made the comment that his son was teaching him new skills every time he came back from training. Not only was this increasing the student's workplace skills, but it was also building confidence and enthusiasm for agriculture.

5.3 Section Three: Views of Career Teachers

The researcher individually interviewed three career teachers at the commencement of the project and then sought their feedback on the data, findings and recommendations from this research project at the end of the project.

In summary, the two strongest themes that emerged from the interviews with the career teachers were the lack of industry promotion and support for agricultural careers and a lack of understanding by career teachers of career pathways within the agribusiness sector as a whole. Other weaker themes included a lack of interest in agriculture by students, lack of career guidance time with students, career teacher's relative lack of influence and the lack of higher education opportunities in agriculture.

The Lack of industry promotion and support for agricultural careers

The career teachers commented that they received very little agriculture industry promotional material and no support from this industry. They indicated that the information they received from other industries was much greater than agriculture. Dairy Australia was mentioned as an industry that had a schools promotional program.

Career teachers' lack of understanding of career pathways

Because of the lack of career advice support from industry, all three career teachers had little knowledge of all the possible career pathways in agriculture.

Students' lack of interest in agriculture

Two of the career teachers commented that there was still a very negative perception by students and parents of careers in agriculture. The negative perception was seen to be very prevalent in schools in rural and regional areas. They commented that it did not matter how good the promotion was, this influence was hard to overcome. Two career teachers in the second interview commented that RIST, through its agricultural training programs, was having a positive influence in

this area. Students returning from training had been promoting it to other students. One teacher commented that in his school the number of students undertaking agricultural courses had more than trebled because of this positive promotion.

Lack of career guidance time with students

One teacher commented that the lack of time to offer career guidance to students per se limited their capacity to focus in on agricultural careers.

Career teachers' relative lack of influence

Two career teachers believed that many students already have set ideas on careers and are more strongly influenced by parents and peers than by career teachers. One teacher, after reviewing the findings from the overall study about the relative lack of influence of career teachers, commented that a career teacher can only do so much, and if the student already has set ideas on their future career pathway, or there is strong parental or peer group pressure than the students will probably not follow the advice of the career teacher anyway.

Lack of higher education opportunities in agriculture

Comments were made about there being very few higher education institutions now offering studies in agriculture. They commented that, in the past, career teachers were able to keep themselves up to date with agricultural career pathways through the promotional information they received from agricultural faculties in higher education institutions. As the numbers of institutions offering agriculture diminished, so did the available resources. One teacher raised the highly competitive nature of vocational education providers and made comment that in his view this was not in the best interest of the student. He explained that he was referring to providers aggressively promoting enrolments rather than looking at the student's needs.

5.4 Section Four: Views of Industry Representatives

The researcher interviewed three executives from industry representative organisations at the commencement of the project and then sought their feedback on the conclusions and recommendations that flowed from the data collected in the research study. In summary, the strongest themes that emerged from these interviews were:

- The challenge of distributed responsibility.
- The need for the industry (including individual rural producers) to take responsibility for training the workforce.

Two moderately strong themes that emerged were:

- Industry both the individual and the peak bodies have to take responsibility for promoting a positive image of agriculture.
- Industry bodies are membership based.

The challenge of distributed responsibility

The lack of a single entity responsible for promoting agriculture in schools was seen by all interviewees as a major limitation to recruitment and retention. There was general consensus that the agricultural industry needed to have a higher level of coordination in the way it interacted with career advisers and teachers. Quite often the career teacher was seen as the problem, when in actual fact there were a whole range of other issues around providing effective career advice to young people. The perceptions of parents and peers, the lack of a coordinated engagement by agriculture with young people on career pathways in agriculture, poor engagement by industry with the media, are just a few of the issues than can be chunked under lack of industry support. There is however a gap in who is ultimately responsible for promoting the industry through schools to young people.

The need for the industry and farmers to take responsibility for training the workforce

All interviewees agreed that employers need to embrace education and training of their workforce as a way of lifting productivity. They commented that while the

innovators and early adopters in agriculture embrace training and education for their workforce, there are a large number of employers who see training as a cost to their business and not an essential part of their business. The emphasis and importance of training the workforce appears to be declining:

'58% of employers view the skill level of their employees as adequate compared with 53% in 2009' (NCVER, Employers Views of the VET system 2011, p.5).

