Chapter 1 – Overview of the Study

1.1 Introduction

The impetus for this study was my concern that Year 10 students were making appropriate subject choices for senior secondary studies. I have been a secondary school teacher specialising in vocational education and training for 18 years, and have taught in a variety of Catholic school settings. In the six years prior to commencing this study I had been a Vocational Education Co-ordinator and Year 12 Co-ordinator at a secondary school for students in Years 8 to 12. In these roles, I was close to the students, and observed an increasing number choosing academic subject pathways for their senior studies with what I believed were minimal interest in the subjects, and a vague concept of their intentions beyond graduation from secondary school. In some cases, students were dissuaded from choosing vocational education as it was perceived to be for those who were struggling academically. Anecdotal information regarding the students' post-secondary destinations revealed a disparity between the subjects studied at school and the career objectives students eventually focussed on. This misalignment of school subject choices and future career pathways was a concern to me and I perceived that it created distress for the students, their families and the staff.

1.2 Prior Research

Data indicating that large numbers of students chose not to continue with training and education after leaving secondary education led to this research study. In Queensland, approximately 72 per cent of secondary students take an academic subject pathway for their senior secondary studies, although only approximately 36 per cent attend a tertiary institution upon graduation (Department for Education and Industrial Relations, 2011; Department of Education Training and Employment, 2010). In addition, although approximately 28.7 per cent of senior secondary students take a vocational subject pathway, only 25.1 per cent undertake further vocational education and training after graduation (Department of...
Education Training and Employment, 2010). Post-secondary schooling, 40 per cent of secondary students do not transition to education or training, and 10 per cent of this group are not employed in their first year after school (Department of Education Training and Employment, 2010). Thus, the majority of secondary students take academic subject pathways but do not use the qualification for tertiary studies, nor do the young Queenslanders who chose a vocational subject pathway capitalise on their decision and continue with further vocational education and training upon graduation.

This is a concern because studies of youth unemployment have identified increased risk of future, long-term casual employment or unemployment for those who do not engage in training and education to enhance their employability skills soon after secondary schooling (OECD Secretariat, 2000; Queensland Government, 2002). Moreover, Queensland youth face challenges emanating from global and national factors, which means their employment prospects may not be as assured if a future economy is not as robust as previously.

International factors such as globalisation, youth unemployment and economic recessions interact with the Australian and Queensland economies to affect career pathways of secondary school students. Policies and initiatives introduced by the Australian Government to provide secure career pathways for adolescents are affected by changes to the labour market and economic downturns and these affect opportunities or constraints facing graduating Queensland students.

Following an analysis of the contexts of the economic and educational policies of the Australian and Queensland governments, and the Organization for Economic Co-operation and Development (OECD), I identified the research problem as students' perceptions of the factors that influence the possible dissonance between the subject pathways chosen by students for senior secondary studies and their post-secondary destinations. The study was
situated within a Queensland economic and educational context with reference to relevant national and international factors that relate to this research problem.

1.3 The Research Questions

The most pertinent influences determining subject choice pathways and future career plans are reviewed and conceptualised in the literature review. Organised into the three domains of self, family and the school environment, the pertinent elements are described and discussed.

First, intrinsic factors that affect how students make their subject pathway selections are identified as vocational interests, academic self-efficacy, career goals and career maturity. These elements dominate the literature concerning influences on career pathways and subject choice.

Vocational interests provide the motivation for students to consider subject pathway choices that would provide an entry into the desired industry or occupation (Sullivan, 2004). These vocational interests develop gradually during adolescence and are nurtured by personal interests, observant and understanding staff and family members (Athanasou, 2006; Nixon, 2006). Measures of interests, preferences and future careers suitability such as the Self-Directed Search (SDS) are used in many Australian schools, in career inventory tools and embedded in Australian Government career advisory websites. Consideration of how vocational interests and career inventory tools such as SDS, contribute to subject pathway choices has led to the following research question:

*To what extent does the outcome of the Self-Directed Search affect subject pathway choices?*

Academic self-efficacy is also developmental and affects the actions and decisions of adolescents in their subject pathway and career choices (Bandura, 1982;1994). Academic self-efficacy has been a distinct characteristic of students who choose academic or vocational subject pathways in their personal estimations of their probability of success in a subject or chosen career. As subject pathways provide the academic foundation for career aspirations,
the level of academic self-efficacy could aid or hinder students' post-school prospects. Exploration of the relationship between academic self-efficacy and subject choice will provide insight into the future prospects of students, and consequently, the following research question important to this study.

*To what extent does academic self-efficacy affect subject pathway choices?*

Next, it has been recognised that the mores and values of the family affect how adolescents view their choices and career opportunities. Family has been highlighted in many studies as having a key role in supporting their child in choosing subjects as well as career development (OECD Secretariat, 2004; Patton & McMahon, 1999), and is perhaps the most significant factor in transition outcomes for students from youth into adulthood (Grigal & Neubert, 2004). The parental educational levels and social background of families were found to affect career choices and subject pathways (Fullarton & Ainley, 2000). Students with parents who were professionals had broader post-secondary choices, while research on adolescents with parents in unskilled occupations found that they would prematurely foreclose on many career options (Mullis, Mullis, & Gerwels, 1998). In addition, the presence of a male role model for an adolescent male had a direct effect on their career choice, and through this link, affected their subject pathway choices (Schuette, Ponton, & Charlton, 2012). The implication of these findings on the relationship between the social background of the family and parental educational levels, suggests career goals are shaped by social, economic and cultural factors before the formal process of subject pathway choice occurs.

These career goals have been found to be affected by the family's occupational aspirations for the student (Whiston & Keller, 2005). The extent of this influence is determined to a certain extent by the child's relationship with their parents and the developing autonomy of the adolescent, and affects career decision making, career goals and subject pathway choices (Eccles & Harold, 1996). Consideration of how the participants in this study are influenced
by their family would provide valuable insight into how they make their subject pathway choices and has led to the following research question.

*How do families influence students when making subject pathway choices?*

Last, factors within the school environment that impact on student career pathways and subject choices are highlighted in the literature as: the adolescent's peers, teachers and Guidance Counsellors, as well as teachers' and students' perceptions of subject pathway choices. As students reach adolescence, the influence of parents wanes and the importance of peers increases have been cited as influential factors (Thomas & Webber, 2009; Warrington & Younger, 2011). Their effect of these factors on subject choice patterns are the subject of various studies, and the findings highlight different mechanisms that operate in the social networks of students to facilitate peer influence (Kiesner, Cadinu, Poulin, & Bucci, 2002; Patterson, Dishion, & Yoerger, 2000; Ryan, 2000).

While adolescents are connected to their peers through their relationships, they also form relationships with teachers. This interconnection enables students to approach teachers for advice. This is due in part to the 'in loco parentis' role they play in the school and the mentoring relationship they develop with the students (Urbis Social Planning and Social Research, 2011a). The ability of teachers to comment and advise on subject pathway choices is reliant on their knowledge of the student's ability; students access this information to make assessments of their future success (Davies, Davies, Hutton, Adnett, & Coe, 2009). Of concern to teachers in this role, is that conversations on future career choices lie outside their experience and skills (Urbis Social Planning and Social Research, 2011a). Unlike teachers, however, Guidance Counsellors in schools are provided with appropriate training and current tertiary study information to provide timely and accurate advice to students on career choices and the pre-requisite subjects (Bunch, 2002). An issue highlighted in the current literature on career advice for adolescents, is the lack of consistent professional standards for career
Guidance Counsellors and the wide range of responsibilities they carry in the school setting (Miles Morgan Australia, 2011; Osborn & Baggerly, 2004; Patton, 2002). These studies indicate that the effect of teachers and Guidance Counsellors on subject pathways may have a varying effect in different contexts and would be critical elements worth further exploration. Therefore if research suggests that the quality of the support for subject selection in the schools is varied, it would be worthwhile to obtain insight into how the students experience the subject selection process in their particular context. The following research question guides this exploration.

How do students make use of school-based subject selection processes?

Last, the perceptions of teachers and students regarding the usefulness and suitability of subjects is evident in international and Australian literature on subject choice. Evidence of bias, where academically-capable students are directed towards scholastic subjects by teachers and the less-capable students to vocationally-oriented programmes, are reported in a variety of studies (Bandura, 2001; Davies, Telhaj, Hutton, Adnett, & Coe, 2009). Compounding this pre-judgment perception is research indicating that students too, have their personal bias towards subjects. Academic subjects were identified by students as more prestigious due to the anticipated outcome of a tertiary education, while vocational subjects were deemed to be more suited to students who preferred more 'hands-on' activities and were less academically capable (Dalley-Trim, Alloway, & Walker, 2008; Nagy, Trautwein, Baumert, Koller, & Garrett, 2006; Shapka, Domene, & Keating, 2006). Other criteria, such as enjoyability and relevancy for future careers were found to affect subject pathway choices as well (Stables, 1997). It has become apparent that students are affected by a complex set of factors when they choose their subject pathways for senior secondary schooling. Intrinsic factors that have been nurtured since childhood affect their perceptions of the degree of ability and the confidence to make career choices based on that sense of self. The student is also shaped and affected by the relationships and social background that surround the family unit. The school
environment provides the context for the choice of subjects, and again the student is embedded in this community and is affected by friends, teachers, Guidance Counsellors and their personal perceptions of the curriculum. Therefore it would be beneficial to this study to explore the effect of the school environment on subject pathway decisions, and leads to the research question below.

*How does the school environment influence students making subject pathway choices?*

As the students is closely engaged with the two contexts of the family and school environment, the two research questions exploring the contexts of family and school environment are combined as:

*How do contextual factors such as family and the school environment, influence students when making subject pathway choices?*

These factors highlighted in the literature offer the broad context for the proposed research. Given that secondary subject pathways and post-school destinations do not appear to link, the purpose of this research was to explore how the influences mentioned above affect students as they make their subject choices.

### 1.4 The Research Design

The focus of this thesis was the context and motivations for students when making their subject pathway choices for their senior secondary studies. The literature review (Chapter Three) generated four research questions which focussed the conduct of the research design. They are:

*RQ1: To what extent does the outcome of the Self-Directed Search affect subject pathway choices?*

*RQ2: To what extent does academic self-efficacy affect subject pathway choices?*

*RQ3: How do students make use of school-based subject selection processes?*
**RQ4: How do contextual factors such as family and the school environment, influence students when making subject pathway choices?**

### 1.4.1 Epistemology

This research was based on a constructionist epistemology. Constructionists claim that meanings are “constructed by human beings as they engage with the world they are interpreting” (Crotty, 1998, p. 43) and it was the intention of this study to understand how students' interpret and interact with their environment when making subject pathway choices for senior secondary studies. Consequently, constructionism was appropriate for this study which aims to explore purposeful understanding of the reasoning behind Year 10 students' decisions.

### 1.4.2 Theoretical Perspective

Compatible with the epistemology of constructionism and its focus on how students interpret and interact with their world, the theoretical perspective of pragmatism focuses on the actions and intentions of the participants (Creswell, Plano Clark, Gutmann, & Hanson, 2003). This theoretical perspective allows the use of the research questions to guide the methods used to gather and analyse data. These questions arise from the literature surrounding this topic rather than from a specific framework of beliefs and criteria for truth and validity. An adherence to specific beliefs and criteria of a theoretical perspective could potentially limit the kinds of research questions that can be asked or restrict the approach to respond to these questions (Tashakkori & Teddlie, 2003). Consistent with constructionist principles, pragmatism contends that the truth of a theory is judged by how useful it is in accomplishing some outcome or action, not in its capacity to accurately reflect objective reality (Rorty, 1999). Pragmatism permits a combination of data collection and analyses methods in a combination best suited to addressing the central research questions (Creswell et al., 2003; Greene, 2007). Pragmatism is a relevant research paradigm for this study that required a reflexive approach to research enquiry (Denscombe, 2008).
1.4.3 Research Methodology

The methodology adopted for this study was an empirical case study approach. Case study is an empirical approach that enables the researcher to "investigate a contemporary phenomenon within its real-life context, especially when the boundaries between that phenomenon and the context are not clearly evident" (Yin, 2003, p. 13). Case study is an appropriate form of empirical enquiry when investigating contemporary events and behaviours in a naturalistic setting (Stake, 1995). Whilst case study design is limited as a method for inferring causality of findings, it is relevant for this study as it allows for modest speculation about the likely applicability of the findings to other situations under similar conditions (Yin 2003). Case study design is distinct from qualitative research, and can be based on any combination of quantitative and qualitative methods (Yin, 2003).

1.4.4 Methods: Quantitative and Qualitative

The combination of quantitative and qualitative methods of data collection and analyses provide methodological breadth which was invaluable to this study which seeks both richness and range in explaining dynamic behaviours involving multiple perspectives, variables and analytical levels. First, quantitative data collection and analysis was conducted to respond to all four research questions. The quantitative analysis responded to the first two questions by measuring extent. For the next two questions seeking explanations of 'how', the quantitative analyses focussed on measuring changes to responses over the term of the data collection so as to prepare the way for descriptive answers. Quantitative data from the self-report surveys were analysed using appropriate descriptive statistical procedures. In particular Mann-Whitney U Tests were conducted on data to respond to RQ 2: To what extent does academic self-efficacy affect subject pathway choices? Kruskal Wallis Tests were conducted on data to investigate data from the self-report surveys to provide a platform of data for further exploration on RQ4: How do contextual factors such as family and the school environment,
influence students when making subject pathway choices? A more detailed explanation of these statistical procedures is provided in Section 4.3.3.

Next, qualitative data collection and analyses were used to respond to unresolved issues that arose as well as to corroborate findings from the quantitative data analyses. This integrative methodology was defined as 'iterative exchange', as one component of the study informed another component to answer questions, and generated an iterative exchange between the methods (Bazeley, 2010, p. 11). Interview transcripts were collected in Phase Two of this study through the conduct of nine interviews with students. Textual data were organised and systematically analysed using Constant Comparative Method (CCM). The CCM analytic framework is particularly well-suited to this qualitative phase of the study because it can provide rich insights into students' perceptions of how they choose subject pathways. Put simply, CCM focuses on the use of themes as a way of gaining insight into how the students make sense of their world (Boeje, 2002). Preliminary themes that captured the students' description of experiences were developed. Next further themes were developed from these preliminary themes across the school sites. Using CCM the themes were examined for similarities and differences. Finally major conceptual themes were developed and used to respond to the unresolved issues from Phase One of the study. An audit trail was established through interview transcript analysis tables. Tables and diagrams were used to conceptualise the data as a whole. The process of analysis is described in Section 4.4.3.

The main premise behind the use of a combination of quantitative and qualitative methods was to provide a better understanding of the research problem rather than relying on just one method (Creswell & Plano Clark, 2007).

1.4.5 Participants

Research participants for the Quantitative Phase of the study comprised the Year 10 population in three schools. In the Qualitative Phase, nine students from the three schools
were purposively chosen for interviews, and school procedures for assisting students and parents with subject choice were studied. At this stage data were organised into descriptive case studies of the three schools, each with sub-cases of the interviewed students. The cases provided demographic profiles of interest to the study, and were useful for purposes of comparison, providing a more detailed understanding of how students in specific school settings made subject choices (Creswell & Plano Clark, 2007).

1.4.6 Data Gathering Strategies
The data gathering strategies were:

- Self-Report Survey No 1 (100 participants)
- Self-Report Survey No 2 (69 of the original 100 participants)
- In-depth semi-structured interviews (9 participants)
- Observation of subject selection evenings and gathering of school documents relevant to subject selection

1.5 Significance of the Research
This study is potentially significant for the following three reasons.

First, while previous studies have explored how students made subject choices in secondary school settings (Ainley, Robinson, Harvey-Beavis, Elsworth, & Fleming, 1994; Calderon, Dobson, & Wentworth, 2000; Elsworth & Harvey-Beavis, 1995; Fullarton & Ainley, 2000; Radford, 1998; Warton, 1997; Whiteley & Porter, 1998), there is a paucity of scholarship specifically addressing how students presently make their subject choices in the light of current economic conditions and recent educational policies favouring support for VET pathways. Who and what do students take notice of? What do student think are important factors in their choice of subject pathways? Making successful youth transitions and knowing students' perceptions of how best to support strong choices is important for maintaining satisfying employment and hence Australia's future economic security.
Second, policy issues from a government and organisational perspective have important influences on students' post-school transitions. Numerous policies have been enacted to address the issue of successful post-school outcomes for young people in Queensland. This study assesses the current situation from the students' standpoint and highlights how these policies affect the participants' decisions. By exploring this aspect of educational policy, policy makers and administrators may be better informed when shaping future practice and policy issues.

Finally, as a significant proportion of students are not engaging with education and training upon graduation, or seemingly are not following through on the subject pathway choices that correspond with their post-school tertiary pathways, it is important to gain an understanding of how students report that they make their subject pathways choices and the factors that impact on their decisions. A clearer understanding of this phenomenon has the potential to benefit young people and those who support them as they transition to adulthood.

1.6 The Outline of the Thesis

A brief outline of the structure of the thesis is given below.

**Chapter One: Overview of the Study** This introductory chapter presents the study in terms of purpose, impetus of the study, significance and structure. In addition, the chapter outlines the development and sequential nature of the study from literature review to collection and analysis of the data, and finally to a discussion of the findings and conclusions.

**Chapter Two: Defining the Research Problem** provides structure for the context in which the students make their subject selection choices. The study presents a summary of the global, national and State contextual influences that have shaped the life and character of the educational settings.
Chapter Three: Review of the Literature and Identifying the Research Questions presents the review and synthesis of the academic literature and research relevant to this topic. Under the domains of self, family and school environment, an examination of relevant literature identified the salient and emerging issues surrounding this topic. Four research questions surface from this literature and provide focus for the data collection strategies and analyses.

Chapter Four: Design of the Research presents the research design and methodology. This chapter outlines the combination of methods employed for data collection and the processes for the analysis of data.

Chapter Five: Quantitative Analysis: Findings from the Self-report Surveys presents the survey findings and unresolved issues for attention in the next phase of analysis based on the three case sites.

Chapter Six: Qualitative Analysis: Findings from the Interviews organised as case studies of three participating schools, presents the findings generated from the analysis of the semi-structured interviews and school subject selection processes to respond to the unresolved issues from Chapter Five.

Chapter Seven: Discussion of the Research Findings presents a discussion of the research findings in view of the current research literature organised around the specific research questions which guide this inquiry.

Chapter Eight: Conclusions and Recommendations reviews the findings from the research questions. Conclusions and recommendations are presented.
Chapter 2 – Defining the Research Problem

2.1 Introduction

As identified in Chapter One, the impetus for this study was concern for students' inadequacy to select appropriate subject pathways for senior secondary studies. The choice of subject pathway is linked to post-school destinations because choices made for senior subjects in secondary school ultimately determine eligibility for future career pathways. To illustrate: a student intending to pursue a university course would need to consider the pre-requisite educational standards for tertiary entry and choose those subjects for senior secondary studies with the optimum chance of entry. Likewise, a student intending to become a tradesperson would need to consider the pre-requisites for entry into that field and choose suitable subjects or activities in senior secondary studies to facilitate a smooth transition to this trade. This chapter seeks to define the research problem by clarifying changing conditions influencing the support provided to adolescents as they make their senior secondary subject choices.

In order to fully understand the current contexts, an overview of economic and educational policies of the Organization for Economic Co-operation and Development (OECD), which affect Australian and Queensland governments, will be considered. The transactional theory of human development with its "emphasis on multiple interacting spheres of influence" provides a way of representing the governmental spheres surrounding adolescent career pathway choices (Bronfenbrenner, 1979; Schoon et al., 2010). Notably, the elements exist in isolation, but are dynamically interrelated and mutually interdependent (Bronfenbrenner, 1979). Figure 2.1 illustrates the different spheres of governmental influence shaping and affecting the adolescent's environment in senior secondary schooling. Students represented in the centre of the model are "active agents that take control over their environment, and their specific aptitudes and skills, such as intellectual, academic, behavioural and other competences, as well as developing interests, values, beliefs and goals" direct and guide their
choices within the policies and agendas of governmental forces (Crockett & Silbereisen, 2000; Eccles, 2009; Schoon et al., 2010, p. 6). Interactions between the three levels of government are influenced by the wider dynamics in the international, national and State communities. The second layer of this nested model, representing the State of Queensland, represents the policies and initiatives which affect the opportunities or constraints that impact on the school where the student is situated. The third layer represents the wider socio-economic context in which the Queensland Government is ultimately situated. Nationally, the Australian government affects adolescent choices through legislation and directives implemented to react to real world events such as changes to the labour market, or economic downturns (Elder, 1998). Lastly the outer layer represents the international economic community of which Australia has been a member since 1971, the OECD. The OECD provides independent and evidence-based analysis to improve the economic and social-wellbeing of the citizens of its member countries. The Australian government has worked with the OECD analysts for advice about, and analysis of, the vocational and education training sector in Australia, resulting in initiatives such as the introduction of Broadband networks, and improving school leadership activities (Department of Foreign Affairs and Trade, 2012). The dynamic nature of this model also works in reverse, where international factors such as globalisation, youth unemployment, and economic recessions interweave with Australian and Queensland policies to affect the options and support available to adolescents as they make decisions about their senior secondary studies.
In addition, two perspectives which focus the contextual influences and affect the students' decisions about career pathways, and ultimately subject choices are represented inside each contextual layer. These two factors are: Economic Conditions and Educational Policy.

Drawing on this outline, Figure 2.1 provides the structure for this chapter which is comprised of four sections. Section 2.2 begins by examining the international economic and educational policies of the OECD of which Australia is a member. This section guides the reader through a discussion of economic and educational issues and policies aimed at improving the outcomes for adolescents after formal schooling. This context draws on an understanding of how global pressures are distilled to affect National and State economic and educational policies. Section 2.3 discusses Australia within the context of economic and educational policies designed to assist adolescents in their transition to work after school. These policies...
are reflected in the wider economic and educational context of Queensland in Section 2.4. This section is focused on the current economic and educational policies that impact on students in secondary schools in Queensland. This discussion then leads to the concluding section of this chapter, the identification of the research problem in Section 2.6.

2.2 International Context

Throughout the countries that are members of the Organization for Economic Co-operation and Development (OECD), smoothing the transition period for youth into the workforce and adulthood is recognised as a key priority (OECD Secretariat, 2000). Young people are most vulnerable economically when they leave school and commence the next phase of establishing themselves as independent adults by either securing employment or by embarking on further studies. Ensuring a smooth transition for young adults is an economic and educational priority for international communities.

2.2.1 Economic Conditions

Global economic conditions that were exacerbated in 2008 by the global financial downturn have contributed to the complexity surrounding subject choice and career options for school students. The literature pertinent to young people and their post-secondary destinations has focused on several important issues which could impact negatively on employment prospects. Firstly, the aging population in OECD countries which once favoured the employment prospects of young adolescents and the decline in the population of 15-29 year olds, have brought adverse conditions to the labour market. The severe global economic recession has made the transition from school to work very difficult for young people in OECD countries, as older workers postpone retirement, employers choose more experienced workers and businesses close or cut back production (OECD, 2011). Figure 2.2 indicates that in 2009 in OECD countries, on average more than half (53 percent) of 15-19 year old people who were not involved in further education, were also not in the workforce. Compared with older groups, this age group are at particular risk because if they are not in education, training or
employment, 15-19 year olds are "twice as likely to give up looking for work or to lose contact with the labour market entirely" (OECD, 2011, p. 345). Around the world nearly 75 million youth are unemployed (OECD, 2011) and consequently policy makers have prioritised this issue.

![Chart](image.png)

**Figure 2.2.** Proportion of 15-19 year olds not in education, unemployed or not in the labour force in OECD countries (2009) (OECD, 2011, p. 344)

Source: Education at a Glance 2011: OECD Indicators

Concern for young people who are neither in education nor training has been documented by many countries. Moreover, economic conditions are slowly improving, indicating that youth unemployment is expected to decline in the immediate future (OECD, 2011). The data on the growing number of youth who are not looking for work or are unemployed, particularly in European countries, reflects the accumulation of multiple disadvantages such as lack of
qualifications, health issues, poverty and other forms of social exclusion that arise from lack of activity or withdrawal from the labour market (Quintini & Manfredi, 2009). Young people with low educational attainment, and who do not complete upper-secondary schooling, have an unemployment rate 1.8 times that of graduates from tertiary institutions, and the risk is three times as high in seven countries (Estonia, Finland, Norway, Switzerland, Sweden, The Czech Republic and the United States) (European Union Labour Force Survey, 2009). In contrast, there are six OECD countries (Chile, Greece, Italy, Mexico, Portugal and Turkey) where tertiary graduates have a higher risk of unemployment than low-skilled youth (European Union Labour Force Survey, 2009). This is seen as a reflection of upper-secondary or tertiary graduates' unpreparedness for the labour market, resulting in young people working in areas unrelated to their studies (OECD, 2011). International policy recommendations suggest that a better match between the skills youth acquire at school and those needed in the labour market would alleviate these problems, especially when supported by judicious use of economic and educational policies (OECD, 2012). For international sustainable growth, economic initiatives which would benefit adolescents must be supported by comprehensive educational policies focused on appropriate education at school, high quality career guidance early in lower secondary education, and effective employment advice carefully tailored to local or national labour market needs (Martin & Grubb, 2001). To this end, a variety of strategies designed to assist students still at school to make a successful transition to work or further study are evident in OECD countries.

2.2.2 Educational Policy

A variety of international educational policies have focused on the provision of pathways to smooth the transition of adolescents into the workforce. The term 'pathways' has been used in this study, as it has been used in international policy debates to describe education-work transitions, and is a popular metaphor with international education policy makers (Eldridge, 2001; OECD Secretariat, 2000):
A pathway is longer than a single step, and pathways may interconnect ... pathways may be deliberately constructed to lead to particular destinations, and they may be designed to make some destinations easier to reach than others. Even if pathways have developed in an unplanned way, they can be reconstructed or modified (Raffe, 2003b, p. 4).

Educational policies in OECD countries have improved educational outcomes for adolescents attending school. This has been achieved through such strategies as raising the age of compulsory participation in learning, and adding flexibility and diversity to school subject pathway choices through apprenticeships or acquiring qualifications valued by employers (OECD, 2011). Raising the age of compulsory participation in education was introduced in the Netherlands in 2007, requiring 18 year olds who have not acquired a two year diploma for secondary education to re-enrol in a work-study programme; England introduced the Education and Skills Bill raising the compulsory age to 18 for school leavers; and Canada in 2006 raised the compulsory education age with their Student Success Strategy (OECD, 2011). These strategies are intended to lift the academic achievements of students leaving the secondary school system. Further initiatives designed to broaden the opportunities available to those students after graduation is evident in educational policies across OECD countries.

To provide flexibility in subject pathway choices, governments in a variety of countries have used pathway engineering. Pathway engineering is defined as "deliberate attempts to re-model pathway systems in order to ensure adequate opportunities, and to encourage desired levels and patterns of participation" (Raffe, 2003b, p. 10). Pathway engineering attempts to influence young people's choice of pathway in secondary school and post-secondary opportunities. These policies "appeal to the rational element of young people's decision making by changing the opportunities, incentives, costs and constraints associated with participation in different educational programmes in order to influence patterns of participation and progression" (Raffe, 2003b, p. 12). There have been varying degrees of
success. For example, in Denmark and Scotland reform policy making focused on controlling part of the education system to increase participation in vocational pathways with mixed success (Nielsen, 2000; Raffe, Croxford, & Howieson, 1994). Difficulties controlling the education system, particularly the tertiary sector, as well as employers' recruitment strategies, affected the outcome of these incentive schemes. Providing diversity in curriculum offerings and recognition has led to a number of global approaches. For example, in New Zealand, an elaborate qualification framework has been developed for secondary students to recognise their prior learning; Canada, Spain, USA, Sweden and Norway have integrated systems that combine vocational and academic subjects while Ireland has developed three types of certification to enable students in upper secondary schooling to find options that recognises their capabilities, preferences and interests (Bolstad, 2006; Dufaux, 2012). The possibility of subject pathway choice is deemed to be an important incentive for school students, as it allows for study of subjects of personal interest, and is expected to impact on enjoyment of education in the long term and the probability of further study after graduating from school (Smyth & Hannan, 2007).

These individualised and flexible pathways require comprehensive advice for students as they consider upper secondary school options. School career guidance programmes were identified as being inadequate because the programmes were typically under-funded; and advice was frequently provided by teachers with little knowledge of the workforce and with little access to accurate labour market and skill statistics (Robinson, Long, & Lamb, 2011). Consequently, international educational policy makers identified the provision of quality career guidance as approaches to assist adolescents make appropriate decisions at school. One example of this is evidenced by the Scandinavian countries, where there is an emphasis on the availability and quality of guidance and counselling for adolescents as part of a strategy to ensure wise choices are made for future career development (OECD Secretariat, 2000). These strategies have been used in OECD countries to address the problem of students with
low educational attainment leaving school and experiencing difficulty finding jobs or finding jobs in the casual employment sector where pay is low and job opportunities are uncertain (OECD, 2011). Additionally, these strategies are intended to assist students who intend to undertake tertiary qualifications after school to prepare for the labour market, rather than find they are over-qualified and under-utilised (OECD, 2011).

The issue of over-qualified youth has been highlighted in educational policy debates and recognised as a dominant long term trend called 'academic drift' (OECD Secretariat, 2000; Raffe, 2003b, p. 5). Academic drift is defined as "an increase in the proportion of young people entering general pathways, and a decline in the proportion entering vocational and especially apprenticeship-type pathways" (Raffe, Brannen, Fairgrieve, & Martin, 2001, p. 5).

General pathways are those chosen in upper secondary schooling that are academic rather than vocational, and designed to assist the progress of the student to tertiary studies. Whilst this pattern varies across nations, the trend has been identified as significant. Measures to improve the labour market skills of youth with tertiary qualifications and poor labour market outcomes have led to the strategies that strengthen the links between learning and the skill requirements of the labour market, combined with high-quality career guidance in lower secondary education to help adolescents make better informed decisions about their future career (OECD Secretariat, 2004). The issue of school leavers favouring academic rather than vocational outcomes has led to recommendations on the optimum combination of factors which support adolescents making subject pathways choices for their future career development: "a healthy economy; well organised pathways that connect initial education with work and further study; widespread opportunities to combine workplace experience with education; tightly-knit safety nets for those at risk; good information and guidance; and effective institutions and processes (OECD Secretariat, 2000, p. 15).

To summarise, the international challenge of supporting adolescents as they make their subject pathway choices for upper secondary studies has ramifications for the economic
wellbeing of OECD countries. Current economic uncertainty, exacerbated by the global financial downturn, means that 15-19 year olds are vulnerable if they are not in education, training or employment as businesses have contracted to keep experienced employees and refrained from hiring and training young people (International Labour Office, 2012). A variety of educational policies in European countries share similar characteristics: pathway engineering, diverse curriculum offerings, and increasing the age of compulsory education. These initiatives have increased the need for students to have access to quality informed guidance and counselling to ensure maximum benefit is derived from the available options. Some of these economic policy strategies and educational policy recommendations are reflected in the Australian system.

2.3 Australian Context

As noted above, the international context affects the Australian economic and educational context. The objective of assisting young people transition to adulthood with good employment prospects is also one of the concerns of the Australian government. Australia's Deputy Prime Minister and Treasurer, the Honourable Wayne Swan MP, has acknowledged the future challenges of an aging population and youth unemployment on our future prosperity (Swan, 2010b, 2012), and these two factors play a significant role in the policies that affect young people.

2.3.1 Economic conditions

Australia, like other OECD countries, is faced with an aging population. The proportion of the population aged 5 to 24 years has decreased from 37 per cent in 1970 to an estimated 26 per cent in 2010, and by 2050, the proportion of this population is projected to fall to 23 per cent (Swan, 2010a). It is predicted that by 2050 the number of working-age people available to support those in the Australian population over 65 will be 2.3 people, compared with 5 people in 2010 (Swan, 2010a). The issue of an aging population is relevant to this study, because it compounds the importance of the pathway decisions of school leavers who will be
expected to make effective transitions to work for the sustainable growth of the Australian economy.

Coupled with an aging population is the concern of youth unemployment. The rate of youth unemployment for 15 to 19 year olds in Australia who were searching for full time work in June 2012 was 21.6 per cent (Australian Bureau of Statistics, 2012a). Unemployed youth in the age group 15-24 years of age comprise a quarter of the total number of long-term unemployed in Australia (Robinson et al., 2011). Whilst young people do traditionally experience initial bouts of unemployment as they transition from educational settings to work settings, the current economic crisis in Australia has resulted in the usual employers of young people, such as retail and hospitality, decreasing their hiring quotas. This in turn has decreased opportunities for youth to move into the employment market, resulting in extended periods of unemployment (Robinson et al., 2011). To enable Australian youth to attain the labour market flexibility needed to cope with economic fluctuations, the Australian Government has targeted education policy to assist adolescents make a smooth transition from school to the workforce to reduce youth unemployment and meet the needs of the future labour market.

2.3.2 Educational policy
The three features of educational policy aimed at aiding adolescents make suitable choices at school for study and careers are focused on flexible pathways, quality career guidance and quality career information. The concept of pathways is also used in Australian educational policy. In keeping with the OECD guidelines on effective transition mechanisms for young people after secondary schooling, the Australian Government has prioritised and commenced implementation of the National Partnership Agreement on Youth Attainment and Transitions (Council of Australian Governments, 2009). These priorities are expected to improve individual lives of Australian youth as well as future national productivity (Department of Education Training and Workplace Relations, 2012). The Agreement provides for the "well
organised pathways that connect initial education with work and further study and good information and guidance" (OECD Secretariat, 2000, p. 15; Department of Education Training and Workplace Relations, 2012).

Firstly, well organised flexible pathways that connect secondary education with work and further study are evident in the Australian government's policies and expenditure. The National Partnership on Youth Attainment and Transitions has targeted an increase in the educational engagement and attainment of young people, as well as an improvement in transitions to post-school education, training and employment "by providing support for any students who are at risk of not completing Year 12, to ensure they return to school or engage in training (Council of Australian Governments, 2009; Department for Education Employment and Workplace Relations, 2011). In addition, pathway engineering schemes such as incentives for apprentices, trainees and their employers have been developed to encourage young people to seriously consider learning a range of trade skills to provide insights into possible future careers, with the first step being taken at school with subject choices (Swan, 2010b). One way to promote this pathway engineering has been through brokering partnerships between industry and schools, strengthening the links for both parties to form working relationships to influence students at school when choosing subject pathways for upper secondary studies (Department for Education Employment and Workplace Relations, 2011).

Second, quality career guidance, to assist young people derive maximum benefits from possible employment opportunities, has seen $153 million invested in mentoring programmes for students with businesses; industry-based career development programs; multiple learning pathways; and a variety of career development initiatives in the school environment to influence adolescents prior to leaving school (Garrett, 2012). These strategies are designed to enhance the opportunities for school leavers for further studies, training or work by
encouraging flexible pathways, promoting individualisation of career plans, and linking with industry to provide real world options.