Industry both the individual and the peak bodies have to take responsibility for promoting a positive image of agriculture

This theme focused on the individual farmer promoting their industry more positively and on peak industry bodies engaging more effectively with the media on promoting the positive image of agriculture. The agriculture industry needs to promote career pathways in what is becoming a very sophisticated industry.

Industry bodies are membership based

Comments were made that suggested that because many industry bodies are membership based, the messages that these organisations were putting out into the marketplace may not directly align with attracting and recruiting young people to the industry, (i.e. negative stories of the financial plight of their members due to droughts, floods and commodity prices does not inspire young people to consider a career in agriculture).

5.5 Section Five: Views of Employers

The agriculture students, in their responses to the online questionnaire, had identified employers as one of the key influences on their pursuit of a career in agriculture. This was also supported by the parent's responses to their online questionnaire. The researcher wanted to gain a greater understanding of what the linkages were between the student and employer and why they were seen as important.

The researcher interviewed three employers taken from the RIST database of employers. One employer was a large employer of young people and the other two were farmers who employed two or less employees.

Many of the themes that emerged from the interviews with employers were consistent with the responses from the student surveys, the student focus group discussion and the parent survey. The two strongest themes that emerged from the interviews with employers were the importance of the quality of training being provided and the higher likelihood of young people staying in the industry if they have a background in agriculture. Weaker themes included the importance of the attitude of the employer to employing young people and the importance of employers supporting training.

The importance of the quality of training being provided

The training provider was seen as a very important influence for sustaining a young person's interest in agriculture. It was seen as one of the most important links with a good outcome i.e. completion of a traineeship for the employer and employee. Comments were made that quality training also assisted the employer because the student is then more able to perform their duties more effectively. The communication between the training provider and the employee was also seen as assisting in the overall supervision of the young person, because of the additional support and a different perspective.

The higher likelihood of young people staying in the industry if they have a background in agriculture

All interviewees supported the view that young people were more inclined to stay involved in their training course or career if they had past experience in agriculture. Young people who were raised on the land and understood that environment were seen as more likely to continue on with either training or a career in the industry because there were no surprises. The other theme to come through was that there appeared to be a greater adaptability to the work environment by those young

people who had commenced their training at a Certificate II level (around 15-16 years). They had more practical skills and more enthusiasm for the job. One employer commented that although the high attrition rates of young people leaving an industry can be attributed to a number of factors, the most frequent factor is that the work environment is not what the young person expected.

The importance of the attitude of the employer to employing young people

An employer's positive attitude to employing young people was perceived as important for retention in the industry. Positive employers were described as those who have a positive attitude to employing young people and who spend time with the employee for the purpose of training and supporting them. This aligns with the concept of 'employer of choice', a concept supported by the findings from the agriculture students focus group and based around good employers and bad employers. In small rural communities most of the young people know who is a good employer and who they would not want to work for. The students in the focus group discussion made it clear that they would apply for jobs with the good employers and not stay with a bad employer.

The importance of employers supporting training

Allowing time for 'off-farm' training was identified as an important component in the employer-employee relationship. The employer needs to be willing to allow time for young employees to be trained by a third external party. The benefits of this approach are that the young person develops their work-ready skills a lot more quickly. Additionally there is a third party involved to assist with the overall supervision of the young person. One interviewee commented that employers who tried to undertake the training themselves were more likely to have higher turnover of staff than those who provided external training opportunities for their staff. The industry representatives who were interviewed also made comment on the need for employers to embrace and promote training and education for their employees.

'The greatest threat to training access in the agriculture industry is lack of participation by industry (farmers) itself' (DEEDI (Qld) Industry Skills and Workforce Development, Interim Report 2011, p. 9).

5.6 Brief Summary of Findings

The following is a very brief summation of the key findings which will be discussed in Chapter Six.