Third, the Australian Government has reinforced its commitment to provide 'good information and guidance' to school students in harmony with the outcome of analysis from OECD indicators (OECD Secretariat, 2000, p. 15). National career development initiatives worth $47 million, designed to improve the transition of young people to post-school education, training and employment, was prioritised in the 2009 Australian Budget (Swan, 2010b). These include improving the professionalism of the career guidance industry; development of frameworks to facilitate career guidance; and improved access to national career information such as myfuture.edu.au, Job Guide, Job Outlook and Skills Info websites in all States and Territories (Garrett, 2012, p. 6). The website, myfuture.edu.au is an initiative of the Australian Government and is a free, national, online career information and exploration service. It is aimed especially at students who wish to explore their career options with its interactive, user-driven information resources such as the Mini Career Explorer, which provides direction on possible careers that match skills and preferences as well as occupation and industry profiles; labour market and salary information, links, articles, audiocasts and videos, tips on writing resumes, finding a job, and preparing for a job interview (Australian Government, 2002). The Job Guide supplements the website myfuture.edu.au and is a popular resource for school students. The Job Guide is distributed free nationally to every Year 10 student in Australia. Schools are provided with class sets for every enrolled Year 10 student. As a hard copy booklet, it contains information on the most direct pathway to any of the 500 jobs listed in the guide. With the description of the occupation, are links to associations, tertiary links and career advisors in that industry, all designed to assist Year 10 students explore careers and occupations (DEEWR, 2012a). Job Outlook and SkillsInfo websites also provide facts for job seekers on workforce and occupational characteristics such as employment growth, average weekly earnings, the skills needed to perform work tasks and
typical work activities. It also includes the Career Quiz used in the myfuture.edu.au website to assist job seekers focus on their personal skills and preferences when exploring career options (DEEWR, 2012b). These three tools are commonly used by career Guidance Counsellors to provide advice to students on subject pathway choices. Literature surrounding career Guidance Counsellors in schools has highlighted the need to clearly define their role and purpose, as it is also common for these personnel to undertake additional roles such as psychological, grief, trauma and grief counselling for adolescents and their families (Patton, 2000, 2005). Consequently it is important for young people to obtain the support of well-informed career Guidance Counsellors, as their professionalism and advice play an important role in choosing subject pathways.

Economic and educational policy makers recognise that assisting young people make wise choices for upper secondary studies, aids in their transition to the labour market or further post-school education. This assistance is an investment in Australia's future, by equipping a well-informed student population more able to fill the gaps in future labour supplies due to an aging population and to enhance our national productivity. Employers and schools influence young people to consider occupations that suit their skills and preferences as well as meet an area of skill shortage by undertaking initiatives provided by incentives for traineeships and apprenticeships. Consequently, funding for career development initiatives is a necessary component of the strategy to assist school leavers.

2.4 Queensland Context

Just as the Australian context is influenced by international policies for youth, so the government of the State of Queensland is impacted by Australian economic conditions and educational trends. An analysis of the State Government economic and educational policies develops an understanding of the context in which the students and their families make
decisions on subject choice pathways and future careers. These policies impact directly on schools, and shape the students' choices of subjects and future career aspirations.

2.4.1 Economic conditions

Paradoxically, in 2012, Queensland's economy is experiencing both an unemployment rate of 5.6 per cent as well as skills shortages, due in part to the effect of an extensive mining boom in regional and rural parts of the State (Queensland Treasury & Trade, 2012). The skills shortage has aggravated the problem of youth unemployment in Queensland as young people aged between 15 and 19 years of age comprise an unemployment rate of 32.9 per cent, with 9 per cent of this group unemployed for more than 26 weeks (Australian Bureau of Statistics, 2012b). It can be argued that this is due in part to the current financial market volatility, economic uncertainty and the weakening in the labour market as employers choose to increase the working hours of employees and delay hiring decisions: factors which have not benefited the employment prospects of school leavers and young adults (Queensland Government, 2011, p. 9).

In addition to the concern of youth unemployment, the economic challenge of an aging population in Queensland is anticipated to affect the State’s economic prosperity. "specifically, as the proportion of young working age adults (those aged between 15 and 34 years) is expected to decline from 28.3 per cent of the population at 30 June 2011 to 24.9 per cent at 30 June 2031"(Queensland Treasury and Trade, 2012, p. 5). The implications for the Queensland economy are likely to be that the rate of labour-force growth will slow, the rate of economic growth will slow and average living standards will decline (Queensland Government, 2006). Statistical projections by the Queensland Treasury indicate that by 2030 half of the Queensland population will be 65 + years of age, and by 2030 it is expected that there will be 2.8 people aged between 20 and 64 years of age for each person aged over 65, in contrast to the 4.5 people currently in the age bracket of 20 to 64 years of age (Queensland
This is a concern for young people, as the economy they will inherit will be less robust with a smaller workforce.

Part of the strategy to improve the level of youth unemployment and the urgency to skill young Queenslanders to replace retirees, was to introduce reforms that would increase the compulsory age of participation in education and to recognise more flexible avenues of learning. These reforms are relevant to this study as they have a direct influence on how the students make their subject pathway choices for their final phase of learning in secondary school.

### 2.4.2 Educational policy

Queensland educational reform has been used to provide jobs and skills for young people. The need to provide jobs and skills for school leavers was initially identified by the OECD when they conducted a review in fourteen countries, including Australia, on the social and personal costs of youth unemployment and those at risk of not making the transition from education to a working life (OECD Secretariat, 2000). This review identified the national policies and programs that supported successful transition outcomes for young people, and the connections between education, employment, welfare, labour, and social policy domains (OECD Secretariat, 2000). The review also highlighted the changing world of work, prompting the Queensland Government to consider policies that could support the ever-changing learning and earning needs of young people. As a result, several papers addressed the problem of how the Queensland Government could best meet the benchmarks established by the OECD and led to the Education and Training Reforms for the Future (ETRF) (Cosier, 1999; Education Queensland, 1999; King, 1999; Pitman, 1999; Teese & Charlton, 1999). When this initiative was combined with the Australian Government's commitment to national collaboration on common goals for schooling with "The Adelaide Declaration on National Goals for Schooling in the Twenty-first Century", the Queensland Government made a commitment to "do what we can to keep all of them (school-leavers) in some form of learning
or earning. We must take responsibility for what happens to young people now, so that they can lead satisfying lives and fully contribute to our society and economy" (Queensland Government, 2002; MCEETYA, 1999).

Three significant reports directly influenced the educational reforms that affected the students in this study. These reports were commissioned by the Queensland Government and led to the introduction of the Senior Phase of Learning. These were Queensland State Education 2010 (Queensland Government, 2010), the Pitman Report (Pitman, 2002) and the Gardner Report (Gardner, 2002). As a result of the Queensland State Education 2010 report, the Queensland Government agreed to increase the "number of young people who complete Year 12 or its equivalent from 68 to 88 per cent across all school sectors by the year 2010" and increased the age of participation in compulsory education (Queensland Studies Authority, 2004b, p. 5). This commitment led to the introduction of the recognition of a variety of subject options and pathways that would contribute to a new senior certificate and provide some control for students to individualise their upper secondary schooling choices. The new certificate accredited a broader range of learning experiences, and 'tightened up on the quality and quantity of learning stipulations' (Pitman, 2002, p. 27) such as a minimal level of literacy and numeracy. Next, Pitman promoted formal planning for the Senior Phase of Learning. This formal planning would eventually become the Senior Education and Training (SET) Plan. Lastly, the Gardner Report confirmed earlier studies that found that young people who left school early, or did not enter the workforce or undertake further study were disadvantaged in their future life/work trajectories and opportunities (Gardner, 2002; King, 1999; OECD Secretariat, 2000). This report highlighted the need for new and improved career guidance and advice for students, parents/guardians, employers and the community (Gardner, 2002). These three papers led to the introduction of the Youth Participation in Education and Training Act 2003 and the Training Reform Act 2003. The first has been incorporated into the Education (General Provision) Act 2006, which is the governing legislation for education.
in Queensland (Queensland Government, 2003a; 2003b) and provided the framework for the Senior Phase of Learning (Queensland Government, 2006).

Recognising a wide range of achievements outside the school the formal curriculum was a major feature of the new senior phase of learning. This recognition required a formal planning process to register the learning. This SET planning now occurs in Year 10, and is designed to tailor an “individual learning plan of action for the Senior Phase of Learning” (Queensland Government, 2002, p. 16). This planning tool for Year 10 students is integrated into career education to provide information to students and their parents about the options available for upper secondary studies and future careers. It was discovered in trials before its formal introduction, that career education was vital to a successful transition through the Senior Phase of Learning to support the SET planning (ETRF PMEC, 2005). Consequently, career guidance and support services were boosted to help students and their families navigate the system of learning recognition in the Queensland Certificate of Education, also to prepare for the future of work for these young people. In 2005 the Queensland Government launched the Queensland Studies Authority Career Information Service (CIS) to provide links to career information services at www.cis.qld.qld.edu.au. This was designed to be integrated with the students’ individual learning accounts and provide tools and career information for the students to use in their SET planning. SET planning and the accompanying career education is aimed at ensuring that students' choice of subjects for the Senior Phase of Learning is well considered and meets the needs of the future Queensland economy, so that students find suitable education and training opportunities after secondary school, and can enter the workforce without experiencing unduly long periods of unemployment.

Statistics provided by the Queensland Government have revealed a dissonance between what students study in their final years of schooling and their post-secondary destinations, despite the introduction of legislation to increase the compulsory age of participation in education, recognition of diverse learning and flexible pathways, and formal career planning available
for students embarking on senior secondary studies (Department of Education and Training, 2009b, p. 11). In 2008, 60 per cent of the State’s school graduates took academic pathways with their senior subject choices (Department of Education and Training, 2009b, p. 11). Roughly one third (35.1 per cent) of these high school graduates subsequently chose to study in one of nine universities, and almost a quarter (24.5 per cent) were enrolled with one of the 27 non-university higher education providers in the State. Approximately 40 per cent did not enter post-school education or training upon graduation. Figure 2.3 shows the destinations of the students who graduated in 2008 in Queensland.

![Main destinations of Year 12 completers, Queensland 2009](image)

**Figure 2.3  Main destinations of Year 12 Queensland completers, 2008**  
(Department of Education and Training, 2009a)

Data in Figure 2.3 was gathered when this study commenced in 2008, while Figure 2.4 depicts the most recent destinations of Year 12 Queensland completers in 2011.
This comparison reveals that over the past three years very little has changed in the post school destinations of students. In 2008, approximately sixty percent of Queensland high school graduates studied an academic subject pathway, with thirty five percent accepting positions at universities (Department of Education and Training, 2009b). In 2011, approximately 72 per cent completed an academic subject pathway, and approximately 36 per cent accepted positions at universities (Department for Education and Industrial Relations, 2011). It is of concern that approximately 40 per cent of young people are not engaged in any further training and education, and that for some students, particularly those who choose academic subject pathways, there appears to be an incongruity between their choices and post-school destinations. As successful youth transitions to the workforce are a Queensland Government economic and educational objective, a better understanding of student choice behaviour in Year 10, when subject pathway decisions are made, may benefit educational policy makers to provide the most appropriate support for students and their families redress the inconsistencies highlighted in the destination snapshots (Queensland Government, 2002).
2.5 The Research Problem

This chapter has established a basis of contextual knowledge upon which to proceed with this study. The research problem was framed in the context of international, national and State Government policies and initiatives aimed at ensuring that economic prosperity is maintained, while at the same time providing adolescents with educational opportunities that support them when they make their subjects choices at school and consider future career options. Within this context, economic issues common to all three layers in the model are the global financial crisis, youth unemployment, and an aging population. Educational data analysis and recommendations in each of the layers in the model have produced similar strategies to assist adolescents prepare for the labour market and provide appropriate opportunities in the school environment. These initiatives include the increase of age for compulsory participation in education; pathway engineering; individualised learning plans; recognition of diverse learning in certification; and the provision of quality professional career guidance and counselling for adolescents when making subject pathway and career choices. However, these initiatives have not resulted in a change in the destinations for students on leaving school. Thus, the problem for this research study was framed in terms of the implementation of educational initiatives and economic objectives, and is the dissonance between the subject pathways chosen by students for senior secondary studies and their post-school destinations.

The problem led to the purpose of this study, which was to explore how students in Year 10 make subject pathway choices for the final years of their schooling. This clarification of the research problem and the purpose of this study provided direction to the next stage in this research study, the review of the literature, presented in Chapter 3. In this chapter, the literature pertaining to the factors that can affect students when they choose their subjects for senior secondary schooling is reviewed.
Chapter 3 – Review of the Literature

3.1 Introduction

As discussed in Chapter Two, the dissonance between the subject pathways chosen by Year 10 students in Queensland and their post-school destinations, invites further exploration.

This chapter provides a critical review and synthesis of the theoretical literature concerning the factors that can affect students when they choose their subjects for senior secondary schooling. In so doing, it provides a scholarly context for this thesis, pointing to knowledge gaps and areas where research is limited. In this way, it makes an argument for the significance of this study.

3.2 Research Problem

The dissonance between the subject pathways chosen by students for senior secondary studies and their post-school destinations lies at the core of this study. The context for this study is the early twenty-first century Queensland secondary schooling system and subject choice processes for Year 10 students.

3.3 Structure of Chapter Three

Factors that may influence an adolescent’s decisions when choosing their upper secondary school subjects, and thus subject pathways to future careers, are featured within this literature review. The factors have been organized into three domains: those inherent to the adolescent, and those that are part of the two environments where adolescents spend the most time, the family and school. The following Figure 3.1 depicts the factors identified by the literature that have major effects on the subject pathways choices of Year 10 students.
In this chapter, Section 3.4 commences with a discussion of the literature on adolescents and factors that affect subject pathways choices. Section 3.5 guides the reader through factors within the family that influence the adolescent. Section 3.6 is an exploration of the features of the school environment that interact with the adolescent to influence subject pathway choices. Section 3.7 concludes this chapter with a summary of the literature and the research questions arising from the review.

3.4 Self

The literature on subject pathway choices in secondary schools places the student at the hub of the process of decision-making. Relevant literature gives an understanding of how adolescents are influenced by intrinsic factors as they make their choices. Dominant themes emerging from the research literature indicated the importance of vocational interests, academic self-efficacy, and career goals and career maturity in subject pathway selection.
3.4.1 Vocational Interests

Interests provide the motivation to pursue an objective (Sullivan & Hansen, 2004), and the focus of this study is the motivation behind students' choice of subjects and occupation. A study of 217 students found that there was evidence to suggest that interests and personality provided motivation for selectively engaging in particular types of activities consistent with models of the development of interests (Sullivan & Hansen, 2004). Further to this point, interests developed and matured over time, and the key period in the development of interests and competence appeared to occur in middle years of schooling when students make important subject pathway choices (Gottfredson, 1981; Nixon, 2006).

Interests in the context of this study are vocational interests which have been defined as "an expression of personality in work, school subjects, hobbies, recreational activities, and preferences. In short, what we have called 'vocational interests' is simply another aspect of personality" (Holland, 1973, p. 7).

The link between interests and subject choice was the subject of early investigations when Lewis (1913), linked subject choice in education to personal interests. More recent research into subject choices provides strong support for the hypotheses that school subject preferences are systematically related to personal interests that eventually become vocational interests (Ainley et al., 1994; Elsworth et al., 1999; Kidd 1992). Five Australian studies exploring interests and subject preferences of adolescents, using different methods of measurement, design and methods of data analysis, found that personal interests were influential in a broad range of choices regarding school activities and work (Elsworth, et al., 1999). These studies used Holland's RIASEC themes which highlighted preferences and choices and found links between interests, subject choices and occupations (Holland, 1973). Holland's Vocational Preference Inventory, which was used in these studies, employed typologies of persons and environments, and a hexagonal model to highlight similarities among personality types and occupations (Holland, 1973; Holland & Rayman, 1986). The inventory eventually became a
career advice tool called the Self-Directed Search, and is used in schools and workplaces to provide career advice based on personal interests (Shears & Harvey-Beavis, 2006).

Even though there are connections between vocational interests and subject choice some studies identified impediments experienced by students when choosing subjects that reflected vocational interests. In an Australian study of 204 Year 10 students enrolled in two private school with career guidance programmes it was reported that the timing of subject choice decisions and the effect of the school environment could have negative effects on choices linked to vocational interests. Using an occupational interest inventory with a RAISEC scale, students from the boys-only and girls-only schools reported obstacles associated with beliefs and vocational interests (Naylor & Krumboltz, 1994). While an adolescent’s interests could be inferred from relatively consistent preferences for particular activities, subject enrolments involved choices made at a more-or-less specific point in time, and the pressure to make this decision may lead to choices that do not necessarily reflect these interests or preferences, as other factors may take precedence in the decision-making process (Naylor & Krumboltz, 1994). Factors precluding a student from enrolling in subjects that reflected vocational interests were (a) narrow curriculum choices; (b) peer pressure to choose other subjects; or (c) limited choices in the timetable offered (Naylor & Krumboltz, 1994).

To guide students towards subject pathways that accommodate their vocational interests both staff and career Guidance Counsellors reported that they used tools such as Bulls Eye posters, Job Guide and the government career web site myfuture.edu.au, which contains the Self-Directed Search Career inventory tool (Athanasou, 2006; Shears & Harvey-Beavis, 2006). Use of the myfuture.edu.au web site as a career guidance tool was reported by 75 per cent of career advisors in a recent Australian report (Urbis Social Planning and Social Research, 2011b, p. 59). It would be worthwhile to explore whether the information from this career inventory tool actually impacts on the student choices, and whether there is a link between the
advice from this instrument and the pathways chosen by the students. This leads to the research question:

*To what extent does the outcome of the Self-Directed Search affect subject pathway choices?*

In conclusion, when students choose their subjects in the middle years of schooling, there is substantial literature to suggest that their vocational interests have crystallised sufficiently to be a major factor in the resultant choices. A variety of factors can aid or hinder the student in choosing subjects that align with their vocational interests, and consequently students may not be as decisive as expected in the final subject selection. This suggests that factors other than vocational interests affect subject pathway choices. One such factor highlighted in research studies is academic self-efficacy.

### 3.4.2 Academic Self-Efficacy

While adolescents in Year 10 are developing their vocational interests, they are also developing their sense of identity and self-efficacy (Erikson, 1971). Self-efficacy is defined by Bandura (1982, p. 126) as "beliefs about their capabilities to produce designated levels of performance that exercise influence over events that affect their lives. Self-efficacy beliefs determine how people feel, think, motivate themselves and behave". Critical elements of self-efficacy refer to a combination of experiences such as past performance achievements; vicarious experiences from observations of others; verbal persuasion and other types of social influences (Bandura, 1982, p. 126). These experiences and their importance to the individual are relevant when adolescents make choices for subject pathways for senior secondary schooling.

Past achievements have an influence on self-efficacy but are mediated by the maturity of the student. Adolescents in particular have been found to discount the effect of past achievements when considering future career aspirations (Bandura, Barbaranelli, Caprara, & Pastorelli, 2001). Instead, they have been found to draw on their perceived competence rather than their
actual past performance to assess the suitability for a future occupation (Bandura, et al., 2001). Perceived competence is identified as the "single most critical element" of self-efficacy (Bong & Skaalvik, 2003, p. 10).

Vicarious experiences and verbal persuasion can also affect self-efficacy beliefs, particularly if the experiences and verbal persuasion are derived from trusted sources such as family or friends (Dyke, Foskett, & Maringe, 2008). Giddens' (1991) review of a body of research concluded that the 'secondary experiences' of others have been found to influence decisions and contribute to self-efficacy beliefs (Giddens, 1991, p. 4). These elements contribute to levels of personal efficacy and impact on subject choice decisions and career goals (Dyke, et al., 2008).

Self-efficacy can affect an adolescent's estimation of their capability in a variety of domains and it has been found to impact on academic motivation, learning and achievement (Pajares, 1996; Schunk & Pajares, 2005). Grounded in self-efficacy theory, academic self-efficacy refers to an individual's conviction that they can successfully achieve at a designated level on an academic task or attain a specific academic goal (Bandura, 1997; Eccles & Wigfield, 2002; Linnenbrink & Pintrich, 2002; Schunk & Pajares, 2002). Academic self-efficacy can vary according to task difficulty and across academic domains, and past success has been found to be a powerful referent for females in particular (Eccles, 1994; Pajares & Schunk, 2001; Smyth & Hannan, 2006). If a student feels competent and confident in the skills within a subject such as writing for English, they will choose subjects utilising those skills, and avoid those in which they do not feel competent (Zimmerman & Bandura, 1994; Shim, 2005). Academic self-efficacy beliefs also help determine how much effort a student will expend on an activity, how long they will persevere when confronting obstacles such as difficult Maths problems, and how resilient they will be in the face of adverse situations such as a change of teacher, or lack of resources (Bandura & Schunk, 1981; Bouffard-Bouchard, 1990).
Academic self-efficacy beliefs direct adolescents towards subjects where they perceive they will achieve success (Gottfredson, 1981; Holland, 1997; Super, 1990). Notably, a prominent study of 681 sixth grade adolescents revealed that amongst other factors, beliefs in academic ability and ability to complete tasks were significant predictors of college enrolment (Eccles et al. 2004). Whether subjects belong to academic or vocational pathways, they become the pre-requisites for entry into post-secondary courses or employment. The direct influence of perceived academic self-efficacy over perceived career efficacy has been verified in several studies (Bandura, 1977; Bandura et al., 2001) as ‘children ground their sense of occupation efficacy in their beliefs about their academic capabilities rather than their actual academic achievement’ (Bandura et al., 2001). Patterns of occupational choice have also been associated with levels of academic self-efficacy, and students with high academic self-efficacy who achieved well at school, were found to aspire to professional occupations, rather than vocational trades (Creed, Patton, & Prideaux, 2007). An Australian study on career advisers’ practices revealed that low levels of academic self-efficacy have been linked to low academic achievement, and these low-achieving students were also the major participants in vocational education subjects in Australia and had been for many years (Dalley-Trim, Alloway, Patterson, & Walker, 2007).

In brief, adolescents in Year 10 are still developing their sense of self-efficacy and drawing on a variety of experiences, both their own and those of people that they trust, to judge their competence in a range of activities. When choosing subjects for senior secondary studies, the perception of ability rather than actual ability, can shape student estimations of future academic success and subject choice. As these subjects lead to future career pathways, the students are ultimately grounding their occupational goals in the perceptions of academic ability-academic self-efficacy. Consequently, it is of interest to this study to explore how these perceptions interact with subject pathways choices in the Queensland context, leads to the research question:
To what extent does academic self-efficacy affect subject pathway choices?

3.4.3 Career Goals and Career Maturity

Career development has been the subject of intensive investigation in Australia over the past six years due to economic and educational priorities of the federal government.

This is important to the Australian Government because:

Career development is the lifelong process of managing progression in learning and work. The quality of this process significantly determines the nature and quality of individuals’ lives: the kind of people they become, the sense of purpose they have, the income at their disposal. It also determines the social and economic contribution they make to the communities and societies of which they are part (Watt, n.d., p. 2).

Adolescent career development includes the process of career guidance intended to establish career goals (Miles Morgan Australia, 2011). Early career goals matter in their own right, and have been found to have a positive effect on the chances of securing employment upon entry into the labour force (Sikora & Saha, 2011). The development of career goals early in life is dependent on career maturity, which is the child's readiness and capacity to deal with the necessary tasks associated with establishing the aspiration for a particular career (Super, 1990). Establishing a career goal is an integral part of career maturity and includes activities such as planning, exploration, decision making and access to a source of occupational information (Janeiro, 2010).

Career maturity is derived from a range of factors and has a powerful effect on adolescent subject choice (Creed et al., 2007). Biographic variables such as levels of self-efficacy, age, gender and part-time work have been cited as indicators which signal varying degrees of career maturity in adolescents (Patton & Lokan, 2001; Prideaux & Creed, 2001). First, an adolescent's self-efficacy affects a young person’s aspirations to a career when their ability to take the necessary steps towards their career goal is considered (Juang & Vondracek, 2001;
Pajares & Schunk, 2001). To illustrate, researchers found that one of the effects of low self-efficacy on career goals was that adolescents eliminated from their career choices those occupations they believed to be beyond their capabilities, no matter how attractive the occupation (Pajares & Schunk, 2001). Self-efficacy also affects how persistent a person is in investigating the avenues to achieve their career goal and theorists in the field of career maturity have linked career maturity to successful career choices and planning (Super, 1957). Many adolescents assessing their future plans and goals, particularly when choosing subjects for their senior secondary pathways, deal well with the different tasks, such as exploring alternatives, planning their vocational pathways, and developing personal goals (Creed, et al., 2007). The ability to plan and explore future plans and career goals is a variable skill for adolescents according to Nurmi (1989), who reported that only 16 per cent of 105 youngsters between 11 and 15 years old interviewed, could identify the challenges involved in planning for a future career. This lack of planning is of concern because it can lead to poorly thought-out career decisions by adolescents, which often result in "personal dissatisfaction and often in school failure" (Janeiro & Marques, 2010). Therefore, adolescents' levels of self-efficacy can affect how they make decisions about career goals, and how they assess their ability to influence events to attain a satisfactory outcome.

Secondly, adolescents are at an age when they are capable of realistically assessing future careers, and have been found to assess rationally the demands of the profession, for example, amount of time spent studying for a particular career, and the barriers to pursuing particular career goals (e.g. university fees) (Creed, Prideaux, & Patton, 2005). They have also been found to engage in compromise, settling for an attainable career (Gottfredson, 1981; Helwig, 2001). However, adolescents mature at varying rates, and this variance of development is reflected in studies in both America and Australia on career maturity, or ability to assess career options. A large Australian study (Levy, 1987) involving several hundred high school students from grade 9 to grade 12 explored factors such as age and the presence of career
maturity, and found age-related increases in both career maturity attitudes and knowledge. This finding was confirmed in American studies that also found incremental increases in career maturity from grade 9 to grade 12 (Wallace-Broscious, Serafica, & Osipow, 1994). In contrast, atypical findings in a study of high school students in America found no relationship between the age of high school students and their levels of career maturity (Powell & Luzzo, 1998). The contributing factor in this study, was the presence in the district of good career development programs in junior high school that had affected the level of career maturity within the sample and lifted the level of career exploration skills (Powell & Luzzo, 1998, p. 154). Students are still developing career exploration skills in Year 10. Career maturity can be enhanced with a good career program at school to scaffold career exploration activities during grade 9 to grade 12, and can mitigate the effect of varying development stages in adolescents.

Research on the impact of gender on career development in Australian high school students has found that gender differences were evident, but not uniform (Patton & Creed, 2001). Attitudinally, females had lower scores of career maturity than males at age 13 years, and higher scores at ages 15 and 17. Females had higher scores due to their level of knowledge about post-secondary options than males (Lokan, 1984). In further studies exploring the effect of gender on career development, it was established that age was the single most important determinant of career maturity for boys, whereas a sense of family cohesion and internal locus of control were the main determinants for career maturity in girls (King, 1989).

An early introduction to the world of work has also been mentioned as important in career development, and has become a realistic component of a school student's life. Many students commence part-time work or participate in some form of work experience during Year 10. A significant Australian study on the impact of part-time work on high school students' employability, employment outcomes and career development revealed that "20 per cent of Year 10 students worked up to 20 hours a week and by Year 12 38 per cent were working up..."
to 10 hours a week” (Patton & Smith, 2010, p. 56). The effect of part-time work and work experience on the career outcomes of Australian students found that part-time work during their school years had contributed to their career decisions. However, Patton and Smith (2010, p. 58) reported that working part time "itself was not enough to foster and optimise students career maturity" as the type of work was typically in low-paid positions in the hospitality or retail industry. Part time work was also found to have a negative impact on post-school study completion rates. A regresional analysis of longitudinal data on student destinations in Australia found that statistically there was "no significant relationship between individuals participating in work experience and the probability of them participating in post-school study" (Deloitte Access Economics, 2011, p. 36), and that "students who participated in work experience in Year 10 were less likely to complete some form of formal post-school education compared to an individual who did not receive work experience" (Deloitte Access Economics, 2011, p. 35). Consequently, some career exploration strategies such as work experience or part-time work had a variable effect on decisions regarding future study and careers, yet contributed in different ways to career maturity in the student.

To summarise, career development programmes are an important component of the economic and educational objectives of Australian and State governments needed for sustainable economic growth. Additionally, the programmes are important because they are designed to assist career maturity of students. These programs are not the only factors that affect career maturity of adolescents. Biographical variables such as self-efficacy, gender and work experience affect career goals and influence subject pathway choices (Lokan, 1984, Patton & Smith, 2010). Career development is nurtured in career programmes that are formally introduced in the school environment or begin informally in the family environment. Research on career development has firmly established that families that have a long-term influence on adolescents' development also have a significant impact on career goals.
(Schuette, Ponton, & Charlton, 2012). In the following section, literature about the influence of family on career goals and subject pathway choices is reviewed.

### 3.5 Family

Whilst the literature on subject choices in secondary schools recognises the student is central to the students’ decision making process, it is important to consider the current literature on the influence of the family on the adolescent in this process. Family has been highlighted in many studies as having a key role in supporting their child in choosing subjects as well as in their career development (OECD Secretariat, 2004; Patton & McMahon, 1999) and is perhaps the most significant factor in the transition outcomes for students from youth into adulthood (Grigal & Neubert, 2004). The literature surrounding familial influence on subject pathway choice highlights the relevance of families' economic background and parental aspirations for their children's occupations to adolescents' choice behaviour.

#### 3.5.1 Family Economic Background

The mediating effect of parents on subject choice patterns features in the literature on adolescent subject choices. Across the breadth of family structures, factors such as family size and composition were found to have little influence on subject choices or career goals, although through educational levels and socio-economic background it was possible to predict levels of parental involvement in career development (Trusty, Watts, & Erdman, 1997). Fullarton and Ainley (2000) explored this further in an Australian longitudinal survey on subject choices which noted the effect of parental educational levels and social background on subject choice patterns. Fullarton and Ainley (2000, p. 14) reported that adolescents whose parents were professionals were "two times more likely to choose subjects such as Physics or Chemistry than those whose parents were unskilled or semi-skilled", while adolescents whose parents were from the lowest socioeconomic level were more likely to be enrolled in Health and Physical Education and Technology subjects (Fullarton & Ainley, 2000). Consequently, when adolescents were choosing between an academic or vocational pathway, the educational
levels and social background of their family had an effect on subject choices as well as selection of post-secondary fields of study.

The socio-economic differences were also noticeable in career goals, with the parental occupation having some effect on adolescents. Adolescents whose parents were in professional and skilled occupations tended to have broader interests compared with adolescents with parents employed in unskilled occupations. The research behind this finding assessed that adolescents with parents in unskilled occupations may prematurely foreclose on many career options (Mullis et al., 1998). This effect has also been identified in studies on the relationship between career goals of pre-adolescents and the actual occupations of working adults in the homes of low socio-economic families. A significant relationship was depicted between boys' career goals and the occupations of the working male adults, with young males aspiring to stereotypically male-gendered jobs similar to the jobs of the male role model in their family (Schuette et al., 2012). The influence of the working adult male on the pre-adolescent male was further emphasised with findings that there were "no significant matches between the boys and the working women or with the girls and the working adults of either gender" (Schuette et al., 2012, p. 36). There is evidence that the economic background of the parents can have some predictive qualities regarding occupational goals for young males, and that overall family economic background did have an effect on subject choice patterns and career goals (Fullarton & Ainley, 2000).

3.5.2 Family and Adolescent Career Goals

Further to the effect of the family's economic background on career goals, is the influence of the family on subject choice decisions through the quality of their personal relationships and aspirations held for their child.

When the relationship between the adolescent and parents is perceived to be similar and harmonious, the family unit has a significant effect on decisions (Whiston & Keller, 2005).
Further studies into family dynamics discovered that when the adolescent and parents were 'enmeshed' or overly close, adolescents had particular difficulty in career decision making tasks, such as choosing subjects or future occupations (Penick & Jepsen, 1992). The most salient parental behaviours observed to influence subject choice and career decision skills, were when the parent was expressing interest in issues that were important to the adolescent, communicating high expectations for the adolescent's career, encouraging the adolescent to make their own decisions, and expressing pride in the adolescent's achievements (Keller & Whiston, 2008). Turner and Lapan (2002) reported that when adolescents anticipated parental support for particular careers, it significantly enhanced the degree to which the adolescent valued those careers and boosted the adolescent's self-efficacy for those specific careers. This congruence between the parents and the child on career goals was further encouraged when families provided resources to nurture those aspirations thereby developing the career decision skills of the adolescent (Jodl, Michael, Malanchuk, Eccles, & Sameroff, 2001). These family resources enabled the adolescent to assess realistically the feasibility of pursuing the aspiration. In contrast, when there was conflict in the family, and the autonomy of the adolescent or of the mother was undermined by the father, it was found that adolescents went on to jobs with lower prestige due in some part to the distraction of attention on the child (Bell, Allen, Hauser, & O’Connor, 1996).

Roe (1957) identified that the influence of parents on their child's career goals commences with the early parent-child relationship. These career goals develop in the environment families create for the child (Holland, 1985) and can provide role models as well as encouragement and opportunities (Eccles, 1993). Academic and career aspirations become entwined, and parents with high academic aspirations for their children have been identified (Jodl et al., 2001; Pinquart, Juang, & Silbereisen, 2004) as generally seeking professions that best utilize the academic skills of their child, and discourage consideration of occupational pursuits relying heavily on manual labour or routine skills. Nevertheless, parental influence
on occupational aspirations has been observed to wane when the adolescent is in secondary school (Eccles & Wigfield, 2002). The decline in influence on occupational goals has been attributed to the decline of parental involvement in school activities once the child is in high school and the school work becomes more complex, as well as deference to their need for autonomy (Eccles & Harold, 1996). Nonetheless their influence on occupational goals that commenced early in their school life has a lasting effect (Jodl et al., 2001).

The influence of the family is deep-seated, and ranges across subject choice, career decision making and career goals. These areas of influence converge when students choose their subject pathways, and it is worth exploring how the family makes their influence known to the students at this decision point. Therefore a research question that arises from this literature is:

*How do families influence students when making subject pathway choices?*

As adolescents progress through secondary school, significant others outside the family, such as those in the school environment, exert more influence on occupational aspirations as they provide new sources of information to consider.

### 3.6 School Environment

Factors in the school environment that can impact on adolescent subject choice decisions are highlighted in the literature as: peers, the staff, and curriculum perceptions.

#### 3.6.1 Peers

The influence of peers on adolescent behaviour increases as they begin the transition into adulthood and parental influence wanes. Although adolescents still refer to their parents for advice and support, as they emerge from childhood into adolescence they develop a healthy independence referencing parents and peers for guidance and decision-making (Thomas & Webber, 2009; Warrington & Younger, 2011).
Peer influence covers several definitions but with no clear consensus of interpretation. Peer pressure can be defined as a specific instance of social influence which typically produces conformity to a particular way of acting or thinking (Lashbrook, 2000); conformity which is defined as a behavioural disposition (Santor, Messovery, & Kusumakar, 2000) or susceptibility to peer pressure (Sim & Koh, 2003), which are often used as terms to define peer social influences and peer susceptibility. A key period of peer influence is roughly between ages 12 and 16 (Ryan, 2000), and a combined study in New Zealand and the United Kingdom (Thomas & Webber, 2009) discovered that the influence of an adolescent’s peers in encouraging them to remain at school after the age of 16 was almost as influential as parents or their socio-economic status. Similar findings in Nigeria (Owoyele & Toyobo, 2008) expanded on this theme, revealing that peer pressure was the most potent predictor of subject choice (followed by parental demand), and academic ability the least predictor of students’ choice of subjects for senior secondary school level studies.

In the middle years of schooling, adolescents spend more time with their friends than they do their parents, and peer influence and acceptance becomes important, although boys and girls differ in their behaviour patterns with peers (Fuligni, Eccles, Barber, & Clements, 2001). Studies have shown that girls show a greater tendency to seek advice on personal problems and future plans from their friends, whereas boys are less able to resist antisocial peer pressure and are more willing to ignore their parents’ rules, schoolwork, and their own talents to keep and be popular with their friends (Bandura, Caprara, Barbaranelli, Gerbino, & Pastorelli, 2003; Chu, 2005). For some adolescent males this can make decision making difficult, if they are engaging in antisocial behaviour and have to make decisions about their future secondary schooling.

Peer influence also operates through peer networks—those with whom students associate. Students in networks tend to be similar to each other through reinforcement and imitation (Kiesner et al., 2002). Discussions between friends influence choices of activities as friends
often make similar choices, even as to which classes to take (Valente, Unger, & Johnson, 2005); and this reinforces the tendency for peer groups to promote the socialization of academic outcomes (Ryan, 2000). This effect on academic motivation is demonstrated by the student and their close friends by their exchange of information, and their modification of personal behaviour based on observations of their friends' behaviour (Chen, Chang, & He, 2003; Young et al., 1999). Last, peer groups affect academic motivation through the reinforcement of the norms and values of the peer group, particularly noticeable in behaviours such as gossiping, or laughing when a friend jokes about antisocial or deviant behaviour (Patterson et al., 2000). This effect on academic motivation can be detrimental to a student's overall achievement if the student identifies with a group that does not value academic achievement. Although, on a positive note, Ryan (2000) reports that students who become affiliated with academically-oriented peers achieve better during high school than do students who become affiliated with less academically-oriented peers.

Summing up, peers are an important sphere of influence on adolescents. Boys and girls use their peers for support in disparate ways, and the network of peers can have an adverse or positive effect on academic outcomes. Through the reinforcement of norms and values, peers can have a bearing on subject pathway choices and the eventual career pathways.

As students make these decisions, the significance of peer pressure could also be tempered by the effect of the teachers and counsellors who advise on course selection.

### 3.6.2 Counsellors & Teachers

Career Guidance Counsellors in schools play an important role in advising students with career direction and recommendations and assisting school administrators in preparing a career guidance programme at the school. An integral part of career development is the choice of subjects for senior studies which becomes the genesis of a career plan. Year 10 is an important year in Queensland for career development, as students, with the cooperation of
parents, counsellors, and the school staff must develop a Student Education and Training (SET) Plan and lodge it with the school as a guide to establishing a personal career plan and consolidating their senior subject choices (Queensland Studies Authority, 2004a). The SET plan is the result of consultation between the student, career counsellor, parents, and school staff on the type of subjects suitable for the student's chosen career path. Career guidance personnel play an integral part in this process through their training and access to current information. The underlying purpose of guidance personnel is to assist students make informed educational and career decisions, and to provide resources and materials to ensure this process unfolds in a systematic and comprehensive manner (Bunch, 2002).

The skills and expertise of career Guidance Counsellors is an important feature of the provision of quality career guidance to adolescents. Career Guidance Counsellors encompass a wide range of people from a diverse range of professions, with a variety of qualifications, backgrounds and perspectives, yet very few have qualifications in career development (Osborn & Baggerly, 2004; Patton, 2002). It has also been recognised that counsellors generally have other responsibilities such as:

- personal, social and educational guidance. This way of providing career development generally results in its importance, compared to other forms of personal counselling, being down-graded... this has been used as an argument by countries such as Norway and Luxembourg for separating career development assistance from personal counselling, and for creating specialist career guidance staff within schools (Hughes & Karp, 2004; Miles Morgan Australia, 2011, p. 58)

The tools used by school Guidance Counsellors range from computer assisted career guidance such as the Australian Government's myfuture website; career courses in resume preparation and interview techniques; guidance programs or academic counselling interventions. A qualitative research report conducted Australia-wide of the career development needs and
wants of 400 young people (5-24 years), their teachers, parents and communities revealed that
the quality of career awareness and accessibility in secondary schools in Australia was
variable (Urbis Social Planning and Social Research, 2011b). The evidence from this large
scale study suggested students did not find the career development activities useful, in
particular, discussions with the school career practitioner; they were not receiving enough of
what they would preferred such as "hands on activities, work experience/work placement, and
visits to or by universities and TAFES" (Urbis Social Planning and Social Research, 2011b, p.
3). Nevertheless, students still make decisions despite the reported dissatisfaction with
current practice on providing advice on subject choice, therefore it would provide valuable to
explore further how students make their subject pathway choices even if they are uncertain
about the support they receive. Therefore the research question that addresses this topic is:

How do students make use of school-based subject selection processes?

Whilst counsellors have several roles, teaching staff are often seconded to assist in aiding
students plan their career development, and in particular, formalising their choice of subjects
for Years 11 and 12. The quality of this assistance depends on the attitude and aptitude of the
teachers involved.

3.6.3 Teacher Perceptions

While teachers and parents are seen to be influential in assisting students make choices,
interestingly, young people see themselves as primarily responsible for their own career
development (Urbis Social Planning and Social Research, 2011b, p. 65). This distinction
means that teachers can be formally involved in the subject selection process by advising
students on subject content, course prerequisites and possible career avenues, but ultimately
the students take responsibility for the final decision.

Some bias has been noted in the advice provided by teachers to students on the suitability of
subjects. Teachers based their advice on underlying assumptions about what subjects were
appropriate for students, with a study (Davies, Telhaj et al., 2009) revealing that some departments actively discouraged low academic achieving students from taking specific subjects. This study examined the trends and patterns in departmental effectiveness across 664 schools with reference to French, German, Geography and History. It revealed that enrolments in these departments were biased towards higher achieving students who could be expected to perform well and boost the academic profile of the department (Davies, Telhaj et al., 2009). Therefore, school personnel perceptions of students’ ability were very important and affected students’ subject choices (Bandura et al., 2001).

However, teachers have been found to take the role of subject choice advisor very seriously, and consider their role important in "linking their subject content to careers, broadening horizons, developing general competencies and providing advice on subject selection and post-school options" (Urbis Social Planning and Social Research, 2011b, p. 54). A variety of concerns have been noted by secondary teachers as to the limitations of the advice they can provide. For example, Urbis Social Planning and Social Research (2011b) reported that teachers found it hard to provide advice on an industry if they had never worked in it; and providing wrong advice on post-graduate studies options or entry requirements was worrying; not being able to access appropriate information on skill shortages was a concern, and how to access industry information was an impediment to providing advice on subject pathways.

Therefore, when adolescents consult with teachers for advice on their subject pathway choices, the quality of that advice is tempered by their personal biases, current knowledge of the labour market, and industry knowledge. This affects the quality of the advice provided for students, who nevertheless take final responsibility for the decision.

3.6.4 Subject Perceptions

When discussing subject choices, both students and teachers have perceptions about the curriculum offerings of the school and their relevance for students. These perceptions are
powerful agents in subject pathway choice, as the student’s personal interests, abilities, family characteristics and school environment contribute to how the student perceives subjects on offer. Because subjects are ultimately situated in the context of the school, the literature surrounding subject perceptions has been dealt with in this section to highlight the relationship between subject choice and subject perceptions for these students in their individual schools.

First, self-efficacy beliefs were highlighted as being influential, as it was found that females held self-efficacy beliefs typically showing that they hold lower competence certitude than do boys on tasks perceived as masculine (Whitelaw, Milosevic, & Daniels, 2000). These male-dominated subjects were Mathematics, Economics, Business, and the physical sciences such as Physics and Chemistry. Consequently these efficacy beliefs have a limiting effect on what female students perceive to be within their options. These perceptions are reflected in both patterns of participation for high school course selections (Jacobs, Chhin, & Bleeker, 2006) and post-graduate destinations (Department of Education and Training, 2009b. p. 25-26). This is significant, because the subjects chosen for senior secondary studies become the pre-requisites for university entry requirements. Consequently, the limiting effect of efficacy beliefs can be far-reaching if they tend to preclude a student from entry into under-graduate studies and occupations that rely on these credentials for entry.

The Table 3.1 below reflects the course choices made by the secondary school graduates in 2008 in Queensland. Males are ten times more likely than females to be represented in the fields of Engineering and related technologies, and six times more likely to study Architecture and Building. Females were three times more likely to study Education, and were more prominent in the fields of Management and Commerce, Health, Society and Culture, and Creative Arts than males.
An Australian study (Fullarton & Ainley, 2000) revealed males predominate in Mathematics, Physical Sciences, Technical Studies, Computer Studies and Physical Education while females predominate in English, Humanities, Social Sciences, the Arts, Languages, Home Sciences and Some Health Studies, and it would appear that gender interacts with subject choice patterns into tertiary institutions (Department of Education and Training, 2009b).

Next, studies have revealed that gender and social background were found to affect subject choices (Naylor, Elsworth, Care, & Harvey-Beavis, 1997), with earlier studies revealing that females of low socio-economic backgrounds were found to choose Mathematics and Science for Year 11 and 12 studies less frequently than their peers (Elsworth & Day, 1989).

Studies of student perceptions of subjects on offer revealed that enjoyment, usefulness for future employment and the 'prestige' of the subject come under scrutiny during the choice process. First, the theme of enjoyment frequently arose when subject perceptions focused on particular subjects such as the sciences, mathematics, English and physical education (Alloway, Dalley, Patterson, Walker, & Lenoy, 2004; Bleeker & Jacobs, 2004; Fullarton &

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**Table 3.1  Field of study of Year 12 completers, by gender, Queensland 2009**

<table>
<thead>
<tr>
<th>Field of study</th>
<th>Males %</th>
<th>Females %</th>
<th>Total %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engineering &amp; Related Technologies</td>
<td>28.6</td>
<td>2.0</td>
<td>14.9</td>
</tr>
<tr>
<td>Management &amp; Commerce</td>
<td>11.2</td>
<td>17.9</td>
<td>14.7</td>
</tr>
<tr>
<td>Health</td>
<td>6.8</td>
<td>18.3</td>
<td>12.9</td>
</tr>
<tr>
<td>Society &amp; Culture</td>
<td>8.3</td>
<td>16.2</td>
<td>12.5</td>
</tr>
<tr>
<td>Creative Arts</td>
<td>7.5</td>
<td>11.3</td>
<td>9.5</td>
</tr>
<tr>
<td>Natural &amp; Physical Sciences</td>
<td>5.7</td>
<td>6.4</td>
<td>6.1</td>
</tr>
<tr>
<td>Architecture &amp; Building</td>
<td>10.7</td>
<td>1.8</td>
<td>6.0</td>
</tr>
<tr>
<td>Education</td>
<td>2.1</td>
<td>7.9</td>
<td>5.2</td>
</tr>
<tr>
<td>Food, Hospitality &amp; Personal Services</td>
<td>2.9</td>
<td>6.6</td>
<td>4.9</td>
</tr>
<tr>
<td>Information Technology</td>
<td>6.1</td>
<td>0.9</td>
<td>3.3</td>
</tr>
<tr>
<td>Mixed Field Programs</td>
<td>1.6</td>
<td>1.0</td>
<td>1.3</td>
</tr>
<tr>
<td>Agriculture, Environmental &amp; Related Studies</td>
<td>1.3</td>
<td>1.2</td>
<td>1.2</td>
</tr>
<tr>
<td>Double Field of Study</td>
<td>5.8</td>
<td>6.4</td>
<td>6.1</td>
</tr>
<tr>
<td>Other</td>
<td>1.5</td>
<td>1.5</td>
<td>1.5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

(Department of Education and Training, 2009b, p. 26)
Ainley, 2000; Ireson & Hallam, 2005; Khoo & Ainley, 2005; Watt, 2006, 2000; Webb, Lubinski, & Benbow, 2002). Assessments of the enjoyability of a subject and its suitability for future studies (Adey & Biddulph, 2001), included the students’ perceptions of the level of subject difficulty and their perceived ability. The most popular subjects were those with higher levels of activity or practical application, which included Physical Education, Information Technology, Art and Technology subjects (Butler et al., 2005). A longitudinal study in Queensland on perceptions of subjects by secondary students confirmed these findings:

"best liked" or "favourite" subjects were those which they could "do"; found "fun and enjoyable"; "interesting"; relevant for their "future course, work or career"; and for "general knowledge". Students linked: (a) good marks with enjoyment; (b) easiness of the subject with understanding; and (c) interest with usefulness of the subject for future courses and work opportunities (Whiteley & Porter, 1998)

Next, adolescents have been found to be pragmatic in their evaluation of subjects and to value connections between their curriculum and real life, and where there was an obvious connection, these subjects were noted to be relevant and useful for future career skills (Stables & Wikeley, 1997). Therefore, when choosing their subjects for senior studies, adolescents had developed a utilitarian perception of the curriculum on offer, and this had an effect on choices (Fisher, 2007).

Another factor that affected the behaviour of students when they choose their subjects for senior studies is their perceptions of the prestige of subjects (Nagy et al., 2006; Shapka et al., 2006). The perceptions of prestige are evidenced by the two pathways provided in the Australian curriculum for senior secondary students.

The first is the academic pathway which places importance on subjects that contribute to university entrance requirements: OP (Overall Position) in Queensland. The second is the
non-academic pathway and is part of a program in Australian schools called VETiS (Vocational Education and Training in Schools). The current definition of VETiS is "VET in Schools programs are undertaken as part of a student's senior secondary certificate and provide credit towards a nationally recognised VET qualification. VET in Schools programs are based on national industry competency standards" (MCEETYA School Taskforce, 2004).

The general perceptions of the pathways are that VETiS subjects are less challenging and therefore suitable for students with lower academic capabilities, 'those that can't, do VET’ (Dalley-Trim et al., 2008, p. 65); and that the academic pathway is for students with higher academic outcomes and higher occupational aspirations. Perceptions of stigma have been identified as pertaining to VETiS subjects.

The perception of VETiS as being fun, different and more practical, and as providing a change of pace or a "break" in an otherwise rigorous academic load demanding "serious" attention and application on the part of the students, serves in some way to "buy into" the diminished status commonly afforded VET. VET can be seen, in this way, as "other to" mainstream-serious, challenging and real-curriculum offerings. (Dalley-Trim et al., 2008, p. 67)

In contrast, students' perceptions of academic subjects have been identified as positive in nature. Academic subjects have been considered: useful for post-graduate study; as avenues to keep options open so as to maximise options for courses or future careers; interesting; and with extra-curricular activities embedded in the course which would be useful in the future labour market (Whiteley & Porter, 1998). Grade 10 students (Adey & Biddulph, 2001) have also reported that the usefulness of academic subjects was harder to define, as they had difficulty relating the subject content to real world applications or future career opportunities, particularly subjects such as Geography and History. Therefore, perceptions of subjects and the associated prestige as academic and challenging, or less academic and less challenging
arise when students take into consideration how they wish to be perceived by others if they enrol in these subjects for senior studies.

In conclusion, the school environment has a significant impact on the subject pathway choices for adolescents. First, friends and peers have an increasing influence over adolescent choices and behaviours as they develop autonomy. Second, personal characteristics such as self-efficacy, gender and social background combine to influence the choice patterns of adolescents and their career aspirations. Next, the counselling and guidance available in schools is provided to formally assist students choose, and both counsellors and teachers report that their advice is shaped by their access to quality career information, training and appropriate tools. Last, when students make judgments regarding the most appropriate subject pathway for their career aspiration, they appraise the subjects with criteria such as the anticipated level of enjoyment, relevance to future occupations, and the positive or negative opinions of others regarding their choice.

Consequently, the school environment encompasses a variety of powerful influences on the adolescent through the peer networks, guidance services, teachers and the attitudes of students to the subjects on offer. Each or all of these factors are emphasised in the research, and considered important when exploring how adolescents make their subject pathways choices for senior secondary studies. Therefore, it is worth exploring further their influence with the research question:

*How does the school environment influence students when making subject pathway choices?*

### 3.7 Summary

The three domains of self, family and the school environment are the focus in the literature surrounding adolescent subject choices in secondary schooling, and highlight the current perceptions that filter through this study. The following research questions arose from the
literature, and guide this study to explore the current Queensland context for adolescents choosing their subject pathways for senior.

**RESEARCH QUESTIONS**

(i)  *RQ 1*: To what extent does the outcome of the Self-Directed Search affect subject pathway choices?

(ii) *RQ 2*: To what extent does academic self-efficacy affect subject pathway choices?

(iii) *RQ 3*: How do students make use of school-based subject selection processes?

(iv) *RQ 4*: How do contextual factors such as family and the school environment, influence students when making subject pathway choices?
Chapter 4 – Design of the Research

4.1 Introduction

As outlined in Chapter Three, the research problem is the perceived dissonance between the subject pathways chosen by students for senior secondary studies and their post-school destinations. As a consequence, the purpose of this study was to explore how students in Year 10 choose their subject pathways for senior secondary studies so as to enable smoother transitions from school to their future career. This important decision point is a critical topic for this group of stakeholders. To accomplish this purpose, the main research question is:

What do Year 10 students in Queensland see as the main factors affecting their subject choices for their senior secondary schooling?

The four research questions which focus the enquiry in addressing the central research question are:

RQ1: To what extent does the outcome of the Self-Directed Search affect subject pathway choices?

RQ2: To what extent does academic self-efficacy affect subject pathway choices?

RQ3: How do students make use of school-based subject selection processes?

RQ4: How do contextual factors such as family and the school environment, influence students when making subject pathway choices?

The theoretical framework underpinning this study was guided by the four elements in Crotty's model which illustrate the relationship between epistemology, theoretical perspective,
methodology and methods (Crotty, 1998). These four elements of research are interrelated as Crotty outlines:

*Epistemology*: the theory of how we gain knowledge of what we know, which is embedded in the theoretical perspective and thereby in the methodology.

*Theoretical perspective*: the philosophical stance taken by the researcher, which is congruent with the epistemology, and informs the methodology.

*Methodology*: the strategy, plan of action, design or process underpinning the choice and use of particular methods to achieve the desired outcomes.

*Methods*: the techniques or procedures used to gather and analyse data related to research questions (Crotty, 1998, p. 3)

The purpose in detailing a theoretical framework in Section 4.2 is to explain and clarify the set of beliefs that the researcher brings to this research. This is followed by a description of the research design in Section 4.3. The two phases of the research design are further detailed in Sections 4.4 and 4.5. This chapter also considers issues concerning legitimation and inference quality in Section 4.6, with ethical issues discussed in Section 4.7. The summary in Section 4.8 concludes this chapter.

### 4.2 Theoretical Framework

Within this theoretical framework section, the rationale for the selection of the epistemology, the theoretical perspective and the methodology will be discussed. Given the nature of the research questions that delve into the students' perspectives, the epistemology that guides this study was constructionism. The basic assumption of constructionism that resonates with this study was that the participants are involved in an ongoing dynamic process of interpreting their personal world, and their perceptions are therefore necessary to inform the findings for this study. The theoretical perspective, pragmatism, recognises the importance of the research question on the design strategies of a study, and this approach has been utilised to maintain a
focus on the problem under study (Creswell & Plano Clark, 2007, Tashakkori & Teddlie, 1998). The methodology arising from this pragmatist perspective, was case study design. A combination of quantitative and qualitative methods has been selected to gather the data. The fundamental assumption for combining methods in this study, was that it provides a broader and more credible understanding of the research problem than a singular quantitative or qualitative approach (Denzin, 2010). This study combines qualitative and quantitative research methods in data collection, analysis and inferences (Johnson, Onwuegbuzie, & Turner, 2007).

4.2.1 Epistemology: Constructionism

The study seeks to develop a more informed understanding of the choice of subject pathways for Year 10 students. The epistemology most suited to developing this understanding was constructionism, as it emphasises “the importance of the participant’s view, stresses the setting or context in which the participants express the views, and highlights the meaning people personally hold about the issue” (Creswell, 2005, p. 43). Constructionists claim that meanings are “constructed by human beings as they engage with the world they are interpreting” (Crotty, 1998, p. 43). This study was not expected to reveal any one truth surrounding the subject selection process, but intends to construct meaning to better inform readers as to what has occurred for these particular students. As noted above, the four elements of research are interrelated, and just as the epistemology informs the theoretical perspective, constructionism informs the pragmatist approach taken (Crotty, 1998).

4.2.2 Theoretical Perspective: Pragmatism

Consistent with constructionist principles, pragmatism contends that the truth of a theory is judged by how useful it is in accomplishing some outcome or action, not in its capacity to accurately reflect objective reality (Rorty, 1999). These outcomes represent the intentions, interests and values of particular individuals or groups of people, and consequently present different perspectives. The theoretical perspective of pragmatism focuses directly on the
purpose and nature of the research questions and values knowledge in its context as crucial (Creswell et al., 2003). Pragmatism permits "practitioner-based" research, and recognises the existing procedures and standards and how they determine truth in that particular context (Creswell et al., 2003). The focus is on the problem in its social and historical context rather than on the method, and therefore multiple relevant forms of data collection can be used to answer research questions (Creswell & Plano Clark, 2007; Johnson et al., 2007). Therefore pragmatism permits a combination of data collection and analyses methods in a combination best suited to addressing the central research questions (Creswell et al., 2003; Greene, 2007). Pragmatism was a relevant research paradigm for this study that requires a reflexive approach to research enquiry (Denscombe, 2008).

4.2.3 Methodology: Case Study Design

The research strategy used to guide this study was that of an empirical case study approach. A case study is an empirical approach that enables the researcher to "investigate a contemporary phenomenon within its real-life context, especially when the boundaries between that phenomenon and the context are not clearly evident" (Yin, 2003, p. 13). Case study design is distinct from qualitative research, and can be based on any combination of quantitative and qualitative methods. This opinion is supported by case study researchers who advocate that case study is defined by interest in a phenomenon or relationship and not by the method of enquiry (Stake, 1995). Case study is an ideal methodology when it is expected that the context will be pertinent to the phenomenon of the study (Yin, 2003), and when a holistic and in-depth investigation of phenomenon and context is required (Feagin, Surry, & Sjoberb, 1991). In addition, case study is an appropriate form of empirical enquiry when investigating contemporary events and behaviours in a naturalistic setting (Stake, 1995; Yin, 2003), where limited interference from a researcher can occur.

Based on these reasons, the case study approach was appropriate for this study for three reasons. Firstly, this study focuses on the authentic and naturally occurring decisions of the
students in their own bounded school sites. Second, the research sub questions central to this study are designed to guide a holistic and in-depth investigation into the complex environment that surrounds the students and affects their behaviour and choices. As both the context and the phenomenon are intertwined and essential to this thesis (Yin, 2003), the case study approach was highly appropriate for a study of this nature. Last, the case study empirical approach offers methodological breadth that is invaluable to this study, which sought both richness and range in explaining dynamic behaviours involving multiple perspectives, variables and levels of analyses.

In the quantitative phase, the use of case sites enabled comparisons to be made to examine patterns in the responses from the three case sites: boys' only, girls' only and co-educational schools. In some instances, broad information was obtained by aggregating the two single sex schools to compare with the co-educational school, and provided further relevant data to highlight any numerically significant issues to follow up in the subsequent qualitative phase of the study.

In the qualitative phase, case study design has been used to develop a detailed description of nine students across the three case sites. During the analysis, the case description and themes related to the subject selection activities defined each student's case (Creswell et al., 2003). This analysis provided rich texture to the description of each case (Merriam, 1998). Based on this analysis, a detailed description using the perspectives of the students was used to detail the influencers on the students when making their subject pathway decisions.

4.2.4 Methods: Quantitative and Qualitative

In this sequential exploratory study, the methods of data collection and analyses combined techniques from the two main research approaches, quantitative and qualitative (Onwuegbuzie & Leech, 2005). This design was adopted as neither quantitative nor qualitative methods were sufficient by themselves to capture the general trends and details of the complex issue of how students make their subject pathway choices for senior secondary studies. When used in
combination, quantitative and qualitative methods complement each other and allow for more complete analyses (Greene, Caracelli, & Graham, 1989; Tashakkori & Teddlie, 1998).

In quantitative research, numerical data are used to determine general trends across populations, focus on numbers, and provide a broad understanding of issues under investigation (Robson, 2003). In this way, variables are isolated and the magnitude and frequency of relationships are determined. The role of the researcher is to determine which variables to investigate and the best instruments to measure reliable and valid scores (Mertler & Charles, 2010). In this study, the quantitative analysis of data from two self-report surveys was used to examine patterns across the responses; to highlight any numerically significant issues; and to provide relevant unambiguous information for a broad overview of how students make their subject pathway choices for senior studies.

In addition, qualitative research develops a "complex, holistic picture, analyses words, reports details views of informants, and conducts the study in a natural setting" (Creswell, 2007, p. 15). Qualitative research data were collected from participants immersed in the decision making process to understand the meanings they attributed to their actions (Creswell, 2007). To this end, the students were interviewed in their school settings where interactions naturally occurred between the student and the elements that affected their decisions. Data analysis was based on the perspectives obtained from the participants in semi-guided interviews. Ultimately, qualitative data collection and analyses were concerned with the quality and texture of the experience of subject pathway choice for the students.

A major tenet of pragmatism is that quantitative and qualitative methods can be combined to better understand and respond to a research problem.

As a method, it focuses on collecting, analysing, and mixing both quantitative and qualitative data in a single study or series of studies. Its central premise is that the use of quantitative and qualitative approaches in combination provides a better
understanding of research problems than either approach alone. (Creswell & Plano Clark, 2007, p. 5)

This integrative methodology is defined as 'iterative exchange', as one component of the study informs another component to answer questions and generate an iterative exchange between the methods (Bazeley, 2010, p. 11). This iterative model is valuable for resolving emerging issues in the data and suits this exploratory study (Bazeley, 2010). As a pathway to gaining a more informed and sophisticated understanding of the research questions, a combination of quantitative and qualitative methods was adopted. This integration of strategies is defined in the following section.

4.3 Research Design

Two distinct phases were used in this sequential exploratory research design (Creswell et al., 2003). In the first phase, the quantitative, self-report survey data were collected in two steps. These self-report surveys are explained in Section 4.4 in more detail and attached as Appendix C. The aim of the quantitative phase was to identify trends and patterns of selected variables from the two self-report surveys across the case sites of the boys' only, girls' only and co-educational schools. The data analysis had limitations, for example, it did not explain some of the outliers or unusual patterns provided by the participants from the case sites. However, the quantitative phase was a starting point for the study, and allowed for the purposeful selection of participants for individual case studies in the second phase, as well as providing an avenue to further interrogate unresolved issues requiring further exploration.

In the second phase, a qualitative multiple case study approach was used, and interview transcripts were collected through individual semi-structured interviews with selected participants. This qualitative phase helped explain why certain factors, tested in the first phase, were significant indicators of behaviour by seeking explanations from the interview transcripts. The interview transcripts were also used for explanations to the unresolved issues
from the first phase. The rationale for this approach was the quantitative data and results provided a broad picture of the main research questions, i.e., how Year 10 students make their subject pathway choices for senior secondary studies, while the qualitative data and its analyses refined and explored the statistical results from the perspective of the students.

These phases and steps are displayed in Table 4.1

*Table 4.1 Phases in this study*

<table>
<thead>
<tr>
<th>Research Phase</th>
<th>Research Step</th>
<th>Research Method</th>
<th>Description and purpose of the method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase 1</td>
<td>Step 1</td>
<td>Self-report Survey</td>
<td>Numeric data to indicate students' demographic information, academic self-efficacy, preferences and interests, and intended subject pathway choices</td>
</tr>
<tr>
<td></td>
<td>Step 2</td>
<td>Self-report Survey</td>
<td>Numeric data to indicate students' actual subject pathway choices.</td>
</tr>
<tr>
<td>Phase 2</td>
<td>Step 1</td>
<td>Interview</td>
<td>Textual data from the interview transcripts and collection of descriptive data on subject collection processes to corroborate findings, and to provide insight into the unresolved issues that arose from statistical analysis</td>
</tr>
</tbody>
</table>

The reporting of these qualitative results in Chapter 6 has taken a case study approach.

In this multiple-case study design, the analysis was performed at four levels: within each case, between cases on each case site, across groups of cases, and across case sites (Stake, 1995). Analysis of this data was a holistic analysis, first identifying themes that were common or different, and finally an interpretation of the meanings of the cases to report on the 'lessons learned' (Lincoln & Guba, 1985).

The priority in this two phase design was given to the qualitative method, because the qualitative research represented the major aspect of data collection and analysis in this study. The smaller, quantitative component went first in the sequence, and was used to provide the
general overview of the participants' demographic and choice behaviour. The quantitative and qualitative methods were integrated at the beginning of the qualitative phase while selecting participants for each case study analysis. The results of the two phases were also integrated during the discussion of the outcome of the whole study in Chapter 7.

4.4 Phase 1: Quantitative Phase

This section details participant selection, content of the survey instruments, and the process for data collection and analysis.

4.4.1 Participants

Participants for the quantitative phase of the study comprised the Year 10 population in each of three case study schools. The three schools used for this study have characteristics useful for a broad view of the phenomena of subject selection. Features such as culture, gender and a common systemic organisation under Catholic education, facilities and location were used to contribute to the richness of the data under examination. Moreover, Catholic schools can be characterised as differing from government operated schools in Queensland in several aspects. These aspects are: cost of enrolment, selection of students, and the basic issue of choice of attending. For purposes of the research, however, one other factor was particularly significant. Unlike State schools, independent and Catholic schools include not only co-educational schools but single-sex schools as well. As the aspect of gender featured throughout the literature surrounding subject selection, it was important that at least one case site reflected the natural gender balance of the population: see Section 3.4 for full discussion. The research literature on gender and subject choice also suggested that when female students were in an all-female student environment, their aspirations were more robust than if they were in a co-educational setting (Francis, Hutchings, Archer, & Amelling, 2003; Nagy et al., 2006). This argues for the inclusion of an all-girls school in the study so as to explore the aspirations of females in this context. To counter-balance this, an all-boys school was
included in this study. Therefore, of the case sites used in this study, one has only male students, the second only female students, and the third both males and females.

In addition to these gender-differentiating characteristics, there were slight differences in the way that the schools administered their subject selection process, as well as the discrete demographic profiles of the population. The all-boys school has a boarding facility which draws rural students to the school, adding to the diversity of the responses from the participants. The other two schools do not have this facility, but they are similar in as much as they only offer enrolment from Grades 8 to 12. The schools were chosen after their principals responded to invitations to participate in this study.

Each of the schools included in the study offered a wide range of academic and vocational education subjects to allow greater choice. The curriculum offerings in the three case sites are divided into two categories under the Queensland education system. The first categories, Overall Position (OP) subjects, contribute to an OP and a Field Position (FP) necessary for students requiring entrance to tertiary study. To be eligible, students must study 20 semester units of Queensland Statutory Authority subjects, including at least three subjects for the four semesters, and complete the Queensland Core Skills Test. Students who satisfy the prerequisites are able to apply for entry to tertiary courses based on their OP. Students with the best OP scores are offered tertiary places first. In some cases, post-secondary institutions need to differentiate between students with the same OP by using FPs.

The second category of subjects offered by all three schools, Vocational Education and Training subjects (VET), includes subjects which are characterised by the content which includes substantial vocational and practical elements. Results in these subjects are not used in the calculation of OPs and FPs as these subjects do not contribute to an OP score, but accumulate points for a ranking that can be used by technical colleges (e.g., TAFE Colleges) and private providers of education, to discern the level of excellence achieved by these students. Choosing a VET suite of subjects does not preclude a student from attending
university contiguously after high school. However, Iannelli & Raffe (2007) established that fewer graduates from vocational education and training programmes in senior secondary studies enter higher education, than those completing OP courses immediately following the completion of school study. Nonetheless, student results for VET subjects studied lead to the accumulated points that contribute to a Tertiary Entrance Rank (TER). The TER is compiled by applying weightings to the outcomes of each subject completed. VET subjects have a weighting lower than OP subjects in the determination of a score for tertiary entrance, which makes it difficult for students to compete effectively with students taking the OP pathway on the basis of their tertiary entrance score for university admission. All three schools chosen for this study offer both OP and VET subjects to their students.

These schools were appraised to ensure that an entrance-selection process did not misrepresent the population of the school, and that the school itself was not part of a system which excluded a cross-section of the population. An important criterion in choosing these schools was that they were within close proximity to the local TAFE College. This proximity ensured that the students could have chosen to attend TAFE College to complete their senior secondary studies if they did not have access to suitable choices within the curriculum of their schools. The three case study schools were situated in diverse geographical locations: one was on the north side of the city, the second far south of the city and the third close to the city centre although all were within the same Catholic Education diocese.

The profile of the cluster sample of students in the case sites was of students in Year 10 representing a group of mainly 14 to 15 year old students in two types of school settings: single sex (two schools: one all boys and one all girls) and a co-educational school. In Phase 1 of this study, all 100 students were invited to respond to the self-report surveys conducted in Step 1 and Step 2 as part of the quantitative phase of the study. Ninety nine students responded to the survey in Step 1, and 69 of the original group completed the survey in Step
2. The reduction in participants was due to timetabling difficulties experienced in the boys-only school.

4.4.2 Self-report surveys

The surveys developed for use in Steps 1 and 2 of Phase 1 of the study are called the First Self-Report Survey and the Second Self-report Survey. The questions in both surveys were informed by a thorough review of literature as displayed in Chapter Three. The items included in the first survey were grouped into three major sections, with two of these major sections repeated in the second self-report survey. The three sections in the first self-report survey were - Section One: The Student; Section Two: Self-efficacy and the Student, and Section Three: The Student and their preferred activities, skills and occupations. The survey administered in Step 2 of the qualitative phase of the study was a modified version of the survey used in Step 1 of the study.

First Self-Report Survey: Section One: The Student

The first section on the First Self-report Survey, The Student, included 13 questions designed to assist with the development of a general demographic profile for each Year 10 student respondent. Questions referred to their coded identifier, gender, parents’ highest level of education, intended educational direction after Year 12, aspirational occupation, factors that may have influenced this aspiration and expected results in current subjects. They then nominated the subjects they thought they may choose for senior studies, and graded the subjects on a Likert scale to indicate which they thought would lead to a highly paid or rewarding job (Davies et al., 2008; Elsworth et al., 1999; Francis et al., 2003; Fullarton & Ainley, 2000). Students were invited to state their names in the form of a code to be used in both surveys. If they completed both surveys and indicated their agreement to be interviewed on both surveys, they joined a pool of respondents for possible selection during the qualitative phase, Phase 2 of the study. These items were used to address RQ3: How do students make use of school-based subject selection processes? and RQ4: How do contextual factors, such
as family and the school environment influence students when making subject pathway choices?

First Self-Report Survey: Section Two: Self-Efficacy and the Student

The second section of the First Self-Report Survey had the title, **Self-efficacy and the Student**. This section used five questions from the Patterns of Adaptive Learning Scale (PALS) (Midgley et al., 2000). It was designed to measure the students’ strength of academic efficacy, specifically their perceptions, beliefs, and strategies regarding their competence in meeting their study requirements (Midgley et al., 2000). The PALS was developed by researchers at the University of Michigan in order to conduct large-scale research on goal achievement theory as applied to elementary and secondary schools (Midgley et al., 2000). The main purpose of the PALS research was to determine how goal-orientation theory could promote reform within schools. As a result of their research, the PALS team developed and published scales to assess various constructs associated with achievement goals (Midgley, et al., 2000, p. 2). For consistency and reliability, the PALS was adopted for this research as it was designed to examine the students’ academic efficacy (Anderman & Midgley, 2002). Five of the PALS questions relating to academic efficacy were selected to form a scale. This scale uses a 5 point Likert response format with anchors of Not at all true to Very true (Trochim, 2001, p.145-147). Midgley’s research reports a Cronbach coefficient alpha of .78 for this scale (Midgley et al., 2000, p. 20). These findings support the measure’s utility in assessing individual academic efficacy measures **RQ2: To what extent does academic self-efficacy affect subject pathway choices?**

First Self-Report Survey: Section Three: The Student and their preferred activities, skills and occupations

The third section on the self-report survey is **The Student and their preferred activities, skills and occupations**. This section comprised four questions with six scales measuring preferred activities, six scales measuring competencies or skills, six scales measuring
preferred occupations and twelve self-estimates of abilities and skills. The purpose of this section of the self-report survey was to ascertain the career profile that best matched the students' self-reported interests and abilities. The section is based on the Self-Directed Search (Holland, 1985) (SDS) is commonly used as a career inventory tool in Australian schools (Shears & Harvey-Beavis, 2006). It was included in the last section of the first self-report survey. This item was used to address RQ1: To what extent does the outcome of the Self-Directed Search affect subject pathway choices? The SDS is a measure of vocational interest, and will explain how vocational interest and personality type factors impact on students when they make subject choices. It also provides information about a person’s career orientations, and establishes a correlation between the personal aspects of individual and career information. The items of the SDS measure a preference for certain activities, the skills they are familiar with or competent in, their interest in a variety of occupations and their assessment of their own abilities. Results reveal information categorised according to six occupational themes: Realistic, Investigative, Artistic, Social, Enterprising and Conventional (RIASEC) (Shears & Harvey-Beavis, 2006).