Student Perceptions

1. The most significant Influences on the agricultural students' decision to pursue a career in agriculture were, in order, quality industry focused training, their employers and their parents. The least significant influences were industry promotion and their career teachers.
2. Agricultural students held a predominantly positive perception of agriculture as a career and their perceptions did not reflect common industry and media comments in a number of areas. Students in this study did not agree that agriculture is a poorly paid career that requires only low skill levels and does not offering a career pathway. There is a degree of alignment with media commentary with many students perceiving it as a dangerous industry.
3. The students did not believe that agriculture was promoted strongly enough as a positive career by career teachers or industry.
4. Suggestions from the students as to what additional support could be introduced to encourage more young people into agriculture included better industry promotion and more agricultural education in schools. One theme that came from discussions in the focus group was that four of the students had commenced their training in a Certificate II of Agriculture (15-16 years) and they indicated that this was an ideal age to commence as they were engaged in agriculture at an early age and this had encouraged them to continue their

agricultural studies and careers through the Certificate III and then Certificate IV in Agriculture. They said that many of their fellow students had similar experiences.

Non-agricultural Students Perceptions

1. Non-agricultural students had little knowledge of career pathways and the type of employment opportunities existing in agriculture. They had received minimal guidance from career teachers and no information about agriculture.
2. Non-agriculture students held a predominantly positive perception of agriculture in that they indicated it was a highly skilled industry not generally suitable for people with low qualifications.
3. They did view the language used in agriculture as not promoting a progressive and innovative career. This may be an issue in attracting young people from metropolitan areas to agricultural careers in farming.
4. These students did not view agriculture as a dangerous career; however they did later state little knowledge of careers in agriculture so this statement may reflect their limited understanding of agricultural careers.
5. These students did not believe agriculture was promoted strongly to young people in metropolitan areas.

Parents Perceptions

1. The most significant Influences on the parents of agricultural students were in order, the quality industry focused training, their employers and themselves. The least significant influences were industry promotion and career teachers.

2. Parents of agricultural students held a predominantly positive perception of agriculture as a career and their perceptions did not reflect common industry and media comments in a number of areas. Parents in this study did not agree that agriculture is a poorly paid career that requires only low skill levels and does not offer a career pathway.
3. Parents held mixed views on the industry promotion of agriculture and were more favourably inclined to support the influence of career teachers.

Career Teachers

1. Career teachers perceived that there is a lack of a coordinated support from the agricultural industry in promoting the industry to young people.
2. They also perceived that students and parents held a negative view of agricultural careers.
3. The diminishing number of higher educational institutions offering courses in agriculture is an issue with career teachers as the student had limited choice to choose a course which suited and the career teacher had less access to course-based resources to utilise in promoting agricultural courses to students.
4. Another point raised was the strong competition from educational institutions in the vocational sector and enrolments were more important than the needs of the student.
5. Quality training in agriculture did encourage other students to undertake similar courses, in particular those students in Years 9 and 10 (15-16 years) who were very enthusiastic supporters of their agricultural training experience.

Industry Representatives

1. The lack of a coordinated approach to the promotion of agriculture was seen as the greatest limitation.
2. The lack of participation in the training of their workforce by a significant number of employers in agriculture, particularly at an entity level was seen as a challenge to the productivity of their industry and the recruitment and retention of young people to agriculture.
3. Negative media commentary which portrayed the industry as in crisis was seen as a real issue in recruiting the next generation of young people to the land.
4. Individuals in the agriculture sector were also doing a disservice to the positive promotion of the industry by always talking it down.

Employers

1. Employers saw industry focused training that engaged young people as a critical component of attracting and retaining young people in agriculture, through the provision of quality workplace training, job skills, supervision and support for the young person as they progressed through the education and career pathway.
2. Employers perceived that young people with experience working on farms or who came from an agricultural background were more inclined to continue their employment than those with no previous experience in agriculture.