The SDS comprises four sections, each of which measures the six RIASEC interest fields. The four sections are described according to:

1. Activities: This subtest comprises 66 items which represent the six (RIASEC) interest fields. The respondent indicates his or her interest in a variety of activities in the workplace.

2. Competencies: This subtest comprises 66 items which represent the six (RIASEC) interest fields. The respondent indicates whether he or she has a working knowledge of an activity or is competent in a particular activity.

3. Occupations: This subtest comprises 84 items, which represent the six (RIASEC) fields. The respondent indicates his or her feelings and attitudes toward a variety of occupations.
4. Self-rating of abilities or skills: This section consists of two groups (I and II), each comprising six abilities or skills correlating with the six (RIASEC) interest fields. The respondent uses a six-point scale to rate his or her mechanical, scientific, artistic, teaching, sales and clerical abilities (Shears & Harvey-Beavis, 2006).

The purpose of this section of the self-report survey was for each student to choose an occupational profile which was a three-letter RAISEC code. This code was the result of the responses from participants who completed the ‘Self-Directed Search’ questionnaire, included in the first self-report survey about their preferred activities, competencies, preferred occupations, and self-estimates of their ability. The majority of their responses in each category dictated the dominant field for the section. For example, if most of a student’s answers in the occupation section fell in the R or Realistic realm, it could be assumed that the student would best fit occupations within the realm of Realistic occupations. The participant’s three lettered RAISEC code highlighted their strongest, second strongest, and their third strongest field of occupations, and a match was made between the student’s code and the occupations belonging to that code. The codes are set out in a manual with over 1162 of the most common occupations in Australia assigned a three letter RAISEC code. For example, the code ‘CES’ for Accountant, means that accountants largely resemble people in the Conventional occupations. They resemble people in the Enterprising occupations somewhat less, people in the Social occupations less still, and there is probably little resemblance between Accountants and people in the remaining three groups (R, A, I). With regard to this study, only the total scores for the SDS were used. This score was calculated from the subscales mentioned above. The intention of obtaining the SDS code was to ascertain whether the students would nominate a future occupation that matched the occupation from the SDS codes. If they chose an occupation that matched their SDS codes, they would have chosen an occupation that matched their preferred activities, environment, skills and preferences.
Reliability and validity of the SDS

The validity and reliability of the SDS has been widely reported, particularly in a number of studies in Australia with school-age children (Shears & Harvey-Beavis, 2006). Of particular importance to the current research is a study that was conducted in 1990, which aimed to adapt the SDS for use in the Australian context (Shears & Harvey-Beavis, 2006). Using the latest version, the SDS was administered to 907 secondary school students across Australia and in all sectors of education i.e. State, Independent and Catholic sectors, totalling 45 schools. The Cronbach co-efficient alphas ranged from .87 to .91 based on a sample of 907 (Shears & Harvey-Beavis, 2006, p. 13). This same version was used in this study.

Second Self-Report Survey

The second self-report survey instrument was designed to confirm the subject choices students had made, and to enable comparisons between decisions made before and after the formal subject selection process was conducted at the schools. In brief, the data from the second survey included items that revisited their decisions and intentions on: (i) subject choice (ii) future career/study intentions (iii) influencers and (iv) barriers to choice. The two sections in the second self-report survey contain Section One: The Student; and Section Two: Choice Behaviour and the Student from the first self-report survey.

Second Self-Report Survey: Section One: The Student

The first section of the second self-report survey, The Student, had 10 questions, with four repeated questions from the first self-report survey. It was designed to confirm each student’s demographic profile. Questions included a coded identifier, gender, intentions after Year 12, aspirational occupation, expected results in current subjects and factors that may have influenced this aspiration.
Second Self-Report Survey: Section Two: Choice Behaviour and the Student

The second section of the Second Self-Report Survey was Choice Behaviour and the Student. This section consisted of three questions and was designed to shed light on the students' subject selection. Students indicated their reasons for choosing subjects from a range of 12 options provided. Next, they nominated the subjects they chose for senior studies, and then graded the subjects on a Likert Scale. This scale used a 5 point Likert response format with anchors of Least Useful to Most Useful to indicate which they thought would lead to a highly paid or rewarding job (Davies et al., 2008; Elsworth et al., 1999; Francis et al., 2003; Fullarton & Ainley, 2000) similar to the task undertaken in the first self-report survey. Lastly, students indicated the barriers they may have encountered in making their choices. They had four options to choose from if they had encountered any obstacles in choosing their subjects.

4.4.3 Data Analysis

The research questions that were the guide for this study required a mix of data-analysis techniques to understand the complexity of the phenomena of subject choice for adolescents, as well as use the complementary strengths of each method to avoid some of the inherent problems with using one method only (Johnson & Onwuegbuzie, 2005). The analysis of the self-report survey data was supported by the use of the computer program, IBM SPSS Version 18. Using this statistical support programme for quantitative data analysis provided an efficient method for managing the data, provided opportunity to return to the data and explore in more detail as the analysis developed, and it provided an effective means to ask different questions of the data. The exploratory analyses of the data using IBM SPSS Version 18 permitted a range of descriptive and inferential statistical analyses to be conducted. Descriptive analysis techniques such as finding the mean, standard deviation, range, skewness and kurtosis of data from the self-report surveys were useful for summarising the main features of the data sample. Inferential statistical analysis such as t-tests, Mann-Whitney U tests, and Kruskal-Wallis tests were used to test assumptions about the probability or chance
of differences between groups represented in the self-report survey data. A full description of
how these statistical techniques were used is included in Chapter 5. Furthermore, the analysis
of the survey data identified unresolved issues for further exploration in Phase 2 of the study,
the qualitative phase. The results from Phase 1, the quantitative phase, are displayed in
Chapter Five.

4.5 Phase 2: Qualitative Phase

This section details the method of participant selection for the second phase of the study.
Further information follows on the method of data collection and analyses, which was
designed to respond to the unresolved issues derived from the analyses of the quantitative data
in Phase 1 of the study. Material for qualitative analyses included subject selection
handbooks and handouts obtained when the researcher attended the Parent Information
Evenings at each case site. The process of informing the parents was observed, and field
notes were taken. In addition, interview transcripts from the semi-structured interviews
provided the main component of the qualitative data.

4.5.1 Participants

Three students from each of the three schools were purposively chosen for interviews. These
nine interviewees were of interest to the study as they displayed characteristics such as
changed or unchanged subject pathways or were categorised with specific demographic
profiles. In this way, the qualitative sampling sought to explore a few typical cases, and
follow up on unusual choice decisions identified from the quantitative data. These cases
provided demographic profiles of interest to the study, such as parents with levels of
education relevant to this study, a student who was a boarder, a female student who changed
her subject pathway preferences, and therefore were useful for purposes of comparison in an
effort to provide comprehensive interpretation of data generated (Creswell & Plano Clark,
2007).
4.5.2 Individual Interviews

The individual interviews conducted in Phase 2 of the study were essential to "refine, extend, or explain the general picture" derived in the quantitative phase, where the quantitative data provided a "general picture" of the research results (Creswell, 2005, p. 515). The benefits of interviews in studies combining both quantitative and qualitative methods is well recognised (Creswell & Plano Clark, 2007; Johnson & Turner, 2003; Maxwell, 2010), and in this study has been used as a way to reveal the subtle nuances of individual survey responses by allowing participants to elaborate on their responses more comprehensively. More generally, interviews are appropriate for providing more detailed answers to the questions on the self-report surveys (Fontana & Frey, 1994). Interviews provide insights into the attitudes and perspectives of the respondents which are not clearly apparent in the responses to the self-report surveys. The interpretative validity of the findings is expected to be more robust, as the survey data will be explained by the participants' own words and concepts in the interviews (Maxwell, 1992). The specific technique used in the qualitative phase was the 'interview guide approach' (Johnson & Turner, 2003). The interview guide approach is when the interviewer has pre-specified topics which can be reworded to suit the participant being interviewed. These questions were linked to the questions and participants' responses to the self-report survey. The interview guides for the individual students are attached in Appendix D.

Interviews conducted with nine students across all three case sites provided an individualised understanding of the students' perspectives when making decisions regarding their subject choice. Each interview lasted approximately 45 minutes, and was audio-recorded and transcribed with the permission of the participants and their parents. As there are three case sites involved, the contextual data relating to each school was compared across sites to “highlight both the uniqueness and the commonality of the participants’ experiences and provide an understanding of the study more fully” (West & Oldfather, 1995, p. 454). In this
regard, individual interviews was the qualitative method of choice for the study, as it permits the exploration and confirmation of the quantitative data and the unresolved issues that arose by accessing in-depth information. Moreover, it proved a good technique for isolating "attitudes of interest" to the study (Johnson & Turner, 2003, p. 308).

4.5.3 Data Analysis

The qualitative phase of the study served to confirm, corroborate, and elaborate on interpretations and understandings (Rossman & Wilson, 1994) gained from the quantitative data analysis. Contextual data from the interviews were analysed using constant comparative method of analysis (CCM). The CCM was well-suited to this qualitative phase of the study. It enabled the researcher to describe and conceptualise the variety that exists within the subject under study:

by the grace of comparison and looking for commonalities and differences in behaviour, reasons, attitudes, perspectives and so on. When the sampling has been conducted well in a reasonably homogeneous sample, there is a solid basis for generalizing the concepts and the relations between them to units that were absent from the sample, but which represent the same phenomenon. (Boeije, 2002, p. 393)

Put simply, using CCM means that the data can be reduced for understanding and interpretation by "categorizing, coding, delineating categories and connecting them" (Boeije, 2002, p. 393). Using CCM, the qualitative results displayed in Chapter Six show how student participants explain the meaning behind their subject choice decisions. It does so by making explicit the range of categorisations that are raised in students' accounts as they explained their decision-making process and the factors that impacted on those decisions. A detailed description of the CCM process is set out below in order to facilitate greater ease of readability of the results in Chapters Six and Seven.

As an analytical framework, CCM comprises a set of procedures that guides analysis. The four step analysis procedure used in this comparative analysis is:
1. Comparison within a single interview
2. Comparison between interviews within the same group
3. Comparison of interviews from different groups
4. Comparing students across schools

Each of the four comparisons from the interviews were analysed in four different ways. Firstly, each comparison focused on the data or material involved that responded to the research problem and questions. Secondly for each comparison, the aim differed according to the questions asked. Finally the results expected from each type of comparison contributed to interpretation of the student meaning of the subject selection process in their context (Boeije, 2002). Figure 4.1 depicts the comparison of steps, activities undertaken, aim of the comparison, questions asked of the data, and the expected result of the individual steps in the comparison model.
Figure 4.1  Steps of the constant comparative analysis procedure (Boeije, 2002, p. 396)
Table 4.2 provides an example of the technique used to analyse interview transcript into themes and the emergence of theoretical propositions.

**Table 4.2  Text to codes, theme identification and development of theory**

<table>
<thead>
<tr>
<th>Selecting Relevant text</th>
<th>Coding</th>
<th>Theme</th>
<th>Theory</th>
</tr>
</thead>
<tbody>
<tr>
<td>John: I was doing Maths B at the start of the year and I was not bad but borderline in failing so I would rather be in Maths A where I can get the basics.</td>
<td>Maths levels</td>
<td>Academic self-efficacy</td>
<td>The appropriate level of Maths is relative to the likelihood of success.</td>
</tr>
<tr>
<td>John: I know one of them has, because he’s my mate and I have told him that he needs to think about it and he has thought about it and chosen good subjects. Like he is doing Business because he wants to go off and he is going off to do an apprenticeship in Electrician ‘cos he wants to be an electrician. Because he wants to own his own business because his dad is one and has his own business. So he is doing Business Procedures, to have that understanding. So I guess I have tried to put him on the straight track. The others just don’t get – you know just get a job at Night Owl.</td>
<td>Peer networks</td>
<td>Friend's aspirational occupation similar to friend's father's occupation</td>
<td>Students with career maturity can reflect on the choices of peers. Peer advice not always accepted</td>
</tr>
</tbody>
</table>

The first step, which is a comparison within the individual interview data, was at the start of the interview analysis phase. With open coding, every passage of the interview was studied to determine what exactly had been said and to label each passage with a code. By comparing
different parts of the interview, the consistency of the interview as a whole was examined. The fragments were then subjected to further comparison to investigate what they had in common, how they differed, in what context the interviewee made the remarks and which dimensions or aspects of the subject-selection process were highlighted.

The aim of this internal comparison using the open coding process was to develop categories and label them with the most appropriate codes. In this way, it was possible to locate the core message of the interview and to understand the interview including any difficulties, highlights or inconsistencies.

Second, as soon as more than one interview was conducted, the interviews were compared. The comparison was between interviews within the same group, such as persons who shared the same experience, or students within the same school who share the subject selection process. It was important to compare fragments from different interviews dealing with the same theme. By making an inventory of characteristics of each category, a description of the subject selection process in the context of the school emerged. This step further developed the conceptualization of the subject selection process. Further, themes or codes were combined to form clusters. The aim of this step was to extend the code tree until no more codes were needed to cover all the relevant themes contained in the interviews. The relevant parts of the interviews were those that said something about the subject selection process and the influencers on the students in the decision making process.

Third, interviews from different groups were compared with regard to the students' experience of the subject selection process. This form of data triangulation was conducted to obtain additional information from the perspective of the different groups involved in the subject-selection process e.g., students who chose VET subjects within the school, or female students who chose OP. These interviews were used to arrive at a better understanding of the students’ perspectives and strategies. This step did not necessarily result in a new directory of codes,
but was aimed at deepening the insights and completing the information about the students that was the focus of the analysis.

The final stage of comparison was between students who shared the same experience within the context of their schools. This stage implied that the students who were involved did not share exactly the same experience. This form of aggregation took account of the different stories being told. The aim was to further conceptualise the influencers in the subject selection process, and to find further criteria for the mutual comparison of the students. The result of this analysis was an inventory of criteria for comparing the students across the three case sites.

These four types of comparisons revolved around the nine interviews, across the three case sites. The different comparisons used the perspectives of a variety of students who were involved in the same experience but would have different points of view. This diversity of interviews provided rich data and supported the verification of the data from the self-report surveys.

The themes that emerged contributed to the explanations afforded by participants in the study, and contributed to the explanation of the unresolved issues from the quantitative data to make up the overall analyses of the phenomena of subject selection. Results of the qualitative data analyses are displayed in Chapters Six as case studies.

4. 6  Legitimation & Inference Quality

This study was designed to obtain the major benefits of combining both quantitative and qualitative methods, generally acknowledged to enhance legitimation and quality of inferences derived from the findings. These benefits of integrating the quantitative and qualitative analyses realised in the data analysis Sections 4.4.3 and 4.5.3 are triangulation, complementarity, development, initiation and expansion (Greene et al., 1989).
Triangulation tests the convergence of results from different methods of data collection. In this study, several types of data were collected to shed light on subject choice behaviour in the three case sites. These data include (i) numeric data from a self-report surveys administered to Year 10 students in three school sites in Term Two \( (N = 99) \); (ii) numeric data from a second self-report survey administered to the same cohort of Year 10 students in three schools sites in Term Three \( (N = 69) \) and (iii), detailed contextual data from interviews with selected students \( (N = 9) \), whose survey responses reflected a range of characteristics emerging from the data that necessitated further explanation. Data collected from these sources were triangulated to converge or corroborate each other, offset bias and enhanced the validity of the findings (Greene et al., 1989, p. 256).

Complementarity elaborates and clarifies the results from one method with the use of another method (Greene et al., 1989). In this case, while the self-report surveys provided a precise measurement of the patterns and trends associated with the students and their choice behaviour, these patterns and trends were further explained and exemplified by the students' interview data. These data were used to address the same central research question as well as the unresolved issues from the quantitative analysis. Interview data provided an opportunity for participants to "voice their experiences unconstrained by any perspectives of the research or past research findings" (Creswell, 2005, p. 214), thereby offering insights into the factors that impacted on their choice of subjects for senior studies.

Development refers to the process whereby results from one method informed the use of the subsequent methods or steps in the research process (Greene et al., 1989). This study commenced with extensive self-report surveys completed by the participants in two steps so as to enable the researcher to understand the choice patterns and trends associated with the students as they chose their subjects for senior studies. Data from the self-report surveys were used to identify and select categories of students whose experiences and choice patterns were explored in greater depth through the interviews in the subsequent research phase. The
flexibility of this developmental design meant that the purposive sample of interview participants could be used to enhance the findings of the study.

*Initiation* challenges results obtained from one method to stimulate new insights (Greene et al., 1989). In this study, the self-report survey data analysis aimed at providing information on (i) patterns and trends in the students' responses, and (ii) the relationships amongst variables measured in the surveys. More importantly, information gathered from the survey data analysis raised unresolved issues or complexities associated with the choice behaviour of the students. Therefore, the combination of the surveys and interviews allowed for a more comprehensive analysis of the research problem by using the interviews to provide information beyond the scope of the self-report survey data.

*Expansion* provides for the exploration of the specific features of each method (Greene, et al., 1989). A common critique of the use of survey data and numeric analysis alone, is that only a generalised overview of the research problem is obtained in the findings. On the other hand, focusing on a small subset of qualitative interview data brings with it the risk of producing subjective findings, depending upon the skills and probing of the researcher. Taken together, data from the self-report surveys and the interviews strengthened the inferences obtained from this study (Greene et al., 1989).

Consequently the design of the study served to integrate both methods in exploring how students made their subject pathway choices for senior studies. This integration was seen as a way to initiate new and deeper understanding of this phenomenon (Greene et al., 1989).

### 4.7 Ethical Issues

In line with the ethical requirements of Australian Catholic University Human Research Ethics Committee (ACU HREC) and the three schools involved with this study, appropriate ethics applications forms were submitted and ethics approval from both ACU HREC and the schools was received by January 2008. According to the requirements stipulated in the ACU
Ethics Guidelines, all data collection procedures and instruments were accompanied by a Participant Information Letter and Consent Form. The students selected for, and invited to participate in this study were below 18 years of age and considered minors. Parental consent was therefore required. Given the large number of students invited to participate in the students self-report survey phase of the study, individual parental consent was pursued by personal letters as well as notices inviting participation in the school newsletters. Parents were asked to respond to the researcher by completing the consent form and returning it to the year level co-ordinators at each school. Due care was taken to ensure that the students who were involved in the study were reminded that despite parental consent, participation was voluntary. In the information letter to participants, it was made clear that they could elect to withdraw from the study at any stage without penalty or comment. All comments and responses were anonymous and treated confidentially. Interviews were conducted with students who completed the self-report survey and had given their consent to be interviewed. The contact details of the researcher, as well as the Australian Catholic University (ACU) Office of Research Ethics, were clearly stated on the Participant Information Letter should the participants have any questions, concerns or complaints about the conduct of the research.

A copy of the approval from Australian Catholic University Human Research Ethics Committee (ACU HREC) for the research study in general, and the use of specific research instruments, is provided in Appendix A. While an ethics approval letter from the case sites was received, the documents are not included as an appendix for purposes of anonymity and confidentiality. Copies of the participant information letters and consent forms provided to Year 10 students and their parents are included in Appendix B.

4.8 Summary

In summary, this chapter has specified the research problem and research questions guiding this study. An outline of the research methods chosen to address the research sub questions are highlighted in Figure 4.2.
Analysis techniques, legitimation and inference quality, and ethical considerations were then discussed. In so doing, this chapter sets the scene for the display of results in Chapters Five, Six and Seven. The next chapter displays the quantitative results emerging from Phase 1 of the study.
Chapter 5 – Quantitative results: Findings from the self-report surveys

5.1 Overview

The purpose of this study was to explore how students experience the subject selection process, and make choices regarding their school subjects and post-secondary career pathways. The schools, within which this study was located, offer a wide range of subjects to their senior secondary students. As reported in the literature review, a range of individual, family and school factors have a bearing on the students' decision making about which subjects to choose, which subject pathways to pursue, and which subjects are more advantageous for future career aspirations. An analysis of these factors can provide insights into the ways that students experience and negotiate the subject-selection process that is the focus of this thesis.

This chapter is the first of two chapters to display results. This chapter displays the quantitative analysis of the data in response to the four research questions. The analyses of data in response to RQ1 are detailed in Chapter 5 Section 4; RQ2 in Chapter 5 Section 5; RQ3 in Chapter 5 Section 6 and RQ4 in Chapter 5 Section 7. Together, these four research questions guide the display of quantitative results reported in this chapter.

The first self-report survey, detailed in Chapter 4 Section 4.2, was administered to Year 10 in three school sites on two occasions. On the first occasion, April 2008, 100 students self-selected participation and completed the first self-report survey. There were 73 boys and 27 girls. This gender imbalance can be attributed to the low participation rate at the girls-only school. For a full explanation see Chapter 4, Section 4.1. In brief, the data from the self-report survey included items that gathered data on: (i) demographic information and intentions for subject choice prior to a formal process of subject selection within the school's
program, (ii) academic efficacy, and (iii) a career exploration instrument designed to use the students' responses to match with a suitable occupation and work environment (Holland & Rayman, 1986). The data from the second self-report survey included items that revisited their decisions and intentions on: (i) subject choice (ii) future career/study intentions (iii) influencers and (iv) barriers to choice. A copy of both self-report surveys is included in Appendix C.

This chapter will address the first four research questions by displaying results from the students' survey responses. The data are displayed in Section 5.2 outline the Self-Report Survey; Section 5.3 Demographic Data; Section 5.4 Students’ Subject Choice, Interests and Abilities; Section 5.5 Students' Subject Choice and the School Environment; Section 5.6 Second Self-Report Survey; and Section 5.7 Student Choice and Contextual Factors. This chapter concludes with Section 5.8 Summary of Key Findings and Unresolved Issues. It is this section that takes the study into Chapter 6 and the display of qualitative data.

5.2 Self-Report Surveys

Two self-report surveys were administered to the participants. The questions were grouped in the first self-report survey into three major sections, with the first section gathering demographic and contextual data from the student; the second section includes questions related to academic self-efficacy and the student; and the third section gathers information about the student and their preferences regarding activities, skills, and occupations. The titles for the three sections in the survey are - Section One: The Student; Section Two: Self-efficacy and the Student and Section Three: The Student and their preferred activities, skills and occupations. The second self-report survey included items that invited the participants to revisit their decisions and intentions on (i) subject choice (ii) future career/study intentions (iii) influencers and (iv) barriers to choice. The two sections in the second self-report survey
contain Section One: The Student; and Section Two: Choice Behaviour and the Student from
the first self-report survey.

The next section provides an analysis of the research instrument responses, in terms of the
results pertinent to each research sub-question. Subsequent sections report the results of the
second survey, and the chapter concludes with a summary of the key findings emerging from
the data analysis. This summary informs the in-depth qualitative inquiry conducted in the
explanatory phase of the study, the findings of which are discussed in Chapter Six.

5. 3 Display of Demographic Data

The 100 students who contributed to this research by participating in the first survey were 60
students from a boys-only school, 11 students from a girls-only school and 29 from a co-
educational school. In total, these adolescents comprised 27 girls and 73 boys, between the
ages of 14 and 15. Students were asked to indicate their parents' highest education level as a
measure of socio-economic status, and as a possible area of influence on subject pathway
choice as these demographics are well reported in the literature as influencing student choice
(Ali, McWhirter, & Chronister, 2005; Considine & Zappala, 2002; Marks, 2010). Table 5.1
displays the student participants’ parent’s education levels for each gender. It is evident in
this table that 32.9% of the fathers of the male participants had completed a university
qualification, while 29.6% of the fathers of the female participants had completed a university
qualification. Percentages have been used in this table so that the gender imbalance is not
misleading.
Table 5.1  Distribution of fathers’ highest education levels by student gender

<table>
<thead>
<tr>
<th>Student Gender</th>
<th>Vocational Education and Training</th>
<th>OP</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No Year 12</td>
<td>Year 12</td>
</tr>
<tr>
<td>Males</td>
<td>11 (15.1%)</td>
<td>24 (32.9%)</td>
</tr>
<tr>
<td>Females</td>
<td>5 (18.5%)</td>
<td>5 (18.5%)</td>
</tr>
<tr>
<td>Total</td>
<td>16</td>
<td>29</td>
</tr>
</tbody>
</table>

Table 5.2 displays the distribution of the students’ mother’s education level by gender. Worthy of note in Table 5.2, was that 34% of the mothers of the male participants had completed a university qualification, and 26.3% of the mothers of the female students had completed a university qualification. Further study with a larger sample size may provide evidence of a statistically significant difference. Further data analysis was warranted, in both the quantitative and qualitative phase of the study, to explore the effect of parents’ education level on subject pathway choices.

Table 5.2  Distribution of mothers’ highest education levels by student gender

<table>
<thead>
<tr>
<th>Student Gender</th>
<th>Vocational Education and Training</th>
<th>OP</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No Year 12</td>
<td>Year 12</td>
</tr>
<tr>
<td>Males</td>
<td>10 (13.7%)</td>
<td>27 (37%)</td>
</tr>
<tr>
<td>Females</td>
<td>6 (22.2%)</td>
<td>8 (29.6%)</td>
</tr>
<tr>
<td>Total</td>
<td>16</td>
<td>35</td>
</tr>
</tbody>
</table>
5.4 Subject choice, interests and abilities

The data displayed in this section specifically addresses *RQ1: To what extent does the outcome of the Self-Directed Search affect subject pathway choices?* This research question investigated whether knowledge of skills, abilities and preferences would reduce uncertainty for students if they completed the Self-Directed Search prior to choosing their subjects. Importantly here, is that if a suitable scope of occupations could be identified, it may then minimise the changes to course-selection made by students, thereby reducing the work load for school administrators. As well, students could use valuable knowledge about their interests and abilities prior to choosing their subjects, and more students would choose appropriate senior subject pathways that match their talents, abilities and suggested career paths, thereby reducing the incidence of disengaged students in Years 11 and 12 classes (Whiteley & Porter, 1998).

To address this question, the students were asked to nominate an occupation that they intended to pursue after graduating from secondary schooling. These students then completed the career inventory instrument (Self-Directed Search) by recording their interests, abilities and preferences. This resulted in a range of suggested occupations best suited to the students' responses (A description of the Self-Directed Search instrument as a career inventory tool is detailed in Chapter 4 Section 4.4.2).

One hundred students completed the Self-Directed Search which was included in the first self-report survey. From these responses, a three-letter summary code was obtained. This code reflected the strength of the student's inclinations towards occupations in the RIASEC work environments. The occupations were categorised as either OP or VET. This categorisation was derived from the skill level code attached to the occupation in the handbook accompanying the Self-Directed Search questionnaire, which denotes the skill level attributed to that occupation. These skill levels have been taken from the Australian Qualifications Framework terminology for levels of formal education and training. Skill Level 1 requires a
bachelor degree or higher qualification, or a minimum five years’ relevant experience, and therefore occupations of this skill-level are considered OP occupations. Skill Level 2 requires an Advanced Diploma or a minimum three years’ relevant experience and Skill Levels 3, 4 and 5 require a Certificate III or IV or less. Skill Levels 2-5 are classified as VET occupations. For example, if a student's responses indicated a preference to enter university to study medicine, then an OP occupational code was assigned, as entry into this work environment requires a university degree. If a student's profile indicated a tendency to enter the field of carpentry, then a VET occupational code was assigned, as the student would not require a university degree to enter this industry. When students determined their suite of subjects for year 11 in the first survey, the pathway was categorized as either an academic subject pathway (they had chosen a minimum of five OP subjects), or VET pathway (they had not chosen the minimum required five OP subjects necessary for entry to university in Queensland).

To answer the research question regarding the use of SDS to ascertain subject pathway choices, RQ1, it was necessary to match the subject pathways chosen by the students in the second self-report survey to the occupational type selected by the students in the Self-Directed Search. After identifying the SDS occupational codes for each student, a comparison was made with the students' final choice of subjects for their senior studies. This was further differentiated into gender types as well as across the three types of schools represented in the study. This analysis required paired data, and as a consequence, only the data from those students who completed both self-report surveys are included. Table 5.3 displays cross tabulations of the choices made by the male participants, showing how the SDS Occupational profiles of the males related to their actual subject choices. This table displays data that shows 23 male students had SDS occupational profiles requiring a vocational subject pathway; however, 15 of them indicated that they would choose a pathway preparing them for university and to obtain an OP. In contrast, one male responded to the SDS which indicated
his future occupation required an academic subject pathway for university entrance. Instead, he chose a vocational subject pathway which would make him ineligible for an OP score and unable to enter university upon graduation.

Table 5.3  **Self-Directed Search occupational pathways of males cross tabulated with final pathway choice (N=41)**

<table>
<thead>
<tr>
<th>Self-Directed Search Occupational Pathway</th>
<th>Final Pathway</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>VET Pathway</td>
</tr>
<tr>
<td>VET occupation</td>
<td>8</td>
</tr>
<tr>
<td>OP occupation</td>
<td>1</td>
</tr>
</tbody>
</table>

The female students behaved very similarly to the male students by selecting an academic subject pathway in preference to the vocational subject pathway. Table 5.4 displays cross tabulations where 10 of the females with a preference for occupations requiring a vocational subject pathway, chose a selection of subjects making them eligible for an OP score and university entry. All female students with an OP SDS occupational profile chose an academic subject pathway, as did the majority of the male OP SDS occupational profile students.

Table 5.4  **Self-Directed Search occupational pathways of females matched to final pathway choice (N=27)**

<table>
<thead>
<tr>
<th>Self-Directed Search Occupation</th>
<th>Final Subject Pathway</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>VET Subject Pathway</td>
</tr>
<tr>
<td>VET occupation</td>
<td>6</td>
</tr>
<tr>
<td>OP occupation</td>
<td>0</td>
</tr>
</tbody>
</table>
It was clear from the data displayed in Table 5.3 and Table 5.4, that for both male and female students their subject choices favoured an academic subject pathway, regardless of the information they had gathered in responding to the SDS.

In an effort to scrutinise this data further, Table 5.5 displays the subject choices for the two types of school setting that are included in this study: two single sex schools and one co-educational school. In the single sex schools, it was found that the students were almost evenly spread between the VET and OP SDS occupational codes following analysis of the SDS on the first self-report survey. However, on the final self-report survey, 13 of these students had selected an academic subject pathway despite having previously selected an occupation where they would be appropriately qualified through the vocational subject pathway. As can be seen in Table 5.5, this tendency towards an academic subject pathway was more pronounced in the co-educational school. Again, the preference for an OP pathway overrode the occupations they identified as intended careers on the first self-report survey, with 11 students selecting the academic subject pathway over the vocational subject pathway.

<table>
<thead>
<tr>
<th>School type</th>
<th>Self-Directed Search Occupational Pathway</th>
<th>Final Subject Choice Pathways</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>VET Occupational Pathway</td>
<td>OP Occupational Pathway</td>
</tr>
<tr>
<td>Single-sex</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Male</td>
<td>18</td>
<td>11</td>
</tr>
<tr>
<td>Co-educational</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>11</td>
<td>5</td>
</tr>
<tr>
<td>Male</td>
<td>5</td>
<td>8</td>
</tr>
</tbody>
</table>

Table 5.5 Comparison between school types of the Self-Directed Search occupational pathways and students’ subject choices (N=68)
As evidenced in Tables 5.3 – 5.5, the timing of the first self-report survey which gathered student responses prior to a formal subject selection process at the school, provided an important contrast with the data in the second self-report survey which was conducted after the subject selection process. These data suggest that the link between a student’s personal preferences and the subjects they chose for senior studies was not strong. The data displayed in Table 5.5 would also suggest that the trend was equally as prevalent in the single-sex schools as in the co-educational school. Moreover, the students’ SDS occupational code indicating the occupation or environment where they are best suited, and the relationship between the students chosen course of study and the occupation derived from their responses, was not strong. The data suggest that on the whole, the students did not choose vocational subject pathways, and the majority of students preferred an academic subject pathway even though this was not required for them to follow their intended career path. Understanding why the students made these choices cannot be resolved by the quantitative data alone, and therefore this issue remains unresolved, and warrants further investigation in the qualitative phase of the study.

5.5 Students’ subject choice and academic efficacy

The overall preference shown by students for an academic subject pathway, regardless of gender, school setting, interests and preferences, or occupational aspirations, does not explain why a majority of students chose an academic subject pathway. A defining characteristic differentiating students in school settings is their level of academic self-efficacy (Bong, 2004; Lapan, Shaughnessy, & Boggs, 1996; Pajares & Schunk, 2001; Pinquart, Juang, & Silbereisen, 2003). This characteristic addresses RQ 2: To what extent does academic self-efficacy affect subject pathway choices?

As discussed in Chapter 4 Section 4.2, student responses to academic self-efficacy were collected using a PAL Scale (Midgley, 2002) to understand their individual levels of academic self-efficacy and to gauge whether there was a relationship between high or low
levels of academic self-efficacy and the subject choice pathways. This was achieved by comparing their academic self-efficacy with a range of demographic characteristics.

When the Academic Efficacy Scale was completed by 99 of the 100 respondents on the first self-report survey, their response to the five items on a five-point Likert scale had a mean scale score of 3.89, implying the majority of students held positive perceptions. In this study, the internal consistency reliability was sound, with a Cronbach alpha coefficient of .83 implying an acceptable internal consistency reliability for the items that make up that scale. A Cronbach alpha coefficient >.6 would indicate internal consistency reliability for the Academic Efficacy Scale used in this study.

This section reports comparisons of academic self-efficacy according to demographic characteristics: subject pathway, school type and gender. It is believed that these characteristics may have some bearing on student subject choice. To compare the academic efficacy scale according to study pathway, the students were assigned to the two groups: academic subject pathway or vocational subject pathway, chosen by them.

The students indicated on each survey, the pathway they intended to choose. Therefore it was prudent to measure academic self-efficacy in both these situations in association with the pathway choices of the students. Second, a Mann-Whitney U test revealed statistically significant differences in the academic self-efficacy levels of academic subject pathway students ($Md = 4.0, n = 87$) and VET Pathway students ($Md = 3.4, n=11$), $U = 246.5$, -2.624, $p = .009$, $r = 0.4$ which was a medium effect size. This result indicates that academic self-efficacy had a medium effect on subject pathway choices for these students with their initial subject pathway choices. This difference is evident in Figure 5.1.
To compare academic self-efficacy mean scale score according to school type, the students were assigned to three groups. The first group consisted of students in a girls’ school, the second group to students in a boys’ school and the third group to students in a co-educational school. A one-way between-groups analysis of variance was conducted to explore how school type impacted on academic self-efficacy. There was no statistically significant difference found between these groups, indicating that there was not sufficient evidence to show that school type had an impact on academic self-efficacy.

Next, an analysis on the effect of gender on academic self-efficacy was undertaken. A Mann-Whitney U test revealed statistically significant differences in the academic self-efficacy levels of male students ($Md = 4.0, n = 72$) compared with female students ($Md = 3.6, n=27$), $U$
\( z = -2.46, r = 0.3 \) indicating a medium effect size. This result indicated that gender had a medium effect on academic self-efficacy.

**Figure 5.2**  Mean scale score for academic self-efficacy according to gender

To compare academic self-efficacy mean scale score according to gender and school type, the female students’ mean scale scores were compared by girls-only school and co-educational school, and the male students’ mean scale score were compared by boys-only school and the co-educational school. A Mann-Whitney U test revealed no statistical significance in the academic self-efficacy levels of male students in the boys-only school \( (Md = 3.8, n = 59) \) and co-educational school \( (Md = 4.4, n = 13) \), \( U = 286.5, z = -1.43, p = .15 \). Figure 5.3 depicts the statistical analysis of the academic self-efficacy means of the boys in the two school types.
Likewise, a Mann-Whitney U test revealed no statistical significance in the academic self-efficacy levels of female students in the girls-only school ($Md = 3.4, n = 11$) and co-educational school ($Md = 3.7, n=16$), $U = 81, z = -.35, \ p = .73$. This comparison is depicted in Figure 5.4.
From this broad picture of students' levels of academic self-efficacy and subject choice pathways, the chapter proceeds now to consider more closely the effect on the students after engaging with the formal subject choice process in the three school settings. The next section provides further information regarding whether the students' subject choice intentions in Term Two were maintained, by comparing their intentions with those stated in the first and second self-report survey.

**5.6 Students' subject choice and the school environment**

This analysis of the changes in the students' intentions towards their subject choices addresses 

*RQ3: How do students make use of school-based subject selection processes?* The mode of data collection for the second phase of the study involved a second quantitative student self-report survey administered to sixty-nine students in Year 10 in three school sites. The same
students from the girls-only school and the co-educational school completed both surveys. However, due to timetabling difficulties, 31 male students from the boys-only school did not complete the second survey, resulting in only 29 responses to the second self-report survey from that school. Data displayed in this section are paired data and only reflect the responses of students who completed both surveys.

This survey was implemented in October 2008, at which time the students were in their final school term for Year 10, had chosen their subjects and had gained approval by the school administrators for their subject choices for years 11 and 12. As discussed in Chapter 4 Section 4.2, the second self-report survey instrument was designed to ascertain the subject choices students had made, and to enable comparisons between decisions made before and after the formal subject selection process was conducted at the schools. In brief, the data from the second survey included items that revisited their decisions and intentions on: (i) subject choice (ii) future career/study intentions (iii) influencers and (iv) barriers to choice. A copy of the second self-report survey is included as Appendix C. The two sections in the second self-report survey had a total of 13 questions. Section One: The Student; and Section Two: Choice Behaviour and the Student are now discussed.

Section One of the second self-report survey included 10 questions, with questions repeated from the first survey, and was designed to confirm the demographic profile of the student respondents. Questions included their coded identifier, gender, intentions after Year 12, aspirational occupation, expected results in current subjects and factors that may have influenced this aspiration.

The second section consisted of three questions, designed to explore the students' reasons for choice. Students indicated their reasons for choosing subjects from a range of 12 options provided. Next, they nominated the subjects they chose for senior studies, and graded the subjects on a Likert Scale to indicate those they thought would lead to a highly paid or
rewarding job (Davies et al., 2008; Elsworth et al., 1999; Francis et al., 2003; Fullarton & Ainley, 2000) as they did in the first self-report survey. Finally, they gave an indication about the barriers they may have encountered in making their choices. They had four options from which to choose regarding difficulties encountered in choosing their subjects.

In particular, four questions repeated in both surveys were used to measure changes in the students' responses. The descriptive statistics for these measures of change over the term of the data collection are presented in this section.

5.6.1 Descriptive Statistics for student subject choice and school environment

The majority of students did not change their original subject pathway preference. The students who did make a change to their preferences moved to a vocational subject pathway in both the single-sex schools as well as the co-educational schools. This minor change in students' subject pathway preferences is evident in Table 5.6, and may suggest that the students were likely to have encountered an idea, or were of the opinion that a vocational subject pathway was associated with a better educational outcome for their senior studies, and as a result, changed their preferences. On the other hand, these students may have considered that the academic subject pathway did not provide the opportunities previously expected, and therefore this realisation led to a change of preferences. This quantitative data do not provide insights into what factors interacted with the decision process, and therefore it was not possible to gauge the effect of the subject selection process in the individual schools. Consequently, further investigation of this unresolved issue was warranted in the qualitative phase of this study.
Table 5.6  Number of students who changed subject preferences from Survey 1 to Survey 2 by school type (N=69)

<table>
<thead>
<tr>
<th>School type</th>
<th>Survey 1</th>
<th></th>
<th>Survey 2</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>VET</td>
<td>OP</td>
<td>VET</td>
<td>OP</td>
</tr>
<tr>
<td>Single-sex</td>
<td>8</td>
<td>32</td>
<td>10</td>
<td>30</td>
</tr>
<tr>
<td>Co-educational</td>
<td>2</td>
<td>27</td>
<td>5</td>
<td>24</td>
</tr>
<tr>
<td>Total</td>
<td>10</td>
<td>59</td>
<td>15</td>
<td>54</td>
</tr>
</tbody>
</table>

These results serve as a basis for further statistical analysis of the survey data, to address the contextual factors that have influenced students regardless of whether they have changed their decisions or remained with their original choices throughout the term of this study. The results of analyses on contextual factors are presented in the following section.

5.7  Students' subject choice and contextual factors

An analysis of the individual factors that have influenced the students' decisions addresses the research questions RQ4: How do contextual factors, such as family and the school environment, influence students when making subject pathway choices? The factors that can influence adolescents when choosing subjects for senior studies have been discussed in detail in Chapter Three, the literature review. This section builds on these earlier discussions by displaying descriptive results related to the individual factors.

5.7.1 Descriptive Statistics for student subject choice and contextual factors

The three domains of influence on the student: self, family and the school environment, provide a framework for considering the contextual factors affecting adolescent subject pathway choices in this study. The influencers were presented to the respondents as questions regarding the most influential factor in their decision making process. Consistent with recommendations in the literature, the influencers included such factors as their work experience, media or suggestions from family members (Bright, Pryor, Wilkenfeld, & Earl, 2005). The same question was presented in the second survey to gauge the change in
frequencies of influencers for these students. On the whole, the descriptive statements for influencers indicated that student responses for their intended occupation had been internal to the student. However, as shown in Figure 5.5, by the time of the second survey, the family’s influence increased to affect 13.8% of the students in the boys-only school. Casual or work experience had an impact, increasing the percentage of students affected by another 7.2% and schoolwork increased in its influence over their knowledge of an intended occupation from 15% to 20.7% of the students. For the females in the girls-only school, the range of influencers broadened as they considered their future occupation. While in the first survey the majority considered their future occupation as their own idea, this influencer was diluted by the time of the second survey, when the subject selection process had been completed at their school. Television, books and advertisements affected the judgment of 18.2% of the students regarding their final choice of a future occupation. Schoolwork affected a further 18.3% of the students by the second survey, and career education decreased its influence on the students’ decision for a future occupation, and no students suggested it had persuaded them regarding a future occupation. Figure 5.5 shows minor changes regarding the influencers on the students within the co-education school. Casual or work experience affected a further 6.9% of students, and the original idea of their intended occupation was considered to have originated within themselves for 44.8% of these students.
As the students from each school type consistently selected ‘own idea’ as the greatest influence on their career path, these results would indicate that the students had not undertaken any investigation about their subject pathway choices before receiving career advice and so believed it was their choice. It may have transpired that they had made their decisions after discussions with their family and therefore believed they were influenced by family at that point. Also, the majority of students who maintained that their subject choice was their own at the beginning and end of the collection of the survey data, may have entered Year 10 with their choices decided or partly formed. This issue warrants further investigation in the qualitative phase, to determine in more detail at what point their career plans were formed, and the point of influence.

When considering the choice behaviour of the students regarding their future occupations by gender, the males were slightly more inclined than the female, to be influenced by other factors. This agrees with findings in literature surrounding this topic of influencers on career choices (Paa & McWhirter, 2000). There were no changes in the influencers for future occupations for 45.2% of the males and 48.1% of the females. However, it does suggest that over half the students were influenced by a factor other than their original influence by the
end of the subject-selection process at their school. There were no statistically significant differences between the genders.

To understand the impact of the parents prior to the subject selection process, students were questioned about how much and what type of discussions they had with their parents about their future plans (Connell, 2004). Figure 5.6 depicts the percentages of those discussions students reported with their parents about their future plans. The data were consistent between the different types of schools, although the boys-only school students reported fewer discussions with their parents than students in the other two school types in this study. The prospect of full time work after their senior secondary studies was only discussed by parents at the boys-only school, and was not evident at the other two schools.

![Figure 5.6 Content of parent discussions with students prior to subject selection processes according to school type](image)

Figure 5.6  Content of parent discussions with students prior to subject selection processes according to school type

Information was sought regarding where the students sourced the information they would use for their career decisions, and which were the most valuable. Figure 5.7 reflects the important sources of information for the students in each school. All the students in the first survey responded, and nominated their parents as the most valuable source of information when deciding upon their subjects and future career path. The students in the boys-only school
were the least likely to have sourced information prior to the subject-selection process, whilst the girls-only and co-educational school students had similar patterns of behaviour when gathering valuable information for their future career options. The students in these two schools had similar reliance patterns regarding information sourced from their parents, teachers and information booklet *Job Guide* provided by the Australian Government, through the Department of Education, Employment and Workplace Relations, as well as the *QTAC Guide* supplied by the Queensland Tertiary Admissions Centre. The students in the girls-only school were more likely to use their parents as a primary source of information than the students in the other two schools, and the students in the co-educational school showed a preference for accessing their teachers for information on future careers than students in the other two educational settings. All three schools had Guidance Counsellors available for discussing their subject selection choices; however this support was not utilised to a great extent in any of the schools (Foskett, Dyke, & Maringe, 2008). Why the students did not consider this source of information to be valuable, was an issue of note that required further investigation through interviews in the qualitative stage of this study.

*Figure 5.7 Most valuable sources of information as reported by the students according to school type*
There are other influencing experiences that students use when determining their future career paths. Most students in Year 10 in Queensland are at an age when they can access part time work outside school hours, and can gain work experience either through the school or through their parents’ personal networks (Green & Smith, 2003; Smith & Green, 2001). To gauge whether this had occurred with the students, they were asked to respond in the second survey with information about whether or not they had accessed either or both of these two options. The results in Table 5.7 show that a large percentage of the students in the girls-only school had a part time job (90.9%) and had undertaken work experience. The participation rates of part-time work for the students in the other two schools were identical (65.5%). The girls-only school was the only school of the three to have a formal work experience programme in Year 10 in Term Two, which explains the high level of work experience reported. This may have had a flow-on effect and provided part time jobs for these students. This issue will be reported in more depth in Chapter 6. Some students in the boys-only school and the co-educational school placed sufficient importance on the role of work experience to have organised this outside the curriculum to the level reflected in the table.

<table>
<thead>
<tr>
<th>School type</th>
<th>Part time job</th>
<th>Work experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boys-only</td>
<td>19</td>
<td>6</td>
</tr>
<tr>
<td>Girls-only</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Co-educational</td>
<td>19</td>
<td>4</td>
</tr>
</tbody>
</table>

The school can be a persuading influence on career choices through the range and type of subjects offered to the students (Smyth & Hannan, 2006). Students may have interests outside the curriculum and may be forced to modify their options and take second choice subjects because the school does not offer a subject to suit their interests (Whiteley & Porter, 1998). Teachers may dissuade students from taking subjects because they see them as
unsuitable for that student or their ability (Davies, Telhaj et al., 2009); and resources at a school may be limited so the majority of students may dictate the range and type of subjects on offer once class sizes have been settled (Warton, 1997). To investigate whether obstacles surrounding choice influenced the students’ subject and pathway choices, a question was posed in the second survey to determine whether they ultimately obtained the choices detailed on the subject selection sheet they submitted to the school administration. Both the co-educational school and the boys-only school students reported a similar level of difficulty in securing the subjects they originally wanted, with 13.8% and 13.6% respectively noting they did not procure their first choice of subjects. The students in the girls-only school reported a slightly higher level of dissatisfaction, with 25% stating they did not secure the subjects they nominated on their subject selection sheet. This issue reveals a substantial hurdle for the students to negotiate when navigating a career pathway with their nominated senior subjects. Further insight into how the students experienced this obstacle and its impact on their career options warranted further investigation in the qualitative stage of this study.

The influence of friends on selecting subjects was also gauged through a question on the survey. The effect of friends was negligible, with only three students from the boys-only school registering friends as the main influencer on their choice of subjects, and only one student from each of the girls-only school and the co-educational school. This was in contrast to the findings from literature on peers and their effect on career choice and post-secondary options reported by Thomas and Webber (2009), and warranted further investigation in the qualitative phase of this study.

The parental influence emerged as a prominent variable, and was therefore considered a significant influence on subject choice behaviour. Further analysis was undertaken on the relationship between the education level of both the father and the mother and its effect on subject pathway choices for students. The students were further categorised according to their level of academic self-efficacy. In the pivot table, Table 5.8, several noteworthy features
regarding academic self-efficacy were highlighted. In this table, the father's educational level is portrayed against subject choice pathway, gender, and academic self-efficacy mean scale score at the time of the first self-report survey. The sons of fathers who did not have a Year 12 qualification reported the highest academic self-efficacy mean of all students in this study (mean = 35). Fathers who had completed Year 12 had daughters who reported the lowest academic self-efficacy mean (mean = 19.67). Daughters of fathers with TAFE qualifications reported the highest mean level of academic self-efficacy for females (mean = 30.0).

Table 5.8 Relationship between fathers' educational level, initial subject pathway choice, gender and academic self-efficacy mean.

<table>
<thead>
<tr>
<th>Initial Pathway</th>
<th>VET</th>
<th></th>
<th>OP</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td>Father's education Level</td>
<td>Efficacy Mean</td>
<td>Efficacy Mean</td>
<td>Efficacy Mean</td>
<td>Efficacy Mean</td>
</tr>
<tr>
<td>No Year 12</td>
<td>23.00</td>
<td>23.50</td>
<td>35.00</td>
<td>22.00</td>
</tr>
<tr>
<td>Year 12</td>
<td>23.50</td>
<td>29.17</td>
<td>23.00</td>
<td>39.29</td>
</tr>
<tr>
<td>Trade</td>
<td>24.00</td>
<td>28.33</td>
<td>24.00</td>
<td>28.33</td>
</tr>
<tr>
<td>TAFE</td>
<td>23.50</td>
<td>30.00</td>
<td>.</td>
<td>30.00</td>
</tr>
<tr>
<td>University</td>
<td>21.00</td>
<td>32.29</td>
<td>21.00</td>
<td>27.33</td>
</tr>
</tbody>
</table>

A Kruskal-Wallis Test confirmed statistically significant differences in father’s education levels for academic efficacy and gender. (Gp1, n = 16, No Year 12: Gp2, n = 29, Year 12, Gp3, n = 16, Trade, Gp 4, n = 6, TAFE, Gp 5, n = 32, Uni) $X^2 (4, N = 99) = 5.594, p = .018$. The female students recorded a lower median score of 3.6 ($Md = 3.6$) than the male students, who recorded a median value of 4.0 ($Md = 4$).

Next, Table 5.9 reports the relationship between the father's education level and movement by students in their subject pathway choices. Results from the second self-report survey emphasised the changes in choice patterns in relation to their father's education level. Fathers
who had not completed Year 12 did not affect the subject choice patterns of their sons, but their daughters were inclined to change to a vocational subject pathway. Fathers who had a Year 12 qualification were again more likely to have daughters who changed to a vocational subject pathway when this was not their initial choice. Coupled with the outcome of the previous table, the level of academic self-efficacy may have influenced these changes to vocational subject pathways by female students.

In contrast, sons of men who had a Year 12 qualification were inclined to move to an academic subject pathway if they changed their preferences at all. The children of fathers with trade qualifications did not change their preferences, whilst the sons of fathers with a TAFE qualification remained the same as well. The daughters of fathers with TAFE qualifications moved to an academic subject pathway from their initial vocational subject pathway choice, whilst the children of fathers who had university qualifications made no change to their initial plans.

Table 5.9  Relationship between fathers' educational level, final subject pathway choice, gender and academic self-efficacy mean

<table>
<thead>
<tr>
<th>Father's education Level</th>
<th>Final Pathway</th>
<th>Gender</th>
<th>Efficacy Mean</th>
<th>Gender</th>
<th>Efficacy Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Male</td>
<td>Female</td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td>No Year 12</td>
<td>VET</td>
<td>19.00</td>
<td>35.00</td>
<td>24.00</td>
<td></td>
</tr>
<tr>
<td></td>
<td>OP</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Year 12</td>
<td></td>
<td>25.50</td>
<td>19.00</td>
<td>28.33</td>
<td>21.00</td>
</tr>
<tr>
<td>Trade</td>
<td></td>
<td>23.50</td>
<td>24.00</td>
<td>28.33</td>
<td></td>
</tr>
<tr>
<td>TAFE</td>
<td></td>
<td>23.00</td>
<td>27.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>University</td>
<td></td>
<td>21.00</td>
<td>32.29</td>
<td>27.33</td>
<td></td>
</tr>
</tbody>
</table>

A Kruskal-Wallis Test revealed statistically significant difference in final pathway choices and fathers' education level. (Gp1, n = 14, VET Pathway: Gp2, n = 54, OP Pathway) $X^2 (1, N$
The VET students recorded a lower median score ($Md = 2.27$) than the academic students ($Md = 3.34$).

In contrast, the mother's level of education was analysed in relation to the subject pathway, gender, and academic self-efficacy. Table 5.10 revealed a different pattern of student choice behaviour when viewed through the lens of the mother’s education levels. If the mother did not have a Year 12 qualification, her son was part of the group which had the highest level of academic self-efficacy in the survey cohort (mean = 34.0). If she had gained a Year 12 qualification, there was an indication that her daughter had a weaker academic self-efficacy level than the males, regardless of the subject pathway chosen (mean = 22.0). The daughters of women with TAFE qualifications had the lowest academic self-efficacy mean of the whole student group (mean = 20.0). The mothers with university qualifications whose sons chose a vocational subject pathway had the lowest academic self-efficacy mean of the males (mean = 22.0).

Table 5.10  Relationship between mothers' educational level, initial subject pathway choice, gender and academic self-efficacy mean

<table>
<thead>
<tr>
<th>Mother's education Level</th>
<th>Initial Pathway</th>
<th>Gender</th>
<th>Female</th>
<th>Gender</th>
<th>Female</th>
<th>Gender</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>VET</td>
<td>Male</td>
<td>25.00</td>
<td>Female</td>
<td>24.00</td>
<td>Male</td>
<td>34.00</td>
</tr>
<tr>
<td></td>
<td>OP</td>
<td>Male</td>
<td>23.00</td>
<td>Female</td>
<td>22.00</td>
<td>Male</td>
<td>28.00</td>
</tr>
<tr>
<td></td>
<td>VET</td>
<td>Male</td>
<td>28.00</td>
<td>Female</td>
<td>26.00</td>
<td>Male</td>
<td>31.57</td>
</tr>
</tbody>
</table>

A Kruskal-Wallis Test revealed no statistically significant difference in mothers' education level for academic self-efficacy, gender or the initial subject pathway selection.
Table 5.11 depicts a distinct difference in subject choice behaviour for the students when viewed in the light of their mothers' educational level in comparison to the behaviour of the students in relation to their fathers' educational level. Firstly, when the mothers in this study had no Year 12 qualifications, their daughters were inclined to move from a vocational subject pathway to an academic subject pathway. Next, if the mother had a Year 12 qualification, her son was more inclined to change to a vocational subject pathway, but her daughter was more inclined to change to an academic subject pathway. If a mother had a trade qualification, her daughter would be inclined to change from an academic subject pathway to a vocational subject pathway. The daughters who chose a vocational subject pathway would also have the lowest academic self-efficacy mean of the group (mean = 17.0), whilst the daughters of mothers who had a trade qualification and chose an academic subject pathway would have the highest academic self-efficacy mean of the group (mean = 35.0). Daughters of mothers who had a TAFE qualification were likely to change from an academic subject pathway to a vocational subject pathway, and these girls had the second-lowest level of academic self-efficacy (mean = 20.0). Finally, if a mother had a university qualification, neither her son nor daughter took a vocational subject pathway.

Table 5.11 Relationship between mothers' educational level, final subject pathway choice, gender and academic self-efficacy mean

<table>
<thead>
<tr>
<th>Mother's Education Level</th>
<th>Final Pathway</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>VET</td>
<td>OP</td>
<td>Gender</td>
<td>Gender</td>
<td>Gender</td>
</tr>
<tr>
<td></td>
<td>Male Efficacy Mean</td>
<td>Female Efficacy Mean</td>
<td>Male Efficacy Mean</td>
<td>Female Efficacy Mean</td>
<td></td>
</tr>
<tr>
<td>No Year 12</td>
<td>25.00</td>
<td>18.00</td>
<td>34.00</td>
<td>23.80</td>
<td></td>
</tr>
<tr>
<td>Year 12</td>
<td>24.33</td>
<td>21.67</td>
<td>28.20</td>
<td>22.50</td>
<td></td>
</tr>
<tr>
<td>Trade</td>
<td>17.00</td>
<td>28.00</td>
<td>35.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TAFE</td>
<td>20.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>University</td>
<td></td>
<td></td>
<td>30.38</td>
<td>27.60</td>
<td></td>
</tr>
</tbody>
</table>
A Kruskal-Wallis Test revealed no statistically significant difference in final pathway choices and mothers' education levels.

Two notable patterns emerged from the results of analysis of the data in Table 5.8-Table 5.11, which call attention to the influence of the parents and their educational levels on subject choice pathways for their children, especially in regard to the effect of the fathers' educational level.

The most notable effect of fathers' educational level was on their son's choice behaviour and not their daughter's. Fathers with year 12 qualifications had sons who changed from a vocational subject pathway to an academic subject pathway, whilst fathers with Year 12 qualification had sons and daughters who changed from an academic subject pathway to a vocational subject pathway. The fathers with TAFE or university qualifications had little or no effect on the choice of their children's initial subject pathway choices.

Next, the pattern of academic self-efficacy levels revealed that fathers who did not have Year 12 qualifications, and fathers with university qualifications, had sons with the highest levels of academic self-efficacy in the study and the subject pathways of their children. Mothers' educational levels did not have a relationship to academic self-efficacy means or subject pathways.

In summary, the analysis of the effect of the parents' educational level and the choice behaviour of their children provided insights into the factors that could have affected the decisions made by the students. In order to gain a better understanding of this phenomenon, further investigation was warranted on this issue in the qualitative phase of this study.

Against this background of contextual factors that may have influenced students' subject choice, the next section provides a summary of findings, and focuses on the unresolved issues that have arisen from the analyses.
5.8 Summary of Key Findings and Unresolved Issues

The analyses in this chapter were guided by the four research questions. At the conclusion of the findings for each research question is a summary of the unresolved issues arising from the quantitative results in this chapter. The research questions, findings and unresolved issues from this quantitative data are followed by the display of qualitative data in Chapter 6.

In response to the first research question RQ1: *To what extent does the outcome of the Self-Directed Search affect subject pathway choices?*, it was found that students' subject choices could not be predicted from the Self-Directed Search. This was reflected in the statistical results displayed above where the majority of male and female students favoured academic subject pathways, regardless of their preferred occupation and the entry requirements for that occupation. This trend was equally prevalent in the two single-sex schools as it was in the co-educational school.

This finding reinforces the value of the qualitative phase of this study, where it was possible to investigate student behaviour by gaining deeper insights into the reasons behind their actions. Further explanation was required regarding why the students preferred academic subject pathways even though it was not a requirement for their intended career path. The majority of students did not choose vocational pathways, and discussions with individual students during the qualitative data collection phase are intended to provide insight into this behaviour.

In response to the research question RQ2: *To what extent does academic self-efficacy affect subject pathway choices?*, it was found in the statistical analyses displayed above that academic self-efficacy emerged as a salient predictor of students' decisions when considering subject choices. This was evidenced by the mean scale score for academic self-efficacy of respondents according to subject pathway, gender and school type. Results indicated that students who chose vocational subject pathways have a statistically lower measure of
academic self-efficacy than those students who chose an academic subject pathway. Further analysis also indicated that the female students had statistically significantly lower measures of academic self-efficacy than male students. It was found that there were no statistically significant differences between genders when comparing school type and academic self-efficacy.

Making sense of the findings requires further investigation with individual students to ascertain why females had lower academic self-efficacy than males. Further probing with the view to providing a richer interpretation and re-description of these findings, was warranted in the next phase of this study to ascertain the extent of how gender and academic efficacy interacted on an individual level to affect subject choice.

Third, investigating changes in the students’ intended subject choices addresses RQ3: How do students make use of school-based subject selection processes?, and the results displayed above indicated that the subject selection process had only a minor influence. Students’ responses after the selection process suggest that if they were going to change their choices, it would most likely be to change from an academic subject pathway to a vocational subject pathway. It is suggested from these findings that students encountered information during the subject selection process that mobilised the students to engage with the vocational subjects beyond what they had previously considered, and so were motivated to change their choices to enhance their future subject outcomes and career options. The substance of these motivations requires further discussion, and this will be followed up in the qualitative phase reported in Chapter 6, where interviews with individual students provided an opportunity for insight into this subject choice behaviour.

Last, the analyses investigated the effect of six contextual factors on the subject choice process in response to RQ4: How do contextual factors such as family and the school environment, influence students when making subject pathway choices? These contextual
factors were specifically the effect of influencers on their career path plans; parental
discussions with the respondents; what sources of information in the school environment were
most valuable in the decision making process; the effect of part time work or work
experience; the impact of peers; and lastly, the influence of the parents' educational levels
combined with academic self-efficacy. The majority of students considered that the
intellection of their career path was their own. By the time of the second self-report survey,
the influence of family, television, books and advertisements rose in prominence, but not
enough to dislodge the majority opinion regarding the origin of their career decision as their
own. University destinations dominated discussions in the majority of the respondents'
families, with traineeships and apprenticeships as strong topics for most of the other families.
Parental discussions with the child about post-school options were very similar, regardless of
gender or school type as the majority of responses reported that their parents mainly discussed
university options. The most valuable source of information reported by all students in all
types of schools was their parents. The next most valuable source of information reported by
the students for subject choice and career information, was the teachers at their school. Peers
and friends were found to have a negligible influence on the subject choices of students,
which is contrary to literature surrounding the importance of peers to adolescent decision-
making. This aspect of peer relations will be explored in the qualitative phase of the study.
Last, it was found that there was a more pronounced effect on students' choice behaviour
associated with the fathers' level of education when strengthened by students' gender and
levels of academic self-efficacy.

These analyses left some issues unresolved.

1. The prime issue was the complexity of the effect of the parents' education levels on
   student choice. This is pertinent when considering the second issue about how much
   and at what point, does the family influence subject choice and consideration of career
   options. Students report that their idea for a career had come from themselves,
conflicting with their responses which asserted that they believe the family to be the main source of information regarding their subject choice and career information. Also, students reported the influence of teachers on subject choice decisions. Personal narratives provide an opportunity to reveal further insight regarding how the influence was experienced by the student, enhancing the understanding of this finding from the quantitative data.

2. Findings indicate that the school environment may have affected choice of subjects in a negative way by presenting some obstacles. Just what these obstacles may be, is as important as understanding how students negotiated these obstacles. These issues warrant further investigation.

3. All schools have Guidance Counsellors when students choose subjects and consider careers to access as a valuable resource. Findings suggest that these Guidance Counsellors were under-utilised at the school sites. Again, this finding requires further investigation to uncover why such a valuable and expensive resource seems to be underutilised.

4. The effect of the parents’ level of education on the students’ choices, and their relationship with the students’ academic self-efficacy requires further investigation. Patterns and trends emerging from the quantitative data in relation to subject choice and the influence of the father on academic self-efficacy and subject pathways, warrant further exploration.

In summary, this chapter has documented factors that affect students when they make their subject choices for senior secondary studies. This quantitative investigation provided some notable insights into the complexities of the choice behaviour of adolescents in three types of schools extending understanding of choices beyond the narrow boundaries of OP-dictated studies or vocational subject pathways. In the subsequent exploratory qualitative phase of this study, these unresolved issues are examined to provide detailed insights into the ways these
abstract numeric narratives are enacted in the social realities and interactions of the students’ subject choice behaviour (Rorty, 1999). Chapter 6 provides an account of this further examination.
Chapter 6 - Qualitative Results: Findings from the interviews

6.1 Introduction

The purpose of this study was to explore how students in Year 10 choose their subject pathways for senior secondary studies. The results presented in Chapter 5 indicate that choosing subject pathways is a complex task for adolescents. This may be a reflection of the crucial pressures of adolescence and its associated multiple contexts, attitudes and behaviours which affect students during the year in which they decide on their subjects for senior studies.

The findings from Chapter 5 were organised according to the sub research questions that guided this study. There are four main findings from Chapter 5. One: It was found that students favour an academic subject pathway regardless of the entry requirements for their aspirational occupation. Two: The effect of academic self-efficacy emerged as a significant factor for students when making pathway choices. When students chose a vocational subject pathway, it was likely that they had a low level of academic self-efficacy. Interestingly in this study, it was also found that the female students had lower levels of academic self-efficacy than the male students. Three: It was found that if students did make changes to their subject pathway during the course of the subject selection process at their school, it would most likely be from an academic subject pathway to a vocational subject pathway. Four: There were a variety of contextual factors affecting the decisions of the students. The focus of this research question was on the impact of parents, peers, teachers, Guidance Counsellors, work experience or part time work, and the educational levels of the parents. Each of these factors had varying degrees of influence on the choices of these students, with parents, teachers and work experience or part time work the most influential of all the considered factors. Also
important to this finding and the study as a whole, was the minimal effect of Guidance Counsellors and peers.

Emergent from this analysis were four unresolved issues that needed further clarification through the interviews undertaken in Phase Two of the study, and reported in this chapter.

These unresolved issues contained eight sources of enquiry:

(i) Why did these students prefer an academic subject pathway?

(ii) How did gender and academic self-efficacy interact on an individual level to affect subject choice?

(iii) Why did the subject selection process at the school have only a minor influence on original subject choices?

(iv) Why did students who were likely to change their choices, do so by moving from an academic subject pathway to a vocational subject pathway?

(v) In the students' eyes, how did the effect of the parents' education levels impact on student choice?

(vi) From the students' perspectives, how did the family influence subject choice and consideration for career options?

(vii) How did students experience the influence of teachers on subject choice decisions?

(viii) Why were the Guidance Counsellors under-utilised at the school sites?

This chapter augments the quantitative investigation and analysis discussed in the previous chapter, by focusing on gaining a more informed understanding of how Year 10 students in Queensland choose subjects for their senior secondary schooling. In order to achieve this, this chapter is organised in the following way. Each of the three schools is presented as a separate case site with a synopsis of the subject selection process at the site and the subjects available for the students. Next, each student interviewed at the case site is profiled, concluding with an overview of the themes that emerged at that case site. Lastly, themes from the three case
sites are amalgamated under the domains of self, family and the school environment, in order to respond to the unresolved issues that resulted from the quantitative phase of the study.

6.2 Revisiting the Context

To revise, three secondary schools in Queensland provided the context for this research. Each school offered a comprehensive range of subjects from which students could select both academic and vocational subjects. The key findings of the quantitative investigation (see Section 5.8) indicated that students in Year 10 across the three case sites were influenced by a variety of factors, including academic self-efficacy, family circumstances, parents' education levels, teachers, and subject-selection processes within the schools. The quantitative analyses raised further questions, and so the students' interview transcripts were explored to allow deeper understanding.

Nine students were chosen from among the volunteers who had returned parental consent forms. An overview of the subject pathway choices of the nine interviewees is displayed in Table 6.1. The subject pathway chosen in the initial self-report survey and their aspirational occupation are noted in the first two columns using student pseudonyms. This is contrasted with their final pathway choice and aspirational occupation, provided in Term III after their choices had been accepted by the school administrators. The academic self-efficacy score obtained from their responses to the PAL scale are included for comparison purposes.
Table 6.1 Overview of choice patterns and academic self-efficacy scores for interviewees (N=9)

<table>
<thead>
<tr>
<th>Name</th>
<th>First Pathway Choice</th>
<th>First Occupation Choice</th>
<th>Final Pathway Choice</th>
<th>Final Occupation Choice</th>
<th>Academic Self-Efficacy Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tom</td>
<td>VET</td>
<td>Carpenter</td>
<td>VET</td>
<td>Construction Manager</td>
<td>4.25</td>
</tr>
<tr>
<td>Justin</td>
<td>OP</td>
<td>Draftsperson</td>
<td>VET</td>
<td>Carpenter</td>
<td>3.75</td>
</tr>
<tr>
<td>Harry</td>
<td>VET</td>
<td>Boilermaker</td>
<td>VET</td>
<td>Boilermaker</td>
<td>3.3</td>
</tr>
<tr>
<td>Brad</td>
<td>VET</td>
<td>Professional sportsperson/chef</td>
<td>VET</td>
<td>Professional sportsperson/chef</td>
<td>3.0</td>
</tr>
<tr>
<td>Kathleen</td>
<td>OP</td>
<td>Medical career</td>
<td>OP</td>
<td>Flight attendant</td>
<td>4.25</td>
</tr>
<tr>
<td>Ruth</td>
<td>OP</td>
<td>Hairdresser or beauty therapist</td>
<td>VET</td>
<td>Beauty Therapist</td>
<td>2.5</td>
</tr>
<tr>
<td>Stephanie</td>
<td>OP</td>
<td>Graphic Artist</td>
<td>OP</td>
<td>Animator</td>
<td>3.5</td>
</tr>
<tr>
<td>Patrick</td>
<td>VET</td>
<td>Animator</td>
<td>OP</td>
<td>Animator</td>
<td>3.25</td>
</tr>
<tr>
<td>John</td>
<td>OP</td>
<td>Network Engineer</td>
<td>VET</td>
<td>Web Designer</td>
<td>4.75</td>
</tr>
</tbody>
</table>

Individual features of the schools contributed to the variety within the qualitative data analysis, and are described in detail in Chapter 4 Section 4.1. The gender composition of the three case sites was addressed, as the sample included Anstey College, an all-boys school; an all-girls school at Barcough College; and a co-educational student population at Cranberg College. All three schools had substantial resources available to assist students, whether they chose an academic or vocational subject pathway.

### 6.3 Procedures for Subject Choice

The subject choice programme in Year 10 at all three colleges was characterised by detailed and systematic procedures. The aim of the programme at each case site was to prepare students for subject choice, complying with the Queensland Department of Education advice to develop individualised learning plans for each student (Queensland Government, 2002).
Figure 6.1 displays the timeline for the subject selection programme at each college. The diagram is bracketed into a three step process. This figure illustrates the timing of the dissemination of information to the students and their parents. The career education programme included material on careers as well as talks by subject Heads of Department. There was also substantial material used from the web site, myfuture.edu.au, and students at each college completed a career quiz available on myfuture.edu.au which supplied direction on careers suited to their skills and abilities. The Job Guide booklet provided by the Federal Government, links to the myfuture.edu.au website, as well as the school subject selection booklet assisted with subject and career choices. The school administrators at each site held a career information night with displays by each department, aimed at helping parents and students identify subjects and careers. Career information was provided to students at each school mainly in Terms Two and Three whilst the majority of parent-information communication occurred at the beginning of Term Three. Completed subject selection forms were collected from families by the end of Term Three for collation of choices to occur in Term Four. This information, available to students and parents, is summarised in Figure 6.1.

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**Figure 6.1   Subject Choice Procedures at each case site**
Each college had slight variations to the three step procedure of informing students and parents and obtaining the students subject pathway preferences for the senior phase of learning. Notably at Anstey College, the school administrators enhanced their parent information evening with the presence of industry representatives who actively engaged with the students and their families to explain aspects of their industry that may appeal to the students as future career pathways. At Barclough College, work experience was a compulsory component of the student information phase which was not present in the other two colleges in this study. Lastly Cranberg College organised excursions to Career Expos and tertiary institutions to provide a first-hand experience for the students of prospective career pathways or possible further study options. These variations were designed by the school administrators to contribute to the information available to the student on possible post-school destinations.