5.7 Summary

The findings detailed above were developed using the mixed methods approach of a combination of qualitative and quantitative research strategies. The findings from each set of responses was interwoven through the data gathering process and

analysis of the data and continually linked back to the student's responses. Each phase was used to validate the agriculture student findings in this project. What the researcher identified through this process was the importance of education and training for young people in maintaining their engagement in the agriculture industry. This supported the researcher's proposition that there is a direct linkage between education and young people being encouraged to undertake or continue a career in agriculture.

CHAPTER SIX:

DISCUSSION

6.1 Introduction.

In summary the key findings of this study were as follows:

1. The majority of participating students enrolled in vocational agricultural courses, their parents, and students from a non-agricultural background perceived agriculture as a well-paid industry, suited to people with high skill levels and providing good career pathways. Parents were less inclined than students to perceive agriculture as a dangerous industry.
2. The three factors that were identified as having the strongest impact on student's decisions to undertake an agricultural career were (in order): the positive impact of quality industry focused training to young people; the positive impact of employers; and the positive impact of parents.
3. The three factors that were identified as having the least impact on student's decision to undertake an agricultural career were: Lack of promotion by the agriculture industry of agriculture as a positive career for young people; the information gained from and advice of career teachers; and the advice and encouragement from friends (outside their student cohort).

6.2 A Positive View of Agriculture as a Career

This predominantly positive and consistent view of careers in agriculture as reported by agricultural students, their parents and non-agricultural students in this study was surprisingly at odds with the typical comments found in the media. These results raise the question as to where these seemingly inaccurate perceptions originate from and why they are supported so strongly in media commentary.

Many media sources maintain some common perceptions of agriculture as a dangerous, low paying, poorly educated industry which is more suited to manual skills. Certain sections of the agricultural industry can perhaps take some responsibility for this negative media output because they tend to see it as a means of attracting Government attention. However this approach works against the recruitment of young people into the industry.

'The general population is kept informed by the media of the negative aspects of agriculture and challenges of the inland. There is always a drought or flood to contend with and airplay is regularly given to extremist campaigns' (Pratley 2008, p. 28).

The negative media commentary in addition to a reduction in funding for agricultural research and development can work to reinforce the notion to prospective students and employees that they should consider career options other than agriculture.

Recommendation 6 of the Victorian Government Parliamentary Inquiry was that:

'The Victorian Government include modern images of agriculture and food and fibre producers in its information and marketing materials, to change the public's 'traditional' view of the agricultural industry' (Parliamentary Paper No 135 2012, p xxiv).

6.3 The Three Factors Identified as having the Most Influence on Students' Decision to Undertake an Agricultural Career

The three factors that were identified as having the strongest impact on student's decisions to undertake an agricultural career were the influence of quality industry focused training to young people, the influence of employers and the influence of parents.

6.3.1 The Positive Impact of Quality Industry Focused Training

By far the strongest positive influence on student's decision to undertake and complete an agricultural qualification in preparation for an agricultural career was quality industry focused training.

In order to investigate this factor in more depth the researcher sought to identify what specific aspects of the student's training experience contributed to this view. A rich and accessible source of data that existed within the training organisation, which the researcher is involved, provided some additional information about this perspective.

RIST has students undertaking traineeships in agriculture at a Certificate II and Certificate III in Agriculture whose ages align with the age profiles of students who participated in this study (15-20 years) and who live in the south west of Victoria, with the majority coming from a background in the red meat and wool industry. The organisation has conducted Post Course surveys with these students for five years (2007- 2011) and the researcher analysed the data of the 817 respondents in 2011.

Overall the students were highly satisfied with their course, with 99% indicating that it met their expectations and 96% rating the usefulness of the course and course content as either above average or excellent. The specialist trainer knowledge was nominated by 88% as the most important factor in their training and 51% nominated the practical hands on training that matched the required workplace skills. Feedback from the student focus group supported the views of the trainer's skills and knowledge as really important and the reason they rated the training so highly. *'They are working in industry every day', 'they go out of their way to explain things'* were some of the comments coming from the students about the trainers.

One other strong theme to come out of the student focus group was the support the training organisation provided to students through their course. This support was defined by one student *'the staff really show an interest in us and they want us to succeed'*. This support included mentoring, on farm visits, and assistance with course work being available after hours.