The purpose of the following analysis is to explore the range of influences that impacted on the students’ subject choice decisions for a qualitative perspective.

6.4 Anstey College

Anstey College is a Catholic all-boys school. Enrolment in 2008 was 1471 through Years 5 to 12. The area served by the school was Queensland wide as there were in excess of 300 boarders. Some of these students have families who reside overseas or in rural remote areas of Australia. The campus has a large variety of facilities catering to a wide range of interests ranging from Agricultural Studies to Physics. Sporting facilities are extensive and most are situated on site, including an auditorium, hospitality training centre, state of the art technology centre and dedicated vocational education learning areas.

The pastoral support system for the students is a vertical house structure led by House Deans and two Guidance Counsellors. The Guidance Counsellors assist with personal and family counselling issues, as well as providing career guidance and information. Career counselling
was a significant part of the guidance service. Students (and parents) could approach Guidance Counsellors for up-to-date information on career and post-secondary options. Guidance Counsellors were involved in the development of the Senior Education and Training (SET) Plans described in Chapter 3, as well as explaining how students could access a school-based traineeship or apprenticeship.

The career guidance and subject choice system in Anstey College was considered a vital component of the service provided by the School for the benefit of the students. A member of the guidance staff had an individual interview with each Year 10 pupil, prior to subject selection being finalised at the end of Term III.

6.4.1 Subjects: Selection

The subject selection booklet from Anstey College contained comprehensive information. The subjects were listed in alphabetical order and a continuum depicting subject pathway from Year 8 to Year 12 was shown as an aid for subject choice. Pathway options after Year 10 were shown with OP pathway (academic) displayed on the left, and Non-OP pathway (vocational) on the right of a tree-diagram. The Subject Selection Form accompanied this booklet.

To bring deeper understanding of how the students engaged with the subject selection process at Anstey College, it was necessary to explore individual cases in greater detail through a closer examination of selected excerpts from students' interview transcripts. The following descriptions of the students precede a closer examination of the themes from those interviews.

6.5 Students

A summary of the students interviewed at Anstey College comprises a description of the aspirations and influencers on the subject choices of the four students, Tom, Justin, Harry and Brad. The interview guides for these students are included in Appendix D of this study. All four students chose a final subject pathway of vocational subjects. Initially, one of the
students intended to choose an academic subject pathway, but changed his preferences as he was one academic subject under the requirement for OP eligibility. The other three students made changes to the content of their courses but remained with a vocational subject pathway. These students' profiles were selected as they were atypical. They included two male students with strong academic self-efficacy who chose a vocational subject pathway, a male student who did not reside with his parents, and a male student who moved from an academic subject pathway to a vocational subject pathway.

6.5.1 Tom

Tom indicated in the first survey that he wanted to be a carpenter, and in the second survey refined his career choice to that of a construction manager. He wanted to pursue his aspiration in the short term through an apprenticeship. His responses to the SDS component of the survey indicated his suitability for occupations such as a commercial pilot, forest and conservation technician, traffic technician, forester, agricultural engineer, fireman, mining and geological engineer. The relationship between the code of Tom’s vocational aspiration and the SDS summary code was important. "When the first letter codes of the current aspiration and the SDS are the same, the likelihood of a person maintaining that aspiration is high" (Shears & Harvey-Beavis, 2006). Tom's vocational aspiration (Realistic Investigative Artistic) and SDS summary (Realistic Investigate Enterprising) shared the same first code, which revealed a preference for Realistic jobs, and a propensity for mechanical skills. Another important family variable worth noting was parental education levels and its effect on the aspirations for their child. Tom's father had a trade qualification and his mother did not complete Year 12. His father had been an electrician and both parents wanted him to get a ‘trade’. His responses on the academic self-efficacy scale resulted in a mean of 4.25, indicating an individual academic self-efficacy measure out of a possible 5. This indicates Tom holds a high perception of his academic self-efficacy, and suggested that he held confident perceptions of his ability to master the learning goals in his classroom environment.
On both surveys he declared his intention to take a vocational subject pathway. In the first survey, his choices comprised two academic subjects (Mathematics B & Japanese) and four vocational subjects (Construction, Engineering, English Communication, Recreation Studies and Religion and Ethics) and in the second survey this choice changed to four academic subjects (Japanese, Maths A, Study of Religion, English) and two vocational subjects (Engineering and Construction). As a minimum of five academic subjects is required to be eligible for an OP score, Tom was deemed OP ineligible.

Tom had been thinking of a job in construction for some time: "One of my friend's Dad is a carpenter and my grandad used to be a mechanic, and I have been talking to them and they all said it would be a great place to be working" (Tom, personal interview, 26 November 2008). It seems as though Tom's career was one familiar to his family. He commented on his parents' opinion of his choice, "They were never against getting a trade because my Dad had a trade when he was younger" (Tom, personal interview, 26 November 2008).

Likewise, the family opinion on the usefulness of subjects and their concept of his ability were clearly communicated to their son. Tom originally chose Japanese, an unlikely choice given his career goal was in a trade, and despite his family's opinion of this subject, he maintained his preference in his final choice of subjects. It seemed that he was listening to his family's advice about jobs but not about subjects.

Yeah I am pretty good at Japanese. It is a subject I really like, but it has no real career path. It is a subject I like. ...Well they (his parents) think that Japanese is a stupid choice. I am already doing Engineering and Construction so (Tom, personal interview, 26 November 2008).

Tom had approached the staff at his school, as well as family members for advice. He had used the Subject Selection Evening to do so and spoke to his industrial teacher, stating:
My industrial teacher, because I wasn't quite sure about doing Engineering but then they said it was always good to have engineering no matter what trade you go into. Just the teachers on Subject Selection Night—they helped me a lot on choosing my subjects (Tom, personal interview, 26 November 2008).

The teacher's opinion on his academic skills held weight. For example, Tom had originally chosen English Communication to pursue a full vocational subject pathway. He changed his preference to English because he said that the English teacher told him he was "too good for English Communication". He also put a lot of thought into which Mathematics was appropriate for his career path.

I don't know—I think I was supposed to go to Maths A because I am probably good enough to do Maths B, but I want to get a school-based apprenticeship next year, and I will be taking a couple of days off school and it will be a bit hard to do Maths B so I moved to Maths A (Tom, personal interview, 26 November 2008).

The family's preference for a trade outweighed the teachers' advice about his academic potential. Ultimately, Tom sought advice on subject choice in conversations with many people. The people he mentioned were the Head of Teaching and Learning, the English teacher, the Industrial Skills teacher, the Mathematics teacher, his parents, his father’s friend who was a carpenter, his grandfather who was a mechanic, and the guidance counsellor. After finalising his choices he had an interview with the guidance counsellor and said, "I already had a pretty good idea of things on what I wanted to do. I had already talked to a lot of people" (Tom, personal interview, 26 November 2008).

Tom’s case was unusual because although he was academically capable and had relatively high academic self-efficacy, he took a vocational subject pathway to pursue a career as a carpenter. Tom believed that he made his own decision regarding his subject choices and subsequent career choice. Whilst he valued his teachers’ opinions, particularly with respect to
subjects, his story revealed the powerful influence a family can have on their child's career path. Tom could have chosen a more academic pathway, but seemed influenced by his family's preference for him to obtain a trade. This was a case of a student taking a subject pathway aimed at a specific occupation.

6.5.2 Justin

Whilst Tom was confident that the industry of construction and carpentry was his vocational future, Justin was less certain that carpentry was for him. Justin initially indicated that he wanted ‘a trade of some sort, if a sporting career didn’t work out’ and by the time of the second self-report survey, wanted to be a carpenter (Justin, personal interview, 26 November 2008). His response to the SDS questionnaire suggested his suitability for occupational areas such as model, floral designer, craft artist, chef, commercial and industrial designer, graphic designer or fashion designer. His current aspirational code was Realistic Investigative Artistic, whilst his SDS summary code was Enterprising Realistic Artistic. His main strengths according to the SDS lay in the area of Enterprise, using his leadership and speaking abilities. He lived with his mother and stepfather. His initial choices were to take an academic course as his mother had aspirations for him to attend university, but then his parents discussed his future with him in reference to obtaining a trade after Year 12. His parents' educational levels were that his father did not complete Year 12 and his mother’s highest qualification was Year 12. His score for academic self-efficacy was 3.75, which suggested above-average confidence in his perceptions of his ability to master classroom goals. His final choice of subjects revealed a vocational subject pathway with one academic subject, Mathematics A.

Justin had harboured a desire to be a draftsperson, but his mother was concerned that the employment opportunities for this occupation were limited and wanted the certainty of a trade to ensure his employability in the future. He felt an obligation to consider his mother's and
stepfather's advice regarding a career for a variety of reasons. He explained the combination of influencers on his career choice when he said,

    I always wanted to be an architect or like a draftsman or something. But Mum said ”Get something behind you first and then maybe later on you can follow that up”....Sort of like my dad doesn't work anymore. He had these big ideas and now he has nothing. So Mum is just sort of forcing me to get something behind me...... I was going to speak to someone from the school and try and get a school based (apprenticeship). I still haven't decided what trade I wanted to do because my Mum still wants me to go electrical with my uncle. But I still don't know what's right. Because I think I can do more than a trade. Like a trade would be good but I can … (Justin, personal interview, 26 November 2008).

His mother was also attuned to the status of taking an academic Mathematics subject, and Justin explained her reasoning saying,

    Oh Mum just said I should be taking Maths A, like I should be doing Maths B she reckons. But I am not going to use Maths B and she doesn't want me to do Maths Essentials so she said Maths A (Justin, personal interview, 26 November 2008).

Justin's past experience in classroom subjects affected his judgement about his choice of subjects for his senior phase of learning. For example, Justin had unsatisfying experiences in English in Year 10 resulting in the choice of English Communication for his senior studies when he explained,

    I haven’t been interested in English this year. I have done the work and passed but I hate it....Complete don’t care about English sort of–just like a lost subject. My teacher–she hates it–lots of detentions and stuff. I like doing things that I will use when I am older. Like Maths A is better than Maths B because right now we are doing financial stuff and all that sort of stuff and banking. English is sort of like read, reading books,
and writing massive things and I don’t really need that. Spelling and stuff—that’s good (Justin, personal interview, 26 November 2008).

Media, such as television, also provided an image for how his future career would look and sound. Justin had been attracted by the television advertisements recommending trades, saying,

You know those ads on TV about the trades and they are all out there and laughing and having fun, there's that. Then there is the mining one where they are driving the big trucks and they are not just sitting down and doing nothing. No writing (Justin, personal interview, 26 November 2008).

On the whole, although Justin still wanted to be a draftsperson the main source of persuasion was his family. The prevailing conversations were with his family, but particularly his mother, whose overriding concern centred on ensuring he obtained a trade to provide a solid career foundation. Justin perceived that his peers were not useful, and that they appeared to be as conflicted as he about the most suitable subjects to take for senior studies. He explained their dilemma stating, "Nobody really knows what they want to do yet. Just trying to pick subjects and see how it will all work out" (Justin, personal interview, 26 November 2008). However, he engaged with media that glamorised the trade lifestyle which also complemented his family's aspirations. The influence of the family and his own school-based experience of learning did not support his aspiration to become a draftsperson, so he resolved to obtain a trade through a vocational subject pathway. This was a case of a student taking a subject pathway for a specific occupation for future employment confidence.

6.5.3 Harry
As much as Justin's story was characterised by extensive family communication, Harry's story was about how a student makes choices when his family is physically removed and conversations are few. Harry was a boarder at Anstey College, and his family lived and
worked on a cattle farm in the west of the state. On both surveys he indicated his career choice as a boilermaker and he wanted an apprenticeship after school. His responses to the SDS suggested he should be a taxi driver, professional athlete, waiter, farm management advisor, fire fighter or police officer. Harry's aspirational occupational code for a boilermaker was Realistic Investigative Artistic, and his SDS summary code was Realistic Enterprising Social. As both these occupational areas share the same first letter it is likely that Harry would pursue an occupation in the Realistic field where his mechanical abilities could be utilised. His parents' educational levels of attainment were that his mother did not complete Year 12 but his father did. They were both cattle farmers and had discussed the idea that Harry's should consider obtaining full time work as soon as he left school. His responses to the academic self-efficacy scale resulted in a mean of 3.3. Harry's academic self-efficacy was average for respondents to this scale. His selection of subjects on the first survey indicated a vocational subject pathway containing four academic subjects (English, Mathematics A, Study of Religion, Agricultural Science). His last subject choices maintained a vocational subject pathway with two academic subjects (English and Mathematics A) and four vocational subjects (Construction, Engineering, Religion and Ethics, Rural Operations).

Harry had used his family's experiences, particularly his brother's, as a template for his future career plan. Harry had chosen to pursue his future career as a boilermaker and had selected two mines near his home where he could apply for employment. He intended to work in the mines like his "brother and his girlfriend" and take on boiler making "like two of my brother's mates" (Harry, personal interview, 26 November 2008).

Harry was one of the few students interviewed and surveyed who actively sought the advice of the Guidance Counsellor. Harry made three appointments to see the Guidance Counsellor and made the decision on subject choices with his assistance. The Guidance Counsellor did not speak with Harry's parents.
Unlike the other students at Anstey College, Harry did not have his family on hand to consult. Nevertheless, their influence on his career aspiration was evident, as his choice was closely aligned to life on his family's cattle station and his brother's trade employment. Harry still sought advice, and chose teachers and the Guidance Counsellor to help decide on individual subjects for the vocational subject pathway he selected. The influence of Harry's family was apparent in his career choice despite the fact that his family was not close at hand. However, he made good use of the guidance at the school when making his subject choice. This was a case of a student choosing a subject pathway with a specific occupation in mind that complements his family's environment.

6.5.4 Brad

The link to the development of interests through family activities was apparent in Harry's story and was highlighted in Brad's subject and careers choices as well. Brad suggested on both his surveys that he wanted to be a professional sports player or chef. His responses to the SDS questionnaire directed him to a profession such as a chef, fitness trainer, vocational education teacher, sports coach farm management advisor, or fire fighter. Both Brad's aspirational occupational code and SDS summary code were the same, which was to become a chef or involved in an athletic field. His aspiration to be a chef as a 'backup' career was inspired by the movie Ratatouille (1997), which he recalled watching eleven years prior to the interview. At this time he was in primary school and had nurtured that interest by working in his uncle and aunt's restaurant during holidays. However, the desire to follow in his brother's footsteps as a professional baseball player in America was stronger. This aspiration was supported by his family, and he had observed first hand his brother's career progression over the past three years in the professional baseball league in America. It was likely that Brad would be successful in either of his occupations (chef or baseball player), as he had strengths in the three fields of Social Realistic Enterprising with strong Social skills and talents according to the profile on SDS. The level of educational attainment for both his parents was
the Year 12 Certificate. His responses to the academic self-efficacy scale resulted in a mean of 3, which suggests he is somewhat confident in his perceptions of his class-work confidence. In the first survey he had selected a vocational subject pathway with three academic subjects (English, Mathematics A and Study of Religion), and his final selection maintained a vocational subject pathway with more vocational subjects (English Communication, Religion and Ethics, Hospitality Operations, Marine Studies, Business Operations - Wine Tourism) and one academic subject - Mathematics A.

Consistent with Brad’s goal of becoming a professional baseball player, his family had invested resources to support this desired outcome as Brad revealed when he said,

Pretty definite about being a baseball player-100 per cent. My brother has already signed a professional contract over in America. So that has given me a little bit more determination to follow in his footsteps ... in the holidays coming up in January I am going to Melbourne for the National Titles in Geelong. They have scouts from all over the world come to these sorts of Titles to check out how good you are. Depending on how good you are, they offer you a contract with a baseball team in America and you will go over there for maybe six months and train with them. But if that doesn't work out and you don't get signed, you can also go to College over in America after school (Brad, personal interview, 26 November 2008).

The teachers at Anstey College had a direct influence on the subjects he was considering to support his career choices. For Brad, the most contentious subject under consideration was the level of Mathematics, and he sought recommendations from his peers and his mother. Ultimately, he did not follow his mother's advice to take an easier Mathematics, but instead took the more challenging Mathematics. Neither did he note his peers' warning that the teacher would make him work harder. He recounted the steps towards his decision to take Mathematics A when he said,
I had a talk with the guys and I think he (the teacher) was too mean. But I was fine with that. So he just put me on to Maths A so I was okay with that. 'Cos Mum said to do prevoc (prevocational) Maths you don't have to worry about it as much, then I can think about other subjects. So I said that's fine. So now I am doing Maths A and I don't mind. I will just have to put more effort into it (Brad, personal interview, 26 November 2008).

Last, Brad had chosen a vocational subject pathway to align with his career goal to become a professional athlete and as a second choice, a chef. Both these career aspirations were his own idea and had been in his mind prior to entering secondary education. Both career options were connected to occupations within his family, that is, his aunt and uncle's restaurant and his brother, a professional baseball player. His family, particularly his mother, were mentioned as having input into the decision regarding his subjects, as were his teachers at school. This was a case of a student choosing subjects with his career aspiration firmly established.

6.6 Emergent Themes at Anstey College

In summary, several themes emerged from the analysis of the interviews with the four students at Anstey College. A specific point of importance was that all the students had the genesis of a career plan as they entered Year 10. These aspirations formed whilst in primary school, had developed through observation and discussions over a period of time with family members. Secondly, there was a preference amongst these students for gathering information from a trusted adult, in most cases a family member. The second most trusted source of information for these students was the teachers. Their advice was sought on subject selection, as well as the predicted ability of the student in subjects like Mathematics and English. All four students chose Mathematics A, whilst only Harry and Tom chose English, which was more academically rigorous than the vocational subject English Communication. Those
students who took English Communication did so with a view to ensuring a pass in the subject to safeguard the attainment of a Queensland Certificate of Education which requires a minimum pass in a literacy and numeracy subject. All these interviewees chose a vocational subject pathway. Each participant was confident in the opportunities provided in selecting their future career with vocational skills and qualifications. This pathway may have also been enhanced by the presence of recruitment personnel at the parent information nights from large companies who wanted school based trainees. It is also noteworthy that all four students chose occupational fields aligned with the occupation of someone they knew in their family, i.e. stepfather, father, uncle, or brother. Their families were influential in supporting their choices, with the interviewees recounting conversations with their mothers more than their fathers in the decision-making process.

The selection of an all-boys school with genuine support for vocational subject pathways was useful in providing a point of difference in comparison with the interview transcripts of students with an all-girls school, Barclough College.

### 6.7 Barclough College

The second case site was Barclough College, a Catholic all-girls school that had an enrolment of approximately 449 in 2008, and was located in the same city as the all-boys school. Staff numbers were relatively small, with an administrative team of four and a teaching staff of 36. Because numbers were small, it was possible for pupils and staff to have a more personal and individual association in a way that was difficult to attain in other case study schools.

At the time of this study, there was no one person responsible for career or personal guidance, as the guidance counsellor had been on leave for some time. The guidance system for career advice and subject choice was organised by the Deputy Principal and the Head of Vocational Education. Career guidance activities commenced in Years 9 and 10, when students participated in career planning lessons for approximately 10 weeks each year. The activities
were based on career information booklets widely available in Queensland and contained the SDS career inventory tool, which was also used in the self-report surveys in this study. Because of the small size and character of the school, the main focus of the subject choice process and career guidance relied on interviews and regular contact with the pupils.

The procedures for subject choice at Barclough College had characteristics similar to Anstey College. However the lack of a Guidance counsellor resulted in more flexible arrangements dispensing subject pathway selection advice.

### 6.7.1 Subjects: Selection

The subject selection forms at Barclough College were more prescriptive than those at Anstey College, as they contained guides as to what current level of attainment could be used as an indicator of eligibility for subject entry. For example, to choose Physical Education for Year 11 and 12, a student required a minimum level of C for English, no minimum level of Mathematics, Science or SOSE and a notation in the ‘Other’ column which stated 'must have very definite and positive desire to apply self to practical component irrespective of what is to be undertaken’. At the Parent Information Evening the Deputy Principal directed parents to consider a distinct subject pathway saying, “So the big decision that the girls need to make is that they are going to an OP course or a vocational education course”.

As emphasised in the letter to parents, final decisions about subjects was dependent on the minimum numbers required to make up classes. A description of the participants at Barclough College is followed by a thematic analysis of the interviews, using the students own narrative to explain their choice behaviour.

### 6.8 Students

Interviews were conducted with two students from Barclough College - Kathleen and Ruth. A description of the students and their educational and family background follows, based on
information obtained from their responses to the self-report surveys and subsequent interviews.

6.8.1 Kathleen

On the first self-report survey, Kathleen signalled an interest in medicine or a medical career. However, by Term Three Kathleen had added the occupation of flight attendant on her second self-report survey. Her responses to the SDS suggested that an occupation of recreational therapist, substance abuse and behavioural disorder counsellor, secondary teacher, marriage or family therapist, or counselling psychologist would best suit her preferences and abilities. Whilst people in the flight attendant field have strong Social skills and abilities (Social Conventional Enterprising) and that of a medical doctor dominant investigative and science fields (Investigative Social Conventional), Kathleen's SDS summary code indicated she would best suit an occupation using more Social Artistic Investigative skills in that order of priority. The occupation of flight attendant and the SDS summary share the first field which was Social. Therefore, given her interests and skills lie in the social area, she would be more suited to an occupation requiring strong social skills, such as a flight attendant. Her parents had discussed with her the merits of attending a university and her parents' educational attainment level was that her mother had a university qualification and her father a diploma qualification. Her responses to the academic self-efficacy scale resulted in a mean of 4.25, which was one of the highest for the female participants in this study and well above average for responses on the PAL scale. In accord with her original career goal in medicine, Kathleen chose an academic pathway of five subjects (Biological Science, English, Mathematics B, Physical Education and Modern History). By the end of the year these choices had changed to Art, Biological Science, Mathematics A, Hospitality Studies, English, and Study of Religion, thereby maintaining her objective to pursue an academic subject pathway.

Whilst Kathleen noted, on her self-report survey, that the main influencer in her subject choice process was the career education program at her school, she highlighted in interviews
the level of support from her family during the decision making process. Kathleen referred to her family, particularly her father, as a valuable resource in her decision making process. Her father attended the parent information evenings, and she revealed that she thought he was a better decision maker than her mother when she said "Yes, my dad is a lot smarter, like logical, with that sort of thing" (Kathleen, personal interview, 17 November 2008). Initially, Kathleen had two options under consideration. These were as a flight attendant or an occupation in the medical field. Both were in the fields where her parents had experience. She explained,

Because my dad used to be a pilot and my mum used to work in a blood bank and I was very interested in what they both used to do. I am also interested in all the medical stuff because-like I got all right marks for Science—but like my Dad showed me what you could do as a flight attendant and I could travel the world. And I could give that a try too (Kathleen, personal interview, 17 November 2008).

Kathleen was also interested in a job similar to that of her cousin, who was an accountant. This occupation was under consideration because it satisfied other criteria she had for her future occupation in that it would provide a good income. Kathleen understood that earning a good income would be the result of undertaking an academic course and obtaining a university qualification. She had two examples to draw on. The first was her information about her cousin's occupation, and the second was a work experience conversation with a child-care worker. This information gave her an indication of what she believed would follow if she chose an academic course. She said,

I am not too sure, but I think it is just from what I heard and everything. Like for Accounting and stuff, my cousin she does Accounting and she is earning a lot of money and she did an OP so. And ones like Childcare and that, I did Childcare for work experience and stuff, and the lady said you don't get paid that much so just
thinking, I just added up the dots and thinking that (Kathleen, personal interview, 17 November 2008).

Kathleen's family were active in researching possible careers for her. Amongst other suggestions, her father directed her to a website about medical careers with the government, and Kathleen recalled his explanation of the benefits of a government job: "My dad told me about it. He said like you get good pay, you get a lot of holidays and stuff like that, so" (Kathleen, personal interview, 17 November 2008). Kathleen's mother perused the Careers Section of the local newspaper, and Kathleen commented that every weekend her mother would offer suggestions "Sometimes my Mum might be like 'Hey Kathleen, look at this, would you like to consider that?' and I'm like 'Yeah, I might'" (Kathleen, personal interview, 17 November 2008).

The family's opinion as to her academic abilities and their beliefs about her ability were influential when choosing subjects.

"Well, actually, my family kind of helped me to decide. Because my brother did Biology and stuff and he enjoyed it and I have similar interests to him. If he enjoyed it then, like, I might enjoy it. I changed from Modern History to Art, because I hear the workload is just a bit ... Maybe Maths B to Maths A. I am just thinking of the workload: my brother is doing Maths B and he's struggling (Kathleen, personal interview, 17 November 2008).

Her parents attended the Parent Information Evening held by the school to provide information on subject choice and the new Queensland Certificate of Education (QCE). Kathleen stated that her parents were still confused about the QCE after attending the evening, but were more focussed on how to get an OP, "The only thing they know about it is about the OP. That you have to get a good mark to get a good OP" (Kathleen, personal interview, 17 November 2008).
Kathleen was comfortable with her family's advice, and summed up her parents' ambitions for her as "just to be happy, to get a good job, and just be happy with what I got, so ...I think it is what every parent would want."

Peers were a source of information about the content of courses under consideration.

Well, my friends influenced me on what they heard, and their experience and stuff. 'Cos they all do different subjects to me. Some do Business and stuff like that and they kind of helped in the way that they kind of had older sisters that went here that did the subjects that I wanted to do. They kind of, like, told me what you have to do (Kathleen, personal interview, 17 November 2008).

Summing up, Kathleen chose an academic subject pathway that she anticipated would lead to a well-paid job. She consulted widely, among her family and friends, who provided feedback on course content and her chances of success in these subjects. She was undecided as to which occupation to set as her goal. She was attracted to a job that was well paid, involved travelling, or a position with a government department, or perhaps in the medical field. As some medical occupations would have required Chemistry and Mathematics B she may have found a number of options removed with her subject selection. On the whole, Kathleen gathered advice from a range of sources, with her family having the most input. Like the majority of students in the survey sample, the main strategy behind Kathleen's choice of subjects was to keep her options open until she was more firmly decided on a particular career objective. This was a case of a student choosing subjects with university entrance as the main goal.

6.8.2 Ruth

Ruth's occupational aspirations were focussed on the Beauty Industry. On both questionnaires, Ruth expressed an interest in beauty therapy, and on her first questionnaire included the occupation of hairdresser. Her responses to the SDS questions suggested a career
in waitressing, customer service, concierge, mediator or conciliator, administrator of a
childcare centre, or equal opportunity representative. Her aspiration to become a beauty
therapist required Artistic skills, which was in contrast to her SDS occupations which required
Social Enterprising Conventional skills. This suggested that her preferences and skills lay
more in the Social rather than Artistic sphere. Her parents had discussed the possibility of
obtaining an apprenticeship or traineeship, and attending a college of advanced education.
Here her mother's educational level of attainment was a trade qualification whilst her father
had not completed Year 12. She stated that her idea for her future occupation was her own,
but was also influenced by knowing someone in the occupational area she chose. Ruth’s
responses to the academic self-efficacy scale resulted in a 2.5 mean. As a measure of
academic self-efficacy out of a possible result of 5, this result suggests that Ruth had a
somewhat low confidence in her ability to master the learning goals and environment of her
classroom. Despite her low academic self-efficacy, her initial subject choices opted for an
academic subject pathway. She initially chose five academic subjects (Accounting,
Biological Science, English, Modern History, and Business Communication and Technology),
and she was considering one of three vocational subjects (Integrated Tourism, Prevocational
Mathematics and Business Procedures). Eventually, her choices changed to four vocational
subjects (Childcare Studies, Computer Studies, English Communication, Religion & Ethics)
and two academic subjects (Mathematics A and Hospitality Studies). She stated that the
timetable did not allow for the combination of subjects she wanted, resulting in the choice of
Hospitality Studies, which she did not expect to enjoy because of its level of difficulty.

Ruth's chosen career as a beauty therapist was within the industry where her sister worked and
was aligned with her part-time job. "My sister owns a hairdressing salon. I sort of know what
she does there. I work at Big W at the cosmetics counter" (Ruth, personal interview, 17
November 2008). She had arrived at the choice of beauty therapy after she had eliminated the
option of becoming a hairdresser following an unfortunate incident while she was a school-based apprenticed hairdresser.

I had an interview with the Vocational Education Co-ordinator and she got me the hairdressing apprenticeship. I was there two months and I was washing this girl's hair. It was full of lice and it made me feel sick. I didn't go back (Ruth, personal interview, 17 November 2008).

Ruth acknowledged her mother's influence on considering her options and opportunities. Ruth's mother accompanied her to an interview for a position in the Beauty Therapy courses at TAFE, and impressed the importance of the opportunity by stating, "Ruth, don't you give any wrong answers" (Ruth, personal interview, 17 November 2008). Admission to this course would enable Ruth to commence her studies for Beauty Therapy at the same time as completing her Queensland Certificate of Education. Her mother also used her personal contacts for work experience in a pre-school, as Ruth had been considering a career in early childhood education. Ruth appreciated her mother's support, saying, "Mum says she just wants me to be happy. She wants me to go to work, like, without hating to do my work" (Ruth, personal interview, 17 November 2008). Ruth's father "just agreed with Mum".

The opinion of her peers about her subject choice was important to Ruth, as she mentioned the associated stigma she felt would ensue by taking a vocational subject pathway.

There has been some fighting here-about 50/50-the year 11s are saying the VET kids are dumb people and OP are the smart people. Yeah, I have a friend who says she is doing VET but I know she is doing all OP. ...There are some people who are definitely not going to get a QCE (Queensland Certificate of Education) (Ruth, personal interview, 17 November 2008).

Ruth clearly felt that she lacked academic ability and it affected her confidence in Mathematics and in other academic aspirations. She spoke of her paucity of academic
confidence and lamented the limitation it imposed on her future. It is significant that, despite her low academic self-efficacy, Ruth chose an academic Mathematics subject rather than the more practical, vocationally-oriented Prevocational Mathematics subject on offer.

I decided to take vocational education because like, I do study but when I read it goes out the other ear. VET has given me work experience, and you have things to do rather than read. I used to be good at Maths but I am not anymore. I could choose more if I was doing OP. I would have liked to do OP. The subjects are more interesting but I can't cope academically (Ruth, personal interview, 17 November 2008).

Ruth explained that she had difficulty absorbing the information provided at the Career Information Days provided by the school.

Too much talking. One afternoon we had two hours of talking. It was too much. There was Ms xxxx, then Ms xxx, then the Counsellor and some ladies from the work placement people. That is why the book (Job Guide) is so good. When there is too much talking I tend to tune out, and with the book you can skim it and look at the jobs (Ruth, personal interview, 17 November 2008).

In conclusion, Ruth chose a vocational subject pathway to pursue her wish to become a beauty therapist, after ruling out childcare and hairdressing. The choice to become a beauty therapist was her own idea. However, conversations with her family had a strong influence on this choice, and her career was in the same industry as her sister. Whilst she said the academic subjects were more interesting, she doubted her ability to cope. As she found concentrating difficult and avoided reading, she somewhat reluctantly chose a vocational subject pathway. She was aware that there were students choosing an academic subject pathway that would not be able to pass the subjects they had chosen, and she was not prepared to follow this choice pattern. Her choices were affected by her low academic self-efficacy
(the lowest of all the interviewees), and a perceived lack of options. Unlike the male students at Anstey College who all chose a vocational subject pathway without mentioning stigma, she spoke of her peers' comments about being 'dumb', and this may point to her hesitation to take this pathway. This was a case of a student taking a subject pathway to ensure she obtained a QCE, despite some associated social stigma.

6.9 Emergent Themes at Barclough College

The students at the all-girls school were a small sample amongst of the whole sample interviewed, but provided significant insight into the female perspective on subject choice. Several themes emerged from the interviews that were the same as the male students. The first theme related to the effect of the family on choices. The influence of the family was evident in a variety of ways. Firstly, family influence encompassed and supported recommendations on subjects, possible occupations and advice on predicted academic skills and abilities. The second theme related to the girls' relationship with trusted adults and peers, and the weight they gave to the advice from their family members. This influence of family members also extended to the scope of their aspirational occupations, as they chose careers closely aligned to those within their family's sphere of knowledge and experience. It was also evident that these students did a lot of self-investigation about their future options. Next, the final theme relates to their focus on achieving a QCE, which was a high priority, and therefore, when a subject was chosen, a careful appraisal of ability was important to ensure success in attaining a QCE.

Three new elements that differed from the male students emerged for the Barclough College students. First, these female students alone had the opportunity of school-organised work experience which was not available to the other students interviewed. Work experience proved to be a valued activity that assisted in their exploration of future careers and subject choice, particularly for Ruth. Second, the acknowledgement of peers as a source of valuable
information on subject content and predicted ability was not a prominent theme with the male students, but a notable influence for the females at Barclough. This exchange between peers may have been more evident at Barclough College because it had a smaller, close-knit student community than the other two schools in the study. Finally, the stigma associated with vocational subject pathways emerged as an obstacle that had to be considered in choice decisions, but this did not arise in the interviews with the male students who chose a vocational subject pathway.

6.10 Cranberg College

The third case site involved in this study was Cranberg College which was a Catholic co-education school. Its enrolment in 2008 was 805. The school was newer than the other schools, and its facilities were suited to the curriculum on offer with industrial kitchens, workshops, theatre facilities and sporting grounds.

Next follows a description of the available subject choices at Cranberg College preceding a detailed description of the three selected cases.

6.10.1 Subjects: Selection

The subject selection sheets at Cranberg College were accompanied by a Senior Schooling Seminar Booklet. The subject selection sheet contained a list of all the subjects in alphabetical order within a table which had the field weightings for the academic subjects detailed for use by the students in conjunction with requirements for university entrance eligibility. Using these forms and the Senior Subject Seminar Booklets, the Job Guide booklet and the results of the career quiz on the myfuture.edu.au website, students had to submit their choices for approval by the administration. The factors that affected these choices are detailed in the transcripts of interviews with three students at Cranberg College.
6.11 Students

Guided interviews were conducted with Stephanie, Patrick and John from Cranberg College for the purposes of the qualitative phase of the study. These students were selected with the intention of allowing for some level of diversity and potential differences of opinion and experience associated with the subject selection process at Cranberg College. A synopsis of each student's background follows, to provide a foundation for further analysis of the textual data in the interviews.

6.11.1 Stephanie

On the first questionnaire Stephanie indicated that she wanted to pursue a career as a graphic artist, but by the second questionnaire had changed this occupational goal to a career as an animator. The results of the SDS suggested she would be suited to the occupation of a park ranger, sociologist, political scientist, hairdresser, radio or television announcer, choreographer, translator or interpreter, or a public relations specialist. The SDS occupation code was Artistic Social Realistic, and the occupational code for an animator was Artistic Investigative Social. Both these occupations had the same first letter in their occupational code of Artistic (A), revealing that her aspiration occupation and occupation chosen by the SDS are in the artistic field. Both her parents had TAFE qualifications, and at the time of the first questionnaire had discussed with her the possibility of attending the College of Art. In the second self-report survey, she signalled her intention to attend university. On both self-report surveys, she stated that her idea for her future occupation had come from knowing someone in the career under consideration. The outcome of her responses to the academic self-efficacy scale resulted in a mean of 3.5, suggesting her level of academic self-efficacy was slightly above average. In her first choice of subjects she selected eight academic subjects (Chemistry, English, Home Economics, Mathematics B and Mathematics C, Physics, Study of Religion and Visual Art). These subjects were not directly aligned with her aspirational career of graphic artistry, but were designed to keep her options open. In her
final preferences she chose English, Mathematics B, Study of Religion, Technical Studies, Visual Art and the vocational subject Multimedia which did not contribute to her OP score.