The impact of the students' satisfaction with their training experience is reflected in the higher than average qualification completion rates of students undertaking traineeships in agriculture with RIST in 2010; 93% average completion of compared to the overall industry 54% (NCVER 2010, p. 7).

One moderate theme to emerge which the researcher identified through both the surveys, student focus group discussions and also the trends within his organisation was that the attraction of young people in the age group 15 – 19 years appeared to be beneficial in encouraging students to continue and progress through the courses from Certificate II, Certificate III and Certificate IV in Agriculture.

It would appear from this data that the three key aspects of a positive training experience for young people that encouraged course completion are:

1. Involvement with quality trainers with significant levels of industry knowledge and skills who are practising in industry.
2. Training in a real workplace environment.
3. Attracting young people between the ages of 15-19 into agriculture training tends to maintain their longer term interests in agriculture.

Over 60% of the RIST students were in full time employment while they completed their course in 2011 (RIST student records 2011) and higher rates of course completion encourage higher retention of young people in the industry.

This conclusion is further supported by the findings of the Parliamentary Inquiry:

'It is clear that young people enjoy and benefit from direct exposure to agriculture through active farming experiences and school based apprenticeships (traineeships in agriculture)' (Parliamentary Paper No 135 2012, p xiv).

6.3.2 The Positive Impact of Employers

The students and parents in this study perceived that employers played a major role in attracting and, more importantly, retaining young people in an agricultural career. Students in this research project were working on farms in the local area in a full time capacity or working part time, (maybe attending school or working for a number of farmers).

In the student focus group the employer relationship was raised and the general consensus and feedback from the students was that a good employer looked after the employee and this made coming to work and staying in the industry worthwhile. One student raised the issue of a poor employer who had nearly driven him to look at other careers outside agriculture. The conversations with employers indicated some challenges with young people and their expectations; most said that young people had a good work ethic, but their expectations of fitting 'work around their social lives' could be challenging at times.

Employers acknowledged the important role the training provider played in the retention of young people in the industry, through quality training programs.

Students spend the majority of their week with employers and if it is a positive experience for them, young people will be more inclined to stay engaged in agriculture

Human resource management skills have not been a high priority for many rural producers as they are usually small operators only employing one or two staff. The larger corporate farming operations have the capacity to invest in better human resource management skills than the smaller employers. It will be important for employers in the future to undertake some human resource management training to enable them to better manage a young workforce.

The concept of 'employers of choice' in agriculture is becoming a popular model. In this model certain employers have a reputation as good employers to work for and have a positive reputation in their community in regards to how they treat their staff. Therefore young people are more likely to be attracted to these employers.

'The committee learnt that human resource management has not been a traditional focus of the farming sector, but practises are developing as business strive to become 'employers of choice'' (Parliamentary Paper No 135 2012, p. xviii).

The 2011 Environmental Scan undertaken by Agrifood Skills Australia (Agrifood) highlighted the importance of up skilling the employers in agriculture:

'There is acknowledgement that industry – individual enterprises and peak bodies – will need to drive a focus at the workplace level and re-examine some of the most entrenched cultures and management practices that affect each worker each day' (Agrifood 2011, p. 13).

The employers consulted had differing views on what training was required, some large employers had human resource policies in place, the smaller ones did not have the time or skills required but did see it as important.

6.3.3 The Positive Impact of Parents

Just under a half of students thought that their parents had a positive influence on their choice of an agricultural career and 54% of parents believed that they had an influence on the careers their children undertook. The results from this survey and follow up interviews with parents and the student focus group suggest that parents are an important influence on young people's choice of an agricultural career and the agricultural and training industry should engage more effectively with these stakeholders to enhance this effect. One student said he wanted to leave school but his parents asked him to undertake an agricultural training course while he was at school and this made him realise that agriculture was the industry he wanted to pursue. Another parent said that his son was not interested in agriculture until he undertook his Certificate II in Agriculture and he went on to complete his Certificate III and is now enrolled to do tertiary studies in agriculture.

The importance of parental influence is also supported by the study by Miller et al., 2011, in which they found that 54% of students surveyed had nominated their parents as an influence on their education/career choice.

The Parliamentary Inquiry identified that:

'Many times young people told the Inquiry that their attitudes towards a career in agriculture are heavily shaped by family conversations around the dinner table'
(Parliamentary Paper No 135 2012, p. 11).

6.4 The Three Factors That Were Identified as Having the Least Influence on Students' Decision to Undertake an Agricultural Career

The three factors that had the least impact on young people's decision to undertake a career in agriculture were promotion by the industry, information and encouragement from career teachers and the influence of friends.

6.4.1 Agricultural Careers are Not Promoted Strongly Enough to Young People

All the student participants in this study agreed that agriculture was not promoted strongly enough to young people. Parent responses were divided, with approximately half perceiving that agriculture was promoted to young people and half disagreeing with that view.

The fact that the majority of the non-agricultural student respondents in this study reported a lack of understanding and knowledge about careers in agriculture further supports the need for the industry to take steps to enhance its promotion and image of agriculture careers in order to attract more young people, especially those from metropolitan centres. This direction is supported by the findings from the Victorian Parliamentary Inquiry into the capacity of the farming sector to attract and retain young farmers and respond to an ageing workforce:

'During the Inquiry into the Farm Sector Capacity, the Rural and Regional Committee heard a great deal of evidence around the community perceptions of the role and value of agriculture as a career. It was clear to the Committee members early on during the Inquiry that agriculture's ability to attract and retain young people in rural Victoria is greatly impeded by its negative image' (Parliamentary Paper No 135 2012, p. xiii).

One of the key issues in relation to the promotion of agricultural careers is who, within the agriculture sector, should be responsible for building the positive image and the positive promotion of the industry. As the Parliamentary Inquiry noted;

'the source of much of this negative image can be found in the communities themselves – often amongst those families living and working in rural Victoria, teachers and other educators, industry and the media' (Parliamentary Paper No 135 2012, p. xiii).

The industry organisations that can have a significant impact on how agriculture is promoted within the general community are key industry groups such as the National Farmers Federation and State representative bodies. As this study is focused on the South West of Victoria, The Victorian Farmers Federation is a key player in the positive promotion of agriculture in this region and the State of Victoria.

The researcher received feedback in the interviews with industry representative that there were significant gaps in areas of responsibility for the promotion of agriculture to the wider community. One representative said that there was no one industry body charged with the overall responsibility of engaging with the Australian community to promote agriculture.

Another key issue relates to what industry support should look like. It is too easy to apportion blame for a lack of positive action to a sector as a whole without being specific about which key components and people are ultimately responsible and what is required from them to promote their industry to young people.

The different forms of industry promotion and support can be categorised in the following ways:

- The coordination of industry promotion and support of programs that are used to attract young people to agriculture.
- The industry's media profile; that is how the industry engages with the general community through both the print and electronic media.
- The industry's engagement with key stakeholders within the education sector to promote agriculture.
- The development and implementation of education and training framework to ensure that these programs align with industry expectations.

The Coordination of Industry Promotion

There is a need for greater coordination and cooperation across all industry sectors, governments (both state and federal) and various government agencies to facilitate an

easier and more consistent engagement with young people. This view is supported by the Industries Development Committee Workforce, Training and Skills Working Group. One of its key findings was that:

'Consistent promotion of the agriculture industry as a successful, sustainable and responsible industry, with a diversity of challenging and rewarding careers is needed to attract more skilled labour in the industry' (Primary Industries Ministerial Council (WTSI) 2009, p. 4).

The Industry Media Profile

One industry representative said that the major industry bodies like the National Farmers Federation and its state representative bodies lack resources to promote agriculture and their responsibility is looking after their membership. This can sometimes be at odds with the promotion of agriculture to the wider community. An example of this is when these bodies are advocating for financial support for farmers during a drought. They will be heavily represented in the media with strong negative messages about the impact of the drought on their members. Young people reading this media coverage may see a desperate industry not worth pursuing as a career.