Stephanie stated that her choice of career was based on her knowing someone in the occupation, and that she had had this idea since she was in Grade 5. She explained that her family had an association with art and the animation industry, saying "Yes, my uncle is sort of like an artist. My family is very creative. And they know Anthony Lucas who is Harvey Krumpet-which is animation" (Stephanie, personal interview, 15 November 2008). It is worth noting that the year Stephanie was in Year 5 was also the year that 'Harvey Krumpet' won the 2003 Academy Award for Best Animated Short Film, possibly influencing her first ambition. Stephanie sought the advice of trusted sources by getting input from her parents, grandparents and siblings on the subjects to take. She commented that her parents "let me do what I want to do", but nevertheless felt pressure from her father to choose subjects he preferred. Although Stephanie wanted to be either a graphic artist or an animator, her initial subject choices for senior were the prerequisites for the electrical industry, that is, Physics, Mathematics B, English, and Technical Studies. Ironically, Stephanie explained that her father had been pushed into an occupation he did not choose, as an electrician, and did not want the same situation for her.

Well they both want me to be happy. Dad wants me to go to uni-you know "Do it right now". Mum went to the College of Art and dropped out and Dad left in Grade 10 to do a trade, 'cos his Dad ...He doesn't want me to be an electrician. He is basically 'do what you like' because he doesn't like it. He would rather be on a boat. He wants me to do what I want to do but to be successful at it-I guess. With Mum-like she is an artist or something. I think she has her own art thing going on. She loves that and she knows that I love it too. She's like "If you want to do that then you can do that too"(Stephanie, personal interview, 15 November 2008).
She was unsure of her father's advice on which Mathematics subject to select, but reluctantly chose Mathematics B saying, "I think that Maths B would give me the most grief. Umm, well I think Dad wants me to give it a go. He is not forcing me" (Stephanie, personal interview, 15 November 2008). She was less confident of her academic skills than the males, and wanted to choose a tertiary institution that would deal with her professed lack of concentration. She anticipated that QANTM, a private tertiary institution specialising in digital media degrees, would best accommodate her style of learning, because it dealt with digital art creation, saying "I sit there taking notes, and then the notes turn into little drawings, and then the drawings turn back into notes. I guess they would be used to dealing with people who can't concentrate"(Stephanie, personal interview, 15 November 2008).

Stephanie chose her subject teachers for advice on different aspects of her career planning and her friends for positive affirmation on her subject choices. Her multimedia teacher was a source of information on her future career options and course advice "because she knows about that kind of thing and she knows what I want to do", though still deferring to some of her father's choices. Her peers sought her advice as well as a providing support for her choices. She explains their discussions saying,

We more or less support each other's choices but then if they were like "we don't know what to do" and they were like thinking of Home Ec (Economics) against Accounting, or Business Communication for an Events Planner, we would be like 'which side (subject pathway) are you actually looking at here (Stephanie, personal interview, 15 November 2008).

The format of the Careers Information Days did not suit Stephanie’s style of learning, but she did gain useful information at the Careers Expo.

"At the time, I was like 'I really don't want to be here 'cos I would rather be sleeping at the back of the classroom' but when you get out of it, it is pretty ... Probably learning all the new things and taking in all the new information that you kind of
want to know but you don't know how to get out of people, I guess was the best part"
(Stephanie, personal interview, 15 November 2008).

Stephanie chose an academic course of study to pursue her aspiration to be an animator, because she knew of a family friend who was in this occupation, and she had been encouraged after conversations with her teacher. Her father was a persuasive advisor, and initially his influence saw her taking a less artistic range of subjects. The opinion of peers had little effect, and the format of the Careers Information Sessions at the School was not suited to her more kinaesthetic style of learning. However, after consultations with her teacher and further conversations with her family, she took a range of subjects more suited to her occupational goal. This occupation was in the artistic field similar to her uncle's and mother's occupation as artists. Her occupational choice was complemented by her part-time job duties at a hardware store on the weekend, where she played games with the children and did face painting as a children's entertainer. This was a case of a student staying focused on obtaining an OP to gain university entry, but changing the subjects within this pathway.

6.11.2 Patrick
Like Stephanie, Patrick chose the occupation of animator and did so in both self-report surveys. The results of the SDS suggested he would be suited to an occupation as a film and video editor, poet or creative writer, reporter, urban and regional planner or industrial psychologist. There was congruence between the SDS code of his aspirational occupation as an animator (Artistic Investigative Social), and his SDS summary code (Artistic Investigative Enterprising), as they shared the same first letter which suggested that Patrick took into account his own talents and needs when choosing to become an animator. The outcome of his responses to the academic self-efficacy scale resulted in a mean of 3.25, which was a level slightly above average. His parents had discussed with him his future intentions of attending university, and their education educational background was that his mother had completed Year 12 and his father had not. He stated that his choice of occupation was his own idea. His
initial subject choices included four academic subjects (English, Mathematics A and Graphics, Japanese) and two vocational subjects (Technical Studies and Multimedia). His final selection included five academic subjects (English, Graphics, Mathematics A, Study of Religion, Modern History) and one vocational subject (Multimedia).

Patrick maintained that since Grade 8, he had wanted to be an animator and had actively researched this career in the meantime. His choice of an academic subject pathway was informed by his research into the subject requirements for his future occupation. His research also encompassed investigations into potential employers and possible venues for future work experience. He illustrated the extent of his exploration into the field of animation by stating that he knew that his potential employers were "in between Brisbane and the Gold Coast has the biggest population of games and 3D companies in Australia" (Patrick, personal interview, 15 November 2008). He explained what course he would take: "There is the Bachelor of Interactive Entertainment specialising in Animation at QANTM College", and had decided where he would like to do work experience stating, "at a CGI place. Like Pandemic which is in the Valley I think. I would like to see how they work and what they do" (Patrick, personal interview, 15 November 2008).

His parents supported his career choice, but he explained they were nervous about his choice of a tertiary institution. They were concerned that the environment was less academic than their preferred choice of one of the large universities in Queensland, and the course seemed too short for a tertiary qualification. He recounted:

I went to the QANTM Open Day and it just seems like really social, and even though my parents keep saying, like, it only takes two years, and it's not social and stuff. They don't really want me to go there, but I do (Patrick, personal interview, 15 November 2008).
When asked what his parents' wishes were for his future, Patrick replied "I am not really sure". The choice of subjects was strategic for Patrick, as he was focussed on the best way to achieve a good OP, and believed his choice of subject could possibly provide an OP between "3 and an 8 or preferably a 5 or a 4" (Patrick, personal interview, 15 November 2008). Like other students, the level of Mathematics required thoughtful consideration, and he used the advice of teachers to decide, stating, "They (the teachers) said that since I was getting a C in Maths B, I really wouldn't rather get C in Years 11 and 12. And A in Maths A-I think that it is worth more" (Patrick, personal interview, 15 November 2008). Patrick had researched his career pathway thoroughly, and whilst he was focussed on finding out all he could, he explained that he did not find the School's Career Information Sessions as fruitful as the Job Guide and the Career Expo where he took the opportunity to question stallholders individually about their offerings.

Some of it was annoying, like we had to fill in these annoying surveys, in PDE. Like what would this task be useful for and I think we did some of it last year in other subjects. So it was annoying because we had to repeat it practically. They were like booklets but stapled together. They used the QTAC web site to find everything like the Job Guide, but it was annoying because the book was from last year, so it used the old QTAC thing so you couldn't find anything. So the school didn't think of that. I liked the booklets that showed me what the OP cut-offs were. I went to the massive Career Expo thing (Patrick, personal interview, 15 November 2008).

To sum up, Patrick was confident that an academic subject pathway would provide eligibility for entry into a tertiary institution that offered the course he wanted. His case was marked by his independence and firm career goal. He had undertaken considerable personal research into his aspirational career. He maintained that the idea of being an animator was his own, and entered high school with this career in mind. He was thoroughly versed in what was required to achieve this goal. His parents were not used as a source of information, and there
was no one in his family who had this career or anything similar. He and his parents were in tune with his aspiration to achieve a tertiary qualification, although there was discord about his choice of tertiary institution. Patrick preferred to read material about subjects and careers at leisure and to be able to ask questions personally. Patrick did consult teachers such as the Mathematics teacher on subjects, so as to gauge his probability of success over the next two years. His peers and his part time job had little connection with his chosen occupation. His subject choices and subsequent career path were his decision. This was a case of a student focussing on a career that he chose himself, that he knew suited him, and selecting subjects to ensure he achieved his career goal.

6.11.3 John

Like Patrick, John showed a determined focus on achieving his career goal. John's intended occupation in the first self-report survey was as a network engineer. On the second self-report survey he changed his occupational goal to being a web designer. His responses on the SDS suggested that the occupation of advertising sales agent, program director, editor or advertising and promotions manager, industrial engineer, financial analyst, cost estimator, auditor, or accountant would be suitable. John's aspiration to be a web designer required a profile predominantly in the investigative area with an occupational code-Investigative Conventional Social-which was in contrast to his SDS summary code-Conventional Enterprising Artistic-which showed a preference for a conventional occupational profile requiring more clerical and mathematical abilities than scientific skills. The result of his responses to the academic self-efficacy scale was a mean of 4.75, which was one of the highest scores amongst the Cranberg College participants and a high result for responses to the PAL scale. His parents' educational background was that they had both completed Year 12. His intention was to obtain a traineeship or an apprenticeship after school in information technology, and said that the idea for his intended occupation was his own. He had chosen five academic subjects (Accounting, Mathematics A, Study of Religion, Business, statement
and Technologies and Recreational Studies) and two vocational subjects (Multimedia and English Communication). His final choices were four vocational subjects (Multimedia, Religion and Ethics, Integrated Tourism, English Communication) and two academic subjects (Economics and Mathematics A).

John, like Patrick, showed initiative by actively seeking out information and sources on which to base his decision for a future career. He approached a wide range of teachers, both on campus and off. He recounted a conversation with a teacher at the local TAFE, "I was talking to one of the instructors at TAFE and she said that we can shape my course next year in Cert III so that I can go straight into a Diploma in Web Design". Next he spoke of his interactions with the school's Multimedia teacher, "She's really good. She convinced me to do Multimedia next year and this year too", and then he explained his relationship with the Head of Vocational Education saying,

That would be Mrs XXX. In the notices, we get the morning notices every morning and she puts in apprenticeships, traineeships, school based ones, part time jobs, information about TAFE courses. That's the way I found out about my TAFE course for next year. You can go and see her any time you want. I have been to see her a few times, and she is always good for a talk. About 3 or 4 times (John, personal interview, 15 November 2008).

He then related how he used his mother's employment network to establish a period of work experience during the school holidays to gauge whether he would like the industry,

I was just talking with my mum and the company that she works for have their IT managers and she asked one of the guys that works there, Andrew, and he said we can get him in for work experience (John, personal interview, 15 November 2008).

John explained that he approached people in online communities for career information,
I did go to *Whirlpool* which is owned by Ninemsn now. That is their broadband one, but there are lots of IT professionals on there and I asked a few questions on there. I went to CNet and they have a lot of professionals on there and I asked a few questions there (John, personal interview, 15 November 2008).

Whilst he trusted these sources, he was more sceptical about mainstream media on career information, like television and newspapers, stating "I find it hard to be convinced by media because I know a lot of it isn't fact" (John, personal interview, 15 November 2008).

When John changed his preferences during the year from an academic subject pathway to a vocational subject pathway, he met some resistance from the Assistant Principal, as he had proven to be a good student and they wanted him to change his subject choices back to the academic subject pathway.

She wanted me to drop Multimedia, do SOR, English, Mathematics A, Economics, BCT instead of Business and PE. All OP. I went home to my parents and told them exactly what she said and they said they thought it was because of that (good school results) so they wrote a letter and signed the bottom of the SET plan and I handed it in. She looked at it and said "Yeah, that's good". They (teachers) wanted me to do uni. They didn't want me to close off my options. Because of my good marks and because they are up in the Bs and because there are opportunities at uni for IT. But I don't think that it is really important to do that (John, personal interview, 15 November 2008).

The Mathematics Department affected his choice of Mathematics subject. He recounted his understanding of what he required for his future occupation and the interplay between that and his mathematics results.

I was doing Maths B at the start of the year and I was not bad but borderline in failing, so I would rather be in Maths A where I can get the basics. I think that IT
would need a higher Maths than Prevoc. Yeah (John, personal interview, 15
November 2008).

He explained how he had changed from an academic suite of subjects to a vocational subject
pathway, after judging that he could become a more successful network engineer if he had
more hands-on experience through a Diploma of Information Technology, which he would
commence while doing his senior secondary studies at his school.

I guess I really enjoy all the subjects that I have chosen. I wasn't really looking for a
uni. I thought I can do what I want at TAFE, and then I have industry certification. I
thought that was the best way for me instead of a uni diploma (John, personal
interview, 15 November 2008).

John already had a small web design business and had been doing work for overseas clients
for the past year. He explained how he envisaged the operation of the business over the next
ten years and how he was currently communicating with his clients.

Probably both being able to do face-to-face with customers and online to be able to
do projects for people in Europe and USA. Also being able to go out to places
locally and going face to face and talk to them about it. I am already looking to do
one in Norway... Yeah, particularly when they are European as they don't speak
much English. They do a little but I have had to learn Norwegian, and they are
Dutch so they have had to learn a little, English, Japanese and German. It is a bit of
a challenge particularly when I am talking to them over the phone (John, personal
interview, 15 November 2008).

He recounted his parents' broad wishes for his future, "Making a lot of money because there is
a lot of money in IT and being financially independent" (John, personal interview, 15
November 2008). He was adamant that his friends had no influence on this choice of subjects
or career as they chose subjects "because they want to be together to muck around in class. I
don't want to do that. I just move away from people and do my own work" (John, personal interview, 15 November 2008). John, like Patrick, recounted how he enjoyed the opportunity to get his information personally, when the school visited the Career Expo: "It was one-on-one, you could ask real professionals, like actual web designers" (John, personal interview, 15 November 2008).

In conclusion, John was a student who went against the norm for subject choice, by selecting a vocational subject pathway for his senior studies, including a subject taken at a local TAFE, even though he was academically capable of success in academic subjects. Teachers were a source of information for some aspects of the selection process, as were work experience, online community enquiries and the Career Expo. John knew what he wanted as he made his subject choice decisions, and used teachers' advice to obtain further information. He had one of the highest levels of academic self-efficacy at his school, and yet he was cautious about his possible results for Mathematics for the senior phase of learning. His parents were a valued source of support rather than advice as he contemplated his options for the future. His peers did not have an effect on his choices, although he had tried to advise friends on subject choice. He was an independent investigator of his chosen career path, and had taken an active role in determining his subjects and the shape of his senior studies profile. This was demonstrated by his enrolment in a local TAFE to complete complementary studies in information technology in order to achieve his goal of being an accredited web designer, while also studying at Cranberg College. He had commenced a small business where he designed web sites for international clients, which interconnected with his aspiration to become a web designer. Unlike Ruth's case, where she chose a vocational subject pathway reluctantly, this was a case of a student with a strong preference for vocational subject pathway.
6.12 Emergent Themes at Cranberg College

The students interviewed at Cranberg College were two males and a female. In a review of the main points of discussion with students from Cranberg College, there were several consistent themes running through their conversations. First, there was a strong emphasis on trusting their own judgement, whether it was for information gathering or gaining opinions on careers. Next, their families were influential in a variety of ways. For the female student there was family input from grandparents, siblings and the parents, the father particularly involved. For the males, the family influence was related more to career choice decisions with suggestions and work experience opportunities, than subject choice. Furthermore, the students at this school were not averse to changing their initial choices. One male student changed from vocational to academic subject pathway, and the second from academic to vocational subject pathways. The first did so to pursue an aspiration he had had for a long time to become an animator and this was done after selecting a tertiary education provider. The second male student personally undertook extensive research and formed a career plan that involved taking a TAFE course during senior schooling, and then moving into a double Diploma course at a local TAFE upon graduation. This decision was supported by the knowledge he gained during work experience. It was also evident that all three students were focussed on aligning their subject choices with their intended career. The next most important feature of the conversations with these students was the influence of the teachers on their subject choices and opinions. Some staff became actively involved in subject selection choices, either positively or negatively as John experienced. Last, like many of the other interviewees, these participants had had their intended careers in mind for some time.

6.13 Unresolved Issues Arising from Quantitative Analysis

This chapter has presented the findings that emerged from the qualitative phase of the study. Specifically, the chapter has provided a rich description of the students who participated in the interviews and elucidated possible reasons for their subject selections. The following section
is a discussion of the eight unresolved issues that arose from the quantitative analysis, using the interview transcripts to provide perspectives from the viewpoint of the interviewees, and possible explanations underscoring the eight issues.

6.13.1 Unresolved Issue One: OP Subject Pathways

The first unresolved issue arose from the quantitative analysis revelation that the respondents preferred an academic subject pathway.

(i) Why did these students prefer an academic subject pathway?

The interview transcripts from the students in the study were analysed and themes reorganised under the headings of *self*, *family* and the *school environment* to provide multiple perspectives, and to reveal the attitudes on subject selection and career aspirations. It was revealed from analyses within the domain of self, that the rationale for choosing an academic subject pathway was perceived usefulness of the subjects for university entry. For some students there were more options embedded within an academic subject pathway, than with a vocational subject pathway leading to a defined trade or occupation. To choose a pathway to university also meant that choices were not as specific as if a distinct trade was the goal. As well, the usefulness of an academic subject pathway was also associated with the inherent rigour of studying academic subjects as opposed to the perceived relative easiness of vocational subjects which made the status of an academic subject pathway more attractive. Therefore, the analyses of the interview transcripts revealed that the motivation to study an academic subject pathway was linked to the perceived usefulness and rigour of the academic subjects, especially if the student did not have a specific career in mind.

Within the domain of family, themes indicated that families coupled subject choices with future career aspirations. It was found, in students' eyes, that if the family had focussed on a university qualification as the next step in their child's career progression, the choice of an academic subject pathway was strongly suggested, in the cases of Stephanie and Kathleen.
An academic subject pathway was also deemed to lead to a good future job with a potentially quality income, opportunities and added benefits, as described by Kathleen's father. Therefore, where an academic subject pathway was seen as being favoured by families, there was an expectation that it would lead to a possible university qualification with potential benefits for the student.

Last, the analysis from the domain of the school environment relating to the choice of academic subject pathway revealed that teachers were seen by some students as being instrumental in assisting them in choosing subject pathways. The analysis revealed that discussions between teachers and the students focused on using the teacher's knowledge to estimate possible success in future subject choices. Favourable estimations of success in academic subjects were influential in the decision-making process.

For the students in this study there are pressures to choose an academic subject pathway and when students chose a vocational subject pathway it was highly likely the student had low academic self-efficacy or a definite career choice, associated with a VET subject pathway at school.

6.13.2 Unresolved Issue Two: Gender and Academic Self-Efficacy

The issue unresolved by the quantitative analysis of academic self-efficacy data was:

(ii) How did gender and academic self-efficacy interact on an individual level to affect subject choice?

As indicated earlier, those students who did choose a VET pathway were notable in Phase 1 of the study, the quantitative phase, as having low levels of academic self-efficacy.

The thematic analysis of the interview transcripts contributed to knowledge of the effect of gender and academic self-efficacy across the three domains: self, family and the school environment. Firstly, within the themes relating to self, the issue of academic self-efficacy arose when the students drew on their past learning experiences to gauge whether they would
enjoy the subject in the future. If their past academic experience was difficult, it required commitment to undertake challenging subjects for senior studies and overcome their residual fear of negative experiences. A female student spoke of her concerns about possible marginalisation with her peer group by taking a vocational subject pathway. However, she chose to do so because of her perceptions about her academic ability. In contrast, the male students did not speak of social marginalisation in association with their vocational subject pathways, although there was an expectation that these subjects would be less-challenging and provide them with a higher probability of success than academic subjects on offer. The prospect that their subject choice could affect friendships was not discussed, and it could be suggested that amongst these male students vocational education pathways were not negatively perceived. However, for the female student who chose VET, the probability of failure seemed to be more influential in her decision than social marginalisation, and her need to achieve a QCE outweighed friendship issues.

Many students gave the impression that families assessed their academic self-efficacy when assisting their child to choose subjects, and used the knowledge of the teachers to do so. The issue of gender was not raised in the interview transcripts, nor was it mentioned by school staff, along with academic self-efficacy, when they advised families on the best subject pathway.

To summarise, friendships seemed to be important to the female students in this study and were an important consideration in subject choice, as vocational subject pathways were not highly valued at the all-girls school (although perhaps this was only evident at that school for other reasons). For the males, friendships may have been just as important, but vocational education subjects did not seem to carry the same stigma and thus did not affect the social status of the boys. For families, the issue of gender had no discernible effect on their measure of their child's academic self-efficacy or subject pathway choice.
6.13.3 Unresolved Issue Three: Effect of Subject Selection Process

Given that the majority of students remained with their original subject pathway choice, it was important to understand why the substantial efforts of teachers and school administration to provide a comprehensive subject selection process at the school had a minimal effect on the students' original choices. The unresolved issue arising from the quantitative analysis of the subject selection data was:

(iii) Why did the subject selection process at the school have only a minor influence on original subject choices?

Firstly, the method chosen by the school to deliver the information for subject selection did not appeal to the students interviewed. Comments that there was too much talking, and the sessions were too long, repeatedly surfaced throughout the interview transcripts at Barclough and Cranberg, whilst the students at Anstey reported that they would have preferred more information. Some interviewees said that the subject selection process did make them concentrate on their choice of subjects and the link to their future career aspirations, but if the student had a career in mind before attending subject selection sessions, change could only come if initiated by the student. The pre-selection of a future career was an important focus of families as well, as it was singular factor noted in the interview transcripts that dominated conversations with their child. For families, the senior secondary subjects had to benefit future career plans.

In contrast, the school staff did mention future career paths, and from the students' perspective their focus in advising students was more about choosing between vocational and academic subject pathways using past results, and less about finding the ideal career for the student. Since most of the students in this study had their original career path chosen prior to entering Year 10, it could be argued that the change activated by staff in subjects or subject pathways would be minimal, because the only students who would change would be those who were undecided on a career. Amongst the interviewees this only involved four students.
To summarise, the change in subject pathways was tied to a change in career choice or the effect of career-exploration activities. Armed with extra knowledge from work experience or questioning significant adults, the students re-aligned their subject choices with their future career aspiration with guidance from both family and school staff. A trend amongst those students who did change was that they changed from an academic subject pathway to a vocational education pathway. It was worthy of investigation to discern whether some activity in the subject-selection process was responsible for this inclination.

6.13.4 Unresolved Issue Four: Changes from Academic to Vocational Subject Pathways

The quantitative analysis revealed that the majority of students who did change their course pathways did so by changing from an academic subject pathway to a vocational subject pathway. A further unresolved issue evident from the quantitative data analysis on subject selection was:

(iv) Why did students who changed their choices, do so by moving from an academic subject pathway to a vocational subject pathway?

The motivation to ensure that the students passed their subjects and successfully graduated grounded the advice provided by the school. The thematic analysis in the domains of self, family and school environment also highlighted the attainment of the QCE as a goal, and in some instances led to a change in pathway from academic to vocational. Within the domain of self, the aspect of academic self-efficacy led students to judge whether they had a selection of subjects that would ensure sufficient points to achieve a QCE, and to adjust their preferences to include less rigorous subjects within the vocational subject pathway. Some students perceived that their families believed the acquisition of a trade would ensure an assured economic future, and the pathway to a trade was through a vocational subject pathway, which was deemed to be less risky than an academic subject pathway. Lastly, the school environment contributed to the choice of a vocational pathway, if teachers were uncertain about the ability of a student to achieve in an academic subject. The prospect of
gambling on academic ability was too much for some students who chose to take a safer path to graduation, through less academically-rigorous subjects. To summarise, the students' academic self-efficacy, and the desire to achieve a QCE and guarantee a sound economic future, were found to be salient aspects in the decision to change to a vocational pathway.

6.13.5 Unresolved Issue Five: Parental Education Levels

The unresolved issue revealed in the interview transcripts was the effect of parental education on the subject choices.

(v) In students' eyes, how did the effect of the parents' education levels impact on student choice?

The qualitative analysis did not reveal any explicit effect of the parents' education levels on the students' choice of subjects within the domains of self or the school environment. However, the themes that emerged within the domain of family through the interviews, revealed that the family were actively involved in forming the students' career aspirations. This aspect may have brought the educational level of parents into play if students aspired to an occupation similar to their parents, which was the situation for some of the interviewees. This influence may have also extended to affecting subject pathway choice, as there were university-qualified parents that were active in guiding their children towards careers and subject choices that lead to academic subject pathways-although this was not always the case. Further, this did not explain why the student whose parents had not completed Year 12, such as Patrick, had one of the highest levels of academic self-efficacy and had committed to undertaking a university course. It was evident from the interview transcripts that Patrick's parents were not active in advising him, whereas Kathleen's university-qualified parents were. Kathleen was urged by her parents to seriously consider a university course and careers aligned with their previous occupations. To summarise, there seemed to be no direct reference to a link between educational qualifications of parents and subject choice, but
within the group of f interviewees, university-qualified parents seemed to have an effect on their child's aspirations to attend university.

6.13.6 Unresolved Issue Six: Family Influence on Career Options

The thematic analysis revealed that families affected subject choice through career aspirations. Therefore, how the students experienced this influence would benefit this study by responding to the unresolved issue which arose from the quantitative analysis being:

(vi) How did the family seem to influence subject choice and consideration for career options?

The interview transcripts revealed conflicting perspectives on the degree of family influence on subject choice and career options. From the students' perspectives, the theme of autonomy was apparent in all interviews. Students took responsibility for the subject and career choices, and even though they conferred widely, believed the choices were their own. Career choices were cited as longstanding, and the subject choices made by the students were aligned to these career aspirations. In contrast to the concept of autonomy, the themes that arose within the domain of family revealed that these career decisions may not have been entirely the student's idea, more than likely originating from within their family's scope of experiences. Hence, it could be understood from the interview transcripts, that the effect of the family and school contexts on career and subject choice was often more pronounced than the students seemed to realise. This supports the response to the previous unresolved issue surrounding the effect of the parents' education levels that the effect of the family was indirect. The school environment did not have an effect on the family's subject choices for their children, as the discussions the students had with their parents were focussed on possible careers and the subjects that matched.

It could be that the parents' influence on subjects and career options had occurred over a long period of time, and resulted from exposing their child to the experiences and personal
aspirations of their family circle. This may explain why the students believed that they had developed their career plans over a long period of time, and that these plans were their own, because they had always been subtly influenced by their family. This is something that could be explored with more longitudinal case studies.

Nevertheless, given that the majority of the interviewees reported that they chose occupations from within the scope of their experience within the family, the family's influence was pervasive although students remained largely unaware of this persuasive leverage.

6.13.7 Unresolved Issue Seven: Teachers

Similarly, the students reported the choice for a career and matching subject choices was their own, but again there was distinct references made by many of the interviewees to the fact that they had consulted with a teacher regarding their choices.

(vii) How did students experience the influence of teachers on subject choice decisions?

The qualitative analysis of interview data was based on the information from some students that they had approached teachers to confirm the self-assessment of their ability in a subject, and others approached teachers to confirm choices they had already determined. Within the domain of self and family the influence of teachers did not arise. However, within the domain of the school environment, the teachers were adults that the students could trust as they had known them for a long period of time, and the students trusted their evaluation of academic ability as well as their knowledge about career options. There was an element of trust and respect for teachers' judgement at this time. Generally, the students interviewed had a career in mind and used the teachers' judgement to assess whether they would achieve academic success with the choices they had made. In summary, the student had determined a specific career pending the discussion with the teachers about subject choice, so the influence of the teachers on subject-choice decisions was largely centred on judgement of ability in those
subjects already chosen for a preferred career. The students in this study reported that they approached their preferred teachers for advice on subject choices. The students valued their relationship with these teachers as well as their advice.

6.13.8 Unresolved Issue Eight: Guidance Counsellors

The majority of students indicated on survey responses that they did not consult the Guidance Counsellors at each school, so consequently, the experience and knowledge invested in keeping Guidance Counsellors abreast of current developments were under-utilised in these schools. The interview transcripts were a valuable insight into students' use of Guidance Counsellors. These findings led to the following unresolved issue.

(viii) Why were the Guidance Counsellors under-utilised at the school?

The thematic analysis of the interview transcripts highlighted several themes that could explain the underutilisation of the Guidance Counsellors. Firstly, within the domain of self, the sentiment that subject choice was an autonomous decision may have led to students neglecting the role of the guidance counsellor until later in the decision-making process. As most students had a career in mind upon entering Year 10, the role of the guidance counsellor in providing a breadth of options for future careers may have been too late to affect the choices. Lastly, the usefulness of specific subjects was mainly discussed with teachers rather than Guidance Counsellors, so the teachers may have devalued the effectiveness of the counsel from Guidance Counsellors in this respect.

Within the domain of the family, it was understood that the influence of the family was very powerful in setting both career aspirations and the subject choices that would lead to these outcomes. Harry, who was a boarder, reported using the services of the guidance counsellor to choose subjects, as his parents were not physically present although it is noteworthy that Harry already had a career goal aligned with his family's occupations. Next, within the school environment, an analysis of perspectives revealed that the teachers were the focus for the
students for advice rather than the Guidance Counsellors, because they had been taught by these teachers and knew them better. It may be that the longer-term relationship with these teachers in school subjects leant more weight to teachers’ opinions than those of the guidance counsellor.

To sum up, the students did not use the services of the Guidance Counsellor in the schools when they had access to other trusted adults they could refer to, such as their parents or teachers. These students had made up their minds well before the formal interviews with the Guidance Counsellors had been arranged. To conclude, the strength of the relationship between the students and the guidance counsellor was probably not sufficient to influence a decision that was considered far reaching by the student and their family.

### 6.14 Summary of Overall Themes

The outcome of this qualitative phase augments the preceding quantitative phase by providing deeper insights into how students in the three case sites experienced and negotiated the process of deciding their subjects for senior secondary schooling in light of the complexities of their environment. The key findings that emerged from this phase of the study are summarised below.

The first domain centred on the student, and the attitudes, beliefs, values and perceptions that they bring to the decision of subject choice. Essentially, the students were convinced that the decision about subjects was theirs and they linked their career aspirations to this decision. Consequently, for many students, the choice of a subject was dependent on their choice of future occupation, and for some, this career had been decided much earlier than Year 10. Next, the students used their past performances in subjects, the experiences of peers and siblings, or teachers' opinions to validate their subject choices. Of interest to this study are the varying degrees of effort that the students made to obtain information contingent to their choice of subject and career. Whilst the students seemed certain that the choice of subjects
and career was their own, the second domain of family revealed that the exchange between the students and their families may have been more complex and powerful than the students realised or were prepared to admit.

Within the domain of family there were themes similar to those within the domain of self. Families, like the student, linked the choice of subjects to the choice of a future career. It was through this behaviour that the students and their families had the most interaction, as the parents' academic aspirations and career aspirations for the students were communicated. Consequently, parental academic and career aspirations were a prominent theme across all case sites. The domain of family covered long-term influences, such as family support for hobbies and talents that were then feeding into subject pathway and career choice. Other long-term influences were evident in the occupations chosen by the interviewees. The majority chose occupations within industries represented in the occupations of family members. As revealed by their choice of subjects and careers, the domain of family covered themes that had influenced the student over a long time. Unlike the long-term characteristics of the themes within the domain of family, the themes emerging under the domain of school environment were more immediate and short term.

Lastly, whilst the case sites under analysis were varied in their characteristics, there were many themes that were consistent within the domain of the school environment. Understanding how the themes of peer influence and teacher and counsellor persuasion affected the students' subject-choice intentions contributed to richer descriptions of the subject choice process. It is also noteworthy that the subject-choice process in the schools had an effect on the students, and not always as intended by the school administrators. Nevertheless, this process and the priority to achieve a QCE dominated the school environments, and influenced both Year 10 students and their families. These themes were short-term influencers on subject choice, due to the imperative for students to make their decision in Year 10, and the urgency that accompanied this deadline. Therefore the themes had short-term
characteristics as the students gathered up-to-date information and were reminded of the importance of making wise subject choices.

This chapter has reported the qualitative results from Phase 2 of the study, and has extended the descriptive analyses conducted in Phase 1, the quantitative phase, to provide an in-depth exploration of the phenomena of subject pathway choice pertinent to this study. In the following chapter of this thesis, the key findings that have emerged from both the quantitative and qualitative phases are synthesised and discussed in the light of the research questions that guide this inquiry.
Chapter 7 – Discussion of the Research Findings

7.1 Overview

This chapter is a review and synthesis of the findings from the preceding quantitative and qualitative phases, and an interpretation of these findings in the light of the research literature. In this chapter, the purpose of and the research questions guiding these inquiries which were set out in Chapter One and Chapter Three are revisited. Next follows a discussion of the significance of the study, in the light of the current literature, and in the final chapter these syntheses are presented regarding contributions to knowledge, methodology, policy and practice.

7.2 Purpose and research questions revisited

The inquiry documented in this thesis takes place at a key decision making time for secondary students in Queensland. Students selecting subjects for study in their final years of secondary schooling are presented with a plethora of options, making the choice process complex for them and their families. The complexity inherent in making choices is reflected in data that shows that, whilst the majority of students take academic subject pathways for their senior studies, less than a third capitalised on the choice and continued tertiary studies at university (Queensland Department of Education and Training, 2010). This trend is also evident with students who have chosen vocational subject pathways. In 2008 less than ten percent had undertaken further study, and four in ten Year 12 completers declined to engage in any form of recognised education and training in the year after they left school (Queensland Department of Education and Training, 2010). It would seem that for many Australian students, the subjects or pathway chosen for the senior secondary studies did not convert to matching university or vocational pathways after graduation. The problem is compounded by
data from international research suggesting that the longer a student takes to transition to a working life, the more likely it is that the student will experience poor labour market success (OECD Secretariat, 2000). Therefore, the issue of students' perceptions of subject pathway choice at secondary school is worthy of investigation for the benefit of policy makers, school administrators and the families of students who together invest substantial resources to provide a smooth transition for students to their next phase to adulthood.

This study considers data relating to students' perceptions of how they make decisions for their senior subject pathways to explore a perceived dissonance between the subject pathways chosen by students for senior secondary studies and their post-school destinations. The thesis has focussed on three case sites in a city in Queensland using four research sub questions, namely:

(i) \textit{RQ1: To what extent does the outcome of the Self-Directed Search affect subject pathway choices?}

(ii) \textit{RQ2: To what extent does academic self-efficacy affect subject pathway choices?}

(iii) \textit{RQ3: How do students make use of school-based subject selection processes?}

(iv) \textit{RQ4: How do contextual factors such as family and the school environment, influence students when making subject pathway choices?}

To address the research questions, an 'exploratory' two-phase research design (Creswell & Plano Clark, 2007) was chosen that combined complementary quantitative and qualitative methods to highlight different aspects of the phenomena of students' subject choice decisions (Erzberger & Kelle, 2003). Combining both quantitative and qualitative data collection and analyses in a single study provides a" better understanding of the research problem than either approach alone" (Creswell & Plano Clark, 2007, p. 5). Using a pragmatist perspective to explain the behaviour of the students in this study means that the research questions are important mainstays of this strategy. These research sub-questions were initially addressed
in the quantitative phase outlined in Chapter Five, with several unresolved issues requiring further exploration in the qualitative Phase that followed in Chapter Six. The key findings of both phases of the study are highlighted and synthesised in the following chapter under the headings of the specific research questions.