While industry representative groups use the media to communicate their messages on issues facing agriculture to garner support for government action, the negative publicity generated can have a detrimental effect on the perception of the industry by young people. Through the severe drought in the last decade the media was full of negative stories of farmer's financial and emotional hardships. While these situations were extreme and there were countless stories of very real hardship across the nation, it could be argued that the constant negative media about agriculture and its future did nothing to promote it as an industry that young people would find appealing. The image that the farm sector needed government support to survive did not present a positive image of a sustainable and progressive industry that would be attractive to young people. What was not conveyed in the media or by our industry leaders was that:

'Australian agriculture is one of the least subsidised with only 4% of farming income being supported by government compared to 61% in Norway, 23% in the European Union, 17% in Canadian and 9% in the USA' (NFF, Farm Facts 2012, p.17).

At the same time this media campaign was being waged there was no mention of the continuing contribution of agriculture to the prosperity of the nation stating the following facts:

'The growth of the farm sector over the past 20 years has consistently outperformed other sectors, and was a key reason Australia avoided a recession during the global financial crisis, or that the Australian farm sector employed 307,000 people directly and 1.6 million through the supply chain, or that the agricultural sector led the nation in the reduction of greenhouse emissions, a massive 40% reduction between 1990 and 2006' (NFF, Farm Facts 2012, pp.1-11).

Smaller farmer groups and people involved in agriculture both 'behind the farm gate' and 'post farm gate' also have some responsibility to promote their industry in a positive light. Too often farmers are their own worst enemy in the promotion of agriculture. For example they tend to talk a lot about bad seasons, poor commodity prices, long hours of work and poor incomes.

'Former deputy PM, Tim Fischer, was highly critical of what he described as the counterproductive negative mantras. Tim said farmers complain when they feel they can exercise leverage. That leverage resulted in a \$900 million drought aid package for the current drought' (Wahlquist 2003).

The key industry players identified in this research project need to ensure that their media policies are not only focused on raising community awareness of the issues facing the industry but must also be balanced with a positive view of the industry so that young people looking at career alternatives see agriculture as a positive career. People involved in agricultural production also have an important part to play and they should be encouraged to talk about agriculture as a positive and vibrant industry instead of over-focusing on problems and other negative issues.

6.4.2 Career Teachers are Poorly Informed about Careers in Agriculture

In this study, career teachers were identified by the majority of the agricultural students and non-agricultural students and more than half of the parents as having minimal impact in promoting agricultural careers to secondary students. There could be a range of explanations for this pattern such as a lack of effective resources, or a poor understanding

of career pathways in agriculture. These explanations may be more or less important depending on whether the career teachers are based in rural and regional schools or metropolitan schools.

Supporting evidence for the conclusion that career teachers have less impact on student's decisions about agricultural career paths than might be expected can be found in a study by Miller et al. (2011). The researchers in this study focused on the career motivations and attitudes of first year students in agricultural courses at the University of Queensland. They found that career advisors, university and industry representatives each influenced only around 7% of the respondents. Similarly, in their submissions to the Parliamentary Inquiry many young people said that:

'Their career advisors had little knowledge of the many opportunities available in the farming sectors – or worse, career advisers had actively dissuaded young people from pursuing careers in agriculture' (Parliamentary Paper No 135 2012, p. 12).

In the focus group with students the lack of career support for agriculture was raised. One student made the comment that he when he raised the idea of pursuing a career in agriculture his career teacher advised him *'to get a trade first'*.

One of the themes that emerged during the researcher's interviews with career teachers was their perception that there is a lack of any effective promotional material on the agriculture industry for career teachers to use. Although they did receive promotional material and career information from a range of individual agricultural education and training institutions, they did not receive any general material promoting agriculture as a positive career destination for young people.

Career teachers cannot bear all of the responsibility for their lack of encouragement of young people towards agriculture. The industry must also accept responsibility for the lack of effective and appropriate industry career material that career teachers can use to promote agricultural careers.

The Parliamentary Inquiry argued:

'That young people interested in studying agriculture should be able to identify a clear pathway from school through to higher education. Career pathways in employment should be equally clear. The committee learnt that these education and career pathways are currently not well identified for young people across rural and regional Victoria. The committee believed that it is the responsibility of the farming sector to develop and promote these pathways for young Victorians' (Parliamentary Paper No 135 2012, p. xix).

Industry has a vital role to play in building and presenting a positive image of agriculture within the general community, to young people contemplating a career, and to other stakeholders and gatekeepers, and especially to career teachers in both rural and metropolitan secondary schools and training providers, who have an influence over young people's career choices:

'Industry needs to play a crucial role in providing leadership to address agriculture, workforce, training and skills issues' (NFF, Farm Facts 2012, pp. 1-11).

One of the key themes that emerged from the interviews with career teachers and industry representatives in this study was their identification of a significant gap in the capability of agricultural industries to promote agriculture through career teachers and educational institutions, as there appears to be no one body responsible for this function. The promotion of agriculture was left to a wide range of organisations who on the whole did not have a mandate for this but undertook some type of promotion because there was no one else promoting agriculture.

Recommendation 2 of the Parliamentary Inquiry identified the lack of quality agricultural career information as critically important and said:

'In recognition of the important role of career advisers in secondary schools, the State government (Victorian) appoint a rural industries careers adviser within the Department of Primary Industries or Primary Skills Victoria to promote agricultural careers to students' (Parliamentary Paper No 135 2012, p. xxiii).

The challenge for the implementation of this recommendation is that it appears to be very under resourced and one person would not be capable of carrying out this role. This would also only partly address the issue in one state and not on a national basis.

Recommendation 3 of the Parliamentary Inquiry was:

'That the State Government encourage peak industry bodies to increase their communications with high school career advisors, to ensure that information about career opportunities in agriculture remains relevant, up to date and easily accessible'
(Parliamentary Paper No 135 2012, p. xxiv).

Career teachers have the ability to provide valuable information to young people on career pathways in agriculture, but the industry must take responsibility for promoting itself to the career teachers and also providing education to these advisers to ensure they have the information and skills to positively promote careers in agriculture.

6.4.3 Friends and Peers

In the survey of students, friends were raised as a minor positive influence and also a negative influence. In discussing this at the student focus group meeting, friends were seen as a positive influence, especially in the student cohort where strong and lasting friendships were made. The students saw this as a very positive influence in helping each other out in their courses and this then extended to a social connection. On the other hand friends not involved in agriculture could be negative towards the industry as a good career.

CONCLUSIONS AND RECOMMENDATIONS

The researcher acknowledges that there were limitations in this study because of the low numbers of respondents; however the consistency of results across the project indicates that the following recommendations and future actions are based on reliable and robust data.

The researcher suggests that there is an opportunity for the following to occur as a result of this project;

1. A longitudinal study of young people involved in agriculture, tracking a group of young people who have been employed in agriculture for a period of 5 years, to look at the key decisions made from schooling through their career pathway in agriculture. This study could look at the factors that maintained their interest in agriculture as a career; in particular do students who become involved in agriculture training at school or at a vocational level have a greater likelihood of following a career pathway in agriculture.
2. A study to look at broader issues that may impact on a young person's attraction and retention in agriculture such as; issues around farm ownership, linkages to a rural background, living within small isolated communities, commodity prices and seasonal factors influencing the young person career decisions.
3. A study across different regions or industries. This study was confined to a fairly stable agricultural region with good access to a wide range of facilities and services. Would the findings be different if the research was conducted in a more remote rural location?
4. A study into the economic cost to the nation of the lower numbers of students undertaking agricultural science courses at a tertiary level. This study could look at the why these students were not enrolling in agricultural

science courses and what long term economic impact on the agricultural industry this will have in ten to fifteen years.

This research project has looked at a small microcosm of the larger issue of attracting and retaining young people in agriculture. The researcher suggests that the findings in the thesis will add to the body of current knowledge and dispel some myths and common misconceptions. Quality industry focused education and training in agriculture directed towards young people in their middle years of education, employers of choice and positive parental support for agricultural are three key factors in sustaining young people in an agricultural career.

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APPENDIX ONE