7.3 **RQ1: To what extent does the outcome of the Self-Directed Search affect subject pathway choices?**

The first research question explores the effect of a career inventory tool that is frequently used in schools to assist with subject choices - Self-Directed Search (SDS) (Shears & Harvey-Beavis, 2006). In the quantitative phase, trends and patterns of choice were used to measure, as well as identify, the students' suitable occupation from the SDS questionnaire which drew on the students' reported preferences for activities, abilities and skills. The quantitative findings indicated that few students had a match between suggested SDS occupation and their aspirational occupation.

The significance of this finding refers to the widespread use of this career inventory tool in subject choice activities in schools to help guide students in subject selection and career planning. Holland's (1997) typology of occupations was used in the Career Quiz which was completed by every student in the study, first when they completed the self-report survey, and then as part of their school career activities when they used the Federal Government's myfuture.edu.au website (Athanasou, 2006; Holland, 1977). In the single-sex schools 57.5 per cent of the students had interests and abilities compatible with occupations requiring post-secondary vocational qualifications; however only 25 per cent of the students chose a vocational subject pathway. Likewise, in the co-educational school, 55.2 per cent of the students identified careers requiring a vocational qualification by their responses to the SDS, but only 17.2 per cent chose vocational subjects for the senior phase of learning. In addition, 42.5 per cent of students in the single-sex schools had interests and abilities consistent with
occupations requiring a university qualification, whilst 75 per cent of the students chose the academic subject pathway. In the co-educational case site, 44.8 per cent of the students had responded to the SDS and matched to occupations requiring a university qualification, and 82.8 per cent enrolled in an academic subject pathway for their senior phase of learning. Regardless of occupational advice from the Career Quiz for a vocational career pathway, 32.5 per cent of the students in the single-sex schools and 38 per cent of the students in the co-educational schools chose an academic subject pathway. This finding is similar to a study by Athanasou (2000), who found a "major disparity between initial vocational interests and occupational destinations at the commencement of a career".

The preference to choose academic subject pathways has been identified as 'academic drift' in a variety of studies (Barnett, 2006; Murphy, 1987; Raffe, 2003a). Academic drift is "measured by participation in academic rather than vocational pathways" (Raffe et al., 2001, p. 173). This preference for academic pathways was identified in a 1998 investigation into subject choices in Queensland, which highlighted the reasons that students undertook academic courses because they were "interested in", "good at" and "enjoyed" subjects, whilst maintaining that they were keeping their "options open" to maximise their choice of course or career pathways on completing Year 12 " (Whiteley & Porter, 1998, p. 10).

Interviewees such as Kathleen and Stephanie cited reasons such as keeping their options open, for choosing an academic subject pathway. However, of interest to this study are the perspectives of students who, contrary to the trend, changed their preferences from an academic subject pathway to a vocational subject pathway over the term of the study (e.g., Justin, Ruth and John) and the fact that each student had different motivations for this change in subject pathway. Justin originally intended to pursue an academic course as he perceived that his mother's aspirations for him were to attend university and his personal desire to become a draftsperson. His mother's concern for his prospects for employment as a draftsperson superseded this ambition, so to secure a stable employment future, Justin chose
to aim for a trade as a carpenter. Other factors that added to the decision to choose a trade and a vocational subject pathway were television advertisements depicting happy tradesmen driving huge machinery at mining sites, compounded by Justin's poor results in English in the past. Whilst Justin embraced the possibilities of a trade, and felt relief that the English subject for vocational education would be less onerous, Ruth was not as happy about her change to a vocational subject pathway. Ruth had low academic self-efficacy, and her parents held similar beliefs about her inability to achieve academically. Ruth commented that she expected the vocational subjects to be less interesting and less enjoyable than the academic subjects, but was resigned to the idea that her best chance of success lay with vocational subjects. Like Justin, Ruth's family were keen to ensure she secured a firm foothold in the employment market after school. This preference by families to prioritise career opportunities, employability and potential income is prominent in the literature surrounding the effect of families on adolescent career development (Garrett, Campbell, & Mason, 2010). With family already in the beauty industry, Ruth knew the expectations of employees, and was prepared to start her beauty therapy studies through the local TAFE College before graduating from secondary school. Initially, Ruth chose a range of academic subjects and had some concerns about changing to vocational subjects. Ruth's reluctance to change to a vocational subject pathway was that she believed she would suffer a loss of esteem in the eyes of her peers when she made this change; however the prospect of commencing her career studies while still at school was a compelling advantage. Lastly, John changed from an academic subject pathway to a vocational subject pathway for very different reasons. John had the highest level of academic self-efficacy among the interviewees, and had engaged in extensive career exploration before making the change to his subject choices. It is possible that the combination of a course with a local TAFE College in his area of interest while studying his senior subjects, as well as work experience during the holidays prevailed against the urging of teaching staff who wanted him to take an academic subject pathway.
These three students chose vocational subject pathways possibly to secure a firm employment plan after graduation. For both Ruth and John, this plan was enhanced by the opportunity to start studying for their career at the same time as their senior studies. For the male students, the possibility of stigmatisation did not seem to be a factor, but for the female student, a very real possibility. All three students had the support of their parents, and each could identify the occupation they intended to aim for with their subject choices. Rather than 'keeping their options open' (Whiteley & Porter, 1998) all three were comfortable with narrowing their career choice to one specific job.

7.3.1 Summary of Discussion of Self-Directed Search results

Taken collectively, the key findings of the analysis of the data from the SDS responses revealed that the result of the career inventory tool, SDS, was not an indicator of the subject pathway a student would choose, as the majority of students revealed a distinct preference for an academic subject pathway. These results are congruent with studies in Canada and within the OECD countries which found a growing tendency for young people to choose academic courses "conferring a positional advantage even if they may not offer the most appropriate learning opportunities" (Garg, Kauppi, Lewko, & Urajnik, 2002; Raffe, 2002, p. 5). This trend was called 'academic drift' (Raffe et al., 2001), and has presented as a possible factor in the choice patterns of these Australian students as some interviewees like Kathleen and Stephanie voiced opinions that choosing an academic subject pathway would not just be useful for their future careers but would provide an avenue to a good future career with a good potential income. The qualitative findings from this study also provided a unique insight into those students who did not choose an academic subject pathway, and in fact changed to a vocational subject pathway during the course of the study.

For these three students, the subject pathway was expected to provide the foundation for a satisfying future career and to secure graduation, like those students who chose an academic subject pathway. The choice of vocational subject pathway was also attractive, because the
students could commence their future career preparation whilst still studying their senior studies, a benefit not readily available in the academic subject pathway. However, these students differed from the majority of students who chose an academic subject pathway, in so far as the decision to choose vocational subjects required exploration, work experience and pinpointing a specific occupation. Possibly, students who choose academic subject pathways do so because they can delay the process of nominating a particular occupation, whereas vocational education students will be expected to train in specific jobs as part of their programme, thereby making the choice unattractive for those students who are still not sure of where their talents lie or the most appropriate occupation. The presence of three varying degrees of academic self-efficacy for the students who changed to a vocational subject pathway, leads to consideration of the role of academic self-efficacy for the students in this study regardless of the subject pathway choice.

7.4 RQ2: To what extent does academic self-efficacy affect subject pathway choices?

In the literature surrounding adolescent subject choice, academic self-efficacy was highlighted as a salient factor worth exploring within this study. This factor was measured in the first self-report survey and further explored and analysed in the interview transcripts. The scale used to measure academic self-efficacy was included in the first self-report survey to ascertain whether a student's academic self-efficacy seemed to affect subject pathway choices. The academic self-efficacy scale referred to the students' perceptions of their competence to maintain their class work. The mean scale score, out of a possible five, was calculated for each student from their responses to the PAL Scale, previously described in Chapter Four Section 4.1 (Midgley et al., 2000). Mann-Whitney U tests revealed statistically significant differences in the academic efficacy levels of OP Pathway students \((Md = 4.0, n = 87)\) and VET Pathway students \((Md = 3.4, n=11)\), \(U = 246.5, z = -2.624, p = .009, r = 0.4\) with a medium effect size. This result indicated that academic self-efficacy had a medium effect on the initial subject pathway choices for these students. This difference in levels of academic self-efficacy
highlighted that students who chose a vocational education subject pathways seemed to feel less capable of controlling and managing their learning environment and outcomes than students who chose an academic subject pathway. Further Mann-Whitney U tests revealed that there was also statistically significant differences in academic self-efficacy levels of male students ($Md = 4.0, n = 72$) compared with female students ($Md = 3.6, n=271$), $U = 661.0, p = .014, z = -2.46, r = 0.3$ with a medium effect size. These results indicated that the female students in this study had a statistically significant lower measure of academic self-efficacy than did male students.

Academic self-efficacy did affect subject pathway choice for some students. The interviewees used their past experiences of achievement levels in studying a subject as well as the experiences of friends and relatives, to gauge whether they would enjoy undertaking this subject in the future. This behaviour is supported by a variety of literature and views of theorists that confirm that past and vicarious experiences contribute to academic self-efficacy levels (Bandura, 1977; Lent, Brown, & Gore, 1997; Pajares & Schunk, 2001). On the other hand, Brad, who had the lowest level of academic self-efficacy of the interview group, exhibited behaviour that ran counter to the literature by choosing a higher level of Mathematics than recommended by his teacher and mother. Brad was also the only interviewee who had an aspirational occupation that matched the outcome of the Career Quiz. His future aspiration to be a professional sportsperson was also nurtured by his family, as he had a sibling who was a professional baseball player in America, and he hoped to follow suit. Brad's confidence in his sporting ability contrasted with his level of academic self-efficacy. Possibly this could be attributed to his talents in the sporting field which spilled into other areas of his life, and provided the self-belief to undertake challenges with assurance.

For some students, their academic self-efficacy was tested by the implications of ensuring that they successfully graduated and achieved the QCE. For some students, their confidence in their ability was challenged because they felt that they faced the risk that if they were not as
capable as they thought and did not get the required 20 points, they would not graduate. Patrick, Tom and Ruth commented on subjects they chose to ensure they obtained a QCE, whilst Kathleen captured the general fear saying "We were kind of scared-well actually I was-I was kind of scared that I wasn't going to get a certificate-just kind of WOW". It could be that when a student has a high level of academic self-efficacy they are attracted to challenging academic goals. Katherine lacked career maturity and did not seek better information or appropriate work experience, even though her school offered this in Year 10. In contrast, John had the highest level of academic self-efficacy and a high level of career maturity and equipped with these two characteristics had investigated his career options quite extensively. An examination of the combination of career maturity and academic self-efficacy is not discernible in current literature, and these findings offer some insight into the experiences of this student who was efficacious both in his career decision-making and academically, and his subject choice behaviour.

It was evident from the analyses that adolescent academic self-efficacy was susceptible to parental opinion. Several of the interviewees listened to and acted upon, their parents' opinions of their academic capabilities. Ruth in particular adopted a cautious strategy after warnings from her mother, to ensure she passed the interview phase of entry into a TAFE course, as did Justin, who acted on his mother's concerns about his academic skills and the possibility of succeeding in an academic English course. Again, some parents set academic challenges for their children, such as Stephanie, when her father urged her to consider Maths B, though she believed it would 'give her the most grief.' The interviewees recounted how parents offered opinions about their child's academic ability and even though not all students accepted these judgements, they understood what their parents thought of their potential academic achievement and thus possible consequence of subject choices. This is supported by literature that confirms that parents hold a powerful position in shaping their child's academic self-efficacy (Bandura, Barbaranelli, Caprara, & Pastorelli, 1996; Pajares, 1996)
through personal and career aspirations for their child. Of interest in this study was the student who was unaware of anybody in his family who was in his preferred occupation as an animator, and as both his parents did not go beyond secondary graduation, they had little to contribute to his decision to pursue tertiary studies. It is possible that his confidence in pursuing his career aspiration arose from deciding in Year 8, and remaining fixed on that objective in his career exploration and decision making. It is possible that his career maturity contributed to his confidence in his choices for subjects and career plans, and overcame any disadvantage attributable to having parents with little knowledge of tertiary options. The interest in this case lies in new information on how this student, who is breaking new ground, by being the first in his family to undertake tertiary studies, sustains his objective when he set his career aspiration at an early age.

### 7.4.1. Summary of Discussion on Academic Self-Efficacy and Subject Choice

To summarise, academic self-efficacy affected subject choices to some extent. Firstly, it was ascertained that low academic self-efficacy was statistically related to students who chose vocational education pathways. The relationship between low academic self-efficacy and participation in vocational subject pathways is compatible with existing research on students who take vocational subject pathways at school, as well as the location of VET subjects at the "bottom of the status hierarchy of school subjects" (Polesel & Clarke, 2011, p. 525). However, when students have average levels of academic self-efficacy they can still exhibit confidence in taking on challenging subjects such as Mathematics, and focus on ambitious career goals. It is suggested that three factors can combine with academic self-efficacy to change expected behaviours-confidence from another area of achievement such as sport, firm career goals and career maturity. These three factors empowered an interviewee to tailor a set of subjects, both within the school offerings and externally with other training institutions, to meet a chosen career objective. Studies on the effect of these three elements are not readily available, but this analysis offers some insight into the effect of academic self-efficacy on
subject-choice behaviour and other factors that may dilute the influence of low academic self-efficacy on expected subject pathway choices.

In addition to the combination of these three factors, the effect of parents on academic self-efficacy was also noticeable in the interview conversations. The students were aware of their parents' assessment of their abilities, and whilst there was little evidence to suggest that parents limited female aspirations and confidence, the parents' opinion on academic capability was a considerable factor in subject choice. As was found in this study and in relevant research on self-efficacy, parents tended to rely heavily on objective feedback such as past results (Schunk & Meece, 2006), and parents were reported to have made explicit statements about their child's ability and their corresponding expectations (Eccles et al., 1998). The parents' perceptions regarding their child's ability, particularly Maths, were reported to have impacted on subject choices and subsequent career choices, as demonstrated in studies on how mothers' maths-related beliefs impacted on subject choice and future career development (Bleeker & Jacobs, 2004). However, one student who was aiming to undertake tertiary studies did not have parents who could contribute knowledge and experience to this decision. Extensive career exploration filled the void left by his parents' lack of input on tertiary options, and provided the knowledge he needed to enable him to confidently plan his subject choices to achieve this outcome. It is possible that when students can settle on a career aspiration early in their school life, it provides enough time for them to investigate and test their decision.

It is clear that not all students explore careers independently, so schools can meet this need by providing a variety of information sessions and career exploration activities to enable students and their families to make quality decisions regarding subject pathway choices and career goals.
7.5 RQ3: How do students make use of school-based subject selection processes?

For the benefit of both the students and their families, substantial resources were invested in the subject selection process at each case site, and its impact on the subject-choice decisions was measured through the analysis of data from the two self-report surveys. The outcome of these analyses was explored through the perceptions expressed in the students’ interview responses.

It is possible that the subject selection process at the school may have been responsible for some changes in subject pathway choices. In the co-educational school, 11 per cent of the students changed their preference for an academic subject pathway to vocational subject pathways, whilst in the single sex schools 5 per cent of the students changed from an academic to vocational subject pathway during the term of this study. The actual factors at work in each of the schools are not clear from this study, so again there would be a need for further research before definitive recommendations could be made.

In this study, a total of six per cent of the sample of students (three students in the single-sex schools and one in the co-educational school) changed from a vocational subject pathway to an academic subject pathway. The interviewees who did change their subject pathway to a vocational subject pathway, revealed that the impetus behind the change was a refinement in their aspirational career choice. Since the topic of subject choice was linked to future career plans by school staff and family, any change in career choice necessitated a rethink on the choice of subjects for senior studies.

However, for the majority of the interviewees, the choice of career was firmly in their mind upon entering Year 10, such as Brad who wanted to be a baseball player, and Patrick who had wanted to be an animator since Year 8. Changes here seemed to be due to extensive career exploration, including attendance at university open days and career expos. Personal characteristics such as self-efficacy, age and work commitment have been highlighted as significant elements of career maturity in studies surrounding subject selection (Creed &
Patton, 2003; Creed et al., 2007; Janeiro & Marques, 2010), and it is possible that some of these factors contributed to Patrick's determination to become an animator and Brad's ambition to become a professional sportsperson. It is possible that the formal subject selection process at the school provided opportunities for students to formally commence their career exploration, and to access up-to-date information on course entry requirements which affected subject-choice patterns. However, for most students, subject choice and career choice were inexorably linked, as many of them had a career in mind when they chose their subjects, so the school-based subject selection process did not affect their initial choice of pathway.

The school-based subject selection process provided formal instruction in basic career exploration skills for students across the three case sites, by raising an awareness of possible career paths and encouraging vocational aspirations. The level of career maturity amongst the interviewees was not uniform, as some students took extraordinary steps to investigate their future options by organising their own work experience, or engaging with a wide range of information sources such as on-line community forums and career expos. Other students, however, kept their investigations within the realms of their personal experience, and chose options more familiar to them and their family. Therefore, the instructional aspect of the subject selection process in formal career exploration did affect some choice patterns, as students were compelled to consider further career alternatives.

While the subject selection process seemed to provide instruction for the students so did the Parent Information Evenings seem to provide relevant information for the parents. There is considerable research on the powerful effect of family on subject choice and career aspirations (Dustmann, 2004; Hughes, 2003, Jacobs, 2006), and subject selection processes aimed at informing parents contributed to decisions where both the student and parent acted in harmony.
Each case site had a different format for their subject information evenings. The Parent Information Evening at Anstey College differed from the other two schools as several large construction and trade-related firms set up display stands and personnel actively recruited families to consider a future in their industry for their sons. At the other two case sites, the parents had displays from subject area departments within the school on the content of their courses, and there was no evidence that career information was combined with the course information for parents to consider. It is possible that the approach taken by Anstey College may explain why the students at that school embraced the possibility of a trade after school, without any of the associated stigma mentioned by Ruth or John when they described their friends who were taking vocational courses. At the other two schools, students reported that they interpreted the information from the evenings for their parents, and that the use of the booklets provided by the school contributed to their parents overall knowledge of the subjects available as well as QCE information. Hence, the school-based subject selection processes seemed to serve as an instructional and informative support for students and their families, and in the case of Anstey College, could be a persuasive component of the subject-selection process if the subject information was combined with explicit career information.

Through the eyes of students, the school-based subject selection process seemed to bring teachers to the fore as providers of advice regarding subject choice. Where teachers were influential, such as the Multimedia teacher who had provided advice to all three interviewees at Cranberg College, they not only affected subject choice, but also inspired students to consider careers using the skills acquired in their subject. Other students afforded teachers the power to predict their future ability in a subject, and in Mathematics and English, this influence was highly effective in changing Mathematics and English subject choices. This finding complements other studies on teacher and student conversations, which found that they often focused on student's progress and course curriculum rather than future ambitions or characteristics of a profession (Mittendorff, 2010). Another factor that possibly adds weight
to the advice of the teacher is the interpersonal relationship between the teacher and student based on trust and genuine interest from the teacher. This relationship has been emphasised in studies on teachers as being influential in providing guidance and counselling (Davies, Telhaj, et al., 2009; Heppner & Heppner, 2003; Warton, 1997), and could possibly explain why the students in this study consulted specific teachers on subject choice. It was found that at each case site that teachers not only offered, but were also sought out for, advice on subject pathway choice more than career advice.

In contrast, the career Guidance Counsellors at the school were less vital in the decision-making process of the interviewees during the subject selection process. Across the three case sites, there were a variety of processes employed to use the career advice services of the counsellor. At Anstey College, the mandatory interviews with the counsellor were scheduled after choices were made, and were seen by Tom and Justin as a confirmatory interview rather than an information service. At Barclough College, the Counsellor had been ill for over a term and the career advice was provided by the Vocational Education Co-ordinator and Deputy Principal, and occurred after the subject selection process had occurred. At Cranberg College, the Careers Counsellor was used to arrange subject-selection activities, and none of the three students interviewed spoke to her directly about subject choice. For the most part, career Guidance Counsellors were involved in supporting the programs for subject selection, rather than direct career advice with individual students. This variance in the roles of career Guidance Counsellors in schools is reflected in research on the effectiveness of school career counsellors (Johnson, 1996), which concluded that the students' mixed responses to their presence is due in some part to their multifaceted roles in schools which stretched their ability to meet student demands on specific career guidance. It is possible that the advice of a guidance counsellor is sought when parents are not present or able to provide advice, and when the student has low levels of career maturity. The subject selection process compelled students to seek advice from school staff that the students trusted on subject choice and in
some cases, career advice. It is possible that the type of student who consulted the Career Guidance staff are those with absent parents or who had low levels of career maturity and therefore required assistance with subject choices.

7.5.1 Summary of Discussion on the Effect of the Subject Selection Process

In conclusion, the subject selection process at the school was used by both students and their families in a variety of ways. Firstly, for a minority of students, it brought the decision to choose a career to the fore, as advice from the school determined that an effective choice of subjects should be tied to a career plan. For some of the interviewees, a change in career meant a change of subject pathway as well. However, for the majority of students in this study it did not change their initial choice of subject pathway.

The format of the subject selection process could be persuasive for both the student and their families. At Anstey College, all who were interviewed chose a final pathway in vocational subjects, and it may be the influence of the industry personnel that affected this pattern.

Next, it was apparent that students approached staff that they liked and trusted for advice on subject choices and predicted ability, and these opinions could be influential when the teacher was charismatic, such as the Multimedia teacher at Cranberg College. Of interest to this study was the lack of consultation by the majority of the respondents and the interviewees with the Career Guidance Counsellor.

Consequently, the teachers were consulted more freely by the majority of the students than the career Guidance Counsellors on subject choice. Certainly, schools provide career Guidance Counsellors for the benefit of the students, and substantial resources are expended to keep career Guidance Counsellors up to date with current post-secondary offerings, however these findings reveal that this support may be under-utilised.

Equally important to the subject selection process for these students, are other contextual factors within the family and school environment, aside from those previously mentioned, that
arose in the findings and which impacted on subject pathway choices. These factors were considered in response to the last research question guiding this study.

7.6 RQ4: How do contextual factors such as family and the school environment, influence students when making subject pathway choices?

A variety of contextual factors were explored within the self-report surveys and the interviews. A discussion of the integrated analyses follows, exploring students' perspectives on the effect of family and the school environment on subject choices in the light of current literature.

The majority of the respondents to the self-report surveys registered that their choice of career and subjects were their own. These students believed they had decided on their future career and subsequent subject choice with little input from others, but further qualitative analyses unearthed a close tie between aspirational careers and the family occupations of the interviewees. The students reflected on discussions with close family members or friends of the family, and commented that the occupation they were considering had been explained to them or they had seen someone experiencing this occupation firsthand. The rationale given for choosing an occupation similar, or aligned to an occupation from within their family group, was that an interest had been sparked because they had had meaningful and regular contact with that family member and believed they shared common interests. This finding corresponds with literature on how parents affect their children's occupational futures (Jodl et al., 2001). It is possible that a variety of family process variables which have been cited in previous literature, such as "parental attachment, parent-child relationships, parenting style, parental support of exploratory behaviour, family cohesion and family functioning" combined to subtly influence the student to consider a career within the realm of the family's experience (Hughes & Thomas, 2003, p. 40).
This study provides some examples of how a student can be steered away from a personal aspiration towards an occupation which the parent has the career knowledge to provide guidance and support.

Next, a cross-factor analysis of academic efficacy, gender, and parental education levels revealed significant relationships. Of interest from the analyses was the relationship between the father's educational level and his son's subject pathway choices. The quantitative analyses revealed that fathers without any post-secondary qualifications, and fathers with a university qualification, had sons who chose an academic subject pathway as well as the highest levels of academic self-efficacy.

To summarise, the contextual factors within the family that affected subject choice for these students centred on the close tie between the choice of occupation and the incidence of this occupation being closely aligned with the occupation of a member of the family. An example from within this study provided some insight into how a student is deflected from an occupation unknown to the family to a familiar career. It then followed that the analyses underlined a relationship between fathers who had university qualifications or no qualifications, and their son's choice of an academic subject pathway.

A contextual factor from the school environment that was brought to light in the findings, and not previously mentioned, was the influence of peers on subject choice. Across the three case sites, the influence of peers was varied and there was a marked difference in the influence of peers for females and for male students. These discussions have been identified in studies on adolescent career conversations as 'self-refinement' of career goals, and for both of these students, the conversations with their friends acted as a mechanism for modifying and refining career aspirations through subject choices (Young et al., 1999).

There is literature on peer networks, their effect on how adolescents view themselves, and how students in these networks tend to be similar (Ryan, 2000; Schunk & Meece, 2006). Ruth's anxiety about the effect of choosing a vocational subject pathway could possibly be
related to her friends' choice of an academic subject pathway resulting in her being different from her friends. In addition, it is possible that the culture of the school places considerable importance on acquiring tertiary entrance, which by implication may devalue the vocational curriculum in the eyes of the students. Negative perceptions about VET subjects or VET students, have been noted in a variety of studies, essentially because VET was seen to be a “soft” option, of low status and for lower-achieving students (Dalley-Trim et al., 2008; Porter, 2006; Ryan, 1997).

As a result, the effect of peers on subject choice seemed to be felt more by the female students than the males. This may be due in some part to the culture of the girls-only school, which may have devalued vocational curriculum in preference to academic subject pathways, or to personal anxiety felt by female students when they choose subjects different to those of their friends. For the males there was no such concern, and again the culture of the school may have been the deciding factor in combination with the earning potential of male tradespeople in comparison with female tradespeople.

7.6.1 Summary of discussion of contextual influences

To summarise, there were contextual factors within the family and school environment which had an impact on subject choice for these students. First, the occupations within the scope of knowledge and understanding of the family were potent influencers on the aspirations of the students who were interviewed. However, despite the evidence that there was some relationship between aspirations and the family occupations, the revelations of students who were interviewed and the data from the quantitative analyses, reveal that this influence, though strong, is subtle, and the students believe their ultimate choice of a career path and the matching subject choices are their own. Of interest to this study is the relationship between a father's level of education and his son's choice of an academic subject pathway.

Second, the effect of peers was evident for the female interviewees and less so for the males. The female students embraced, and were challenged by, their friends' opinions of their subject
choices. It was apparent from the responses of the male students that they expected no loss of status if they chose a vocational subject pathway, and again, the school's culture may support males choosing either academic or vocational, with vocational subject pathways and the trade occupations holding higher prestige for males than for females.

### 7.6.2 Discussion of significance of findings in the light of current literature

Personal experiences and the importance of these to the students in this study highlighted the role of self-efficacy in making subject and career choices. The sources of self-efficacy identified by Bandura (1982) as past performance achievements; vicarious experiences from the observations of others; verbal persuasion; and other types of social influence were raised by the participants as relevant when they made choices for subject pathways for senior secondary schooling.

Within this study the effect of past performance achievements manifested in the interviewees' subject choices and levels of academic self-efficacy for all participants. Further, the summary of contextual influences revealed that vicarious experiences, such as observing members of the family in their occupations were powerful factors that had an effect on students' choice of careers. As well verbal persuasion such as discussions with teachers, family, past students and peers were tangible factors that influenced both subject and career choices for the participants in this study. Lastly, for some of the interviewees, social influences such as online forums were valuable sources of information and guiding influences in their investigation of appropriate subject choices and future careers.

A further theoretical framework of interest in understanding the findings of this study is the model of sources of influence on decision making developed by Dyke, Foskett and Maringe (2008). The model highlights the concept of hot and cold referents when young people consider subject choices. Hot referents were those trusted sources of information that emanated from personal experiences such as past subject results; vicarious experiences such
as direct observations of peers actions; verbal persuasion from people with whom they have 'relationships of trust'; and social networks that were considered to be less risky than 'expert educational systems' such as online forums (Dyke et al., 2008, p. 110). Cold referents were those sources of information which the students viewed as less valued because they were more impartial and less attuned to their personal needs. Both the quantitative and qualitative data analysis provided examples where students referred to their past subject results, their peers' opinions and the advice of teachers and family as valuable sources of information. These examples highlighted the importance that adolescents place on hot referents when making subject choice decisions. However, despite a concerted effort in each of the schools to provide information at parent information evenings and career activity days, students viewed these activities with less enthusiasm and expressed dissatisfaction with the efforts of staff to provide information in these forums. This attitude resonates with the concept of cold referents raised in the model of influence on adolescent decision making as these activities were less personal (Dyke et al., 2008).

Bandura's (1982) theory on self-efficacy and Dyke et al. (2008) concept of hot and cold referents as influences on adolescent decision-making provide a vantage point from which to synthesise the findings of the study. Hot referents such as past achievements in subjects; vicarious experiences such as siblings subject experiences; verbal persuasion from trusted teachers; and other types of social influence from peers and online forums, were important sources of influence for the students in this study when making subject choice decisions. Moreover, it could be that the effect of advice from career guidance counsellors, subject choice evenings and parent information sessions were less influential and colder referents for information because a 'relationship of trust' had not been established with the personnel involved in the delivery of the information (Dyke et al., 2008). The use of Bandura's (1982) and Dyke et al. (2008) theories to synthesise the study's findings is further explored in Chapter 8 where the theories are extended to promote a new perspective where a
diagrammatic overview of the influence of hot and cold referents on the choice of subjects is provided.

7.7 Summary of the Inferences from the Quantitative and Qualitative Findings

This chapter has reported on the integrated analyses of this study. In line with the specific research questions guiding this study, the data collection, analysis and interpretation focussed on students making their subject pathway choices for their senior secondary studies. In summary, the study identified the following findings:

- The career inventory tool SDS, did not predict the subject pathway students chose, as there was a tendency for students to choose academic subject pathways
- Academic self-efficacy affected subject choices, and its effect could be tempered by parental aspirations and the level of adolescent career maturity
- The school-based subject selection process was influential when combined with career information to both the student and parents
- Students consulted teachers who they trusted and liked on subject choice, students consulted more than Guidance Counsellors
- Students tended to choose aspirational careers similar to those within their family's scope of occupations
- Career maturity was an influential factor in subject selection choices
- Female students were affected by peers' opinions on subject choice when they contrasted with the school's academic culture

In conclusion, this chapter discussed the findings presented that were generated from this study of the factors that influence subject selection choices for Year 10 students. The following Chapter Eight provides a discussion of contributions to knowledge, methodology, policy and practice that arise from these findings of the study.
Chapter 8 – Conclusions and Recommendations

8.1 Research Problem and Purpose

As a Vocational Education Co-ordinator and Year 12 Co-ordinator in a secondary school, I developed a concern for students as they made their subject pathway choices for senior secondary studies. In response to the number of students undertaking subject pathways that did not seem to coincide with their post-secondary choices, this research explored the factors that influence Year 10 students’ subject choice decisions for their senior secondary studies in Queensland. This study also aimed in assisting a better appreciation of the perspectives of the students in order to explore the consequent implications for school administrators and policy makers.

A review of the literature highlighted factors that influence adolescents when they choose their subjects for senior studies and the career aspirations. The quantitative and qualitative data confirmed the relevance of a number of diverse influences on adolescents that contribute to their choice of subject pathway. In particular, the research identified the family as a dominant influence on career choice decisions—at least in the eyes of the students.

8.2 Research Questions

The research question that focuses this thesis was:

How do Year 10 students in Queensland choose subjects for their senior secondary schooling?

An exploration of the literature to response to this question elicited a variety of factors that may influence an adolescent’s decisions when choosing their senior secondary school subjects and their pathways to future careers. The factors were organised into three domains, those inherent to the adolescent, and those that are part of the two environments where adolescents
spend the most time—the family and school. Therefore within the three domains of self, family and school environment, the literature highlighted factors requiring further exploration which led to four research questions.

Firstly, literature on subject pathway choices highlighted the role of vocational interests of adolescents. It was worthwhile then to explore the impact of the career inventory tool, SDS, on the student choices, and to consider whether there is a link between the advice from this instrument and the pathways chosen by the students. This led to the research question:

*To what extent does the outcome of the Self-Directed Search affect subject pathway choices?*

Substantial literature on adolescent development identified the role of an emergent sense of self-efficacy to judge their competence in a range of activities. Interestingly, studies have found that perception of ability, rather than actual ability, is used by students when they gauge their future academic success and subject pathway choices. Consequently, it was of interest to this study to explore how these perceptions interacted with subject pathways choices in the Queensland context, and led to the research question:

*To what extent does academic self-efficacy affect subject pathway choices?*

It was found that students and families had varied responses to the quality of advice provided when choosing subjects for senior studies. Nevertheless, students still made decisions despite the reported dissatisfaction with current practice on providing advice on subject choice. Therefore, an exploration of how students made their subject pathway choices, even if they were uncertain about the support they received, was worthwhile. The research question that led from this query was:

*How do students make use of school-based subject selection processes?*

Finally, two powerful contexts that situated the student were highlighted in the literature as having complex and far-reaching effects on the choice of subject pathways. First, the
influence of the family was found to affect subject choice, career decision-making and career goals of adolescents. These areas of influence converged when students choose their subject pathways, and it was worth exploring how the family exerted their influence on the students at this decision point. As well, the school environment affected adolescent behaviour through the peer networks, guidance services, teacher influence and the attitudes of students to the subjects on offer. All of these factors were emphasised in the research and important to consider when exploring how adolescents make their subject pathways choices for senior secondary studies. Therefore it is worth exploring further both the family and the school environment and their influence with the research question:

*How do contextual factors such as family and the school environment, influence students when making subject pathway choices?*

### 8.3 Research Design

The research questions guided the data collection, analysis and interpretation throughout this study. A constructionist epistemology was adopted for this research which emphasises the perspectives of the participants, their context and focuses on the importance they hold about subject selection (Creswell, 2005). Within constructionism, pragmatism has been selected as the theoretical perspective, as it focuses directly on the purpose and nature of the research questions, and values knowledge in its context as crucial (Creswell et al., 2003). Pragmatism is most suited to this study, as it is not intended merely to 'mirror reality' but to also be 'useful' in emphasising what and who it is for, and how other researchers value the findings (Feilzer, 2010, p. 8). This theoretical perspective leads directly to case study, as it enables the researcher to "investigate a contemporary phenomenon within its real-life context" (Feilzer, 2010; Yin, 2003, p. 13). A case study approach was used, with the individual students making subject selections as embedded cases in each of the three case study schools. It is the process of "bringing together, juxtaposing, seeing similarities across contexts that
conspicuously happens during reading of case studies” (Thomas, 2010, p. 6) that provides insight into the perspectives of students experiencing subject selection for use by school administration decisions, policy makers and future researchers.

Within this theoretical framework a combination of quantitative and qualitative methods was employed, as neither quantitative nor qualitative methods are sufficient by themselves to capture the general trends and details of the complex issue of students’ perceptions of how they make their subject pathway choices for senior secondary studies. As a result, a two-phase data collection process was utilised, where in Phase One, quantitative data were collected through the use of survey and in Phase Two qualitative data were collected using individual interviews with nine student participants.

8.4 Research Questions Addressed

This section addresses each of the research questions that focussed the conduct of the research.

8.4.1 RQ1 - To what extent does the outcome of the Self-Directed Search affect subject pathway choices?

The career inventory tool-SDS-did not predict the subject pathway students chose, as there was a tendency for students to choose academic subject pathways.

Students were inclined to pursue an academic subject pathway regardless of whether their interests and abilities were reflected in those subjects. This tendency was seen as a strategy for those undecided on a career pathway, so as to keep their options as broad as possible upon graduation. Those students who undertook a vocational subject pathway often did so with the view to focussing on a specific occupation. Both the students who took a vocational pathway and those who chose an academic subject pathway, believed that their choices would lead to employment opportunities with sound potential income streams.
8.4.2 RQ2: To what extent does academic self-efficacy affect subject pathway choices?

*Academic self-efficacy affected subject choices and its effect could be tempered by parental aspirations and the level of adolescent career maturity.*

Students with low academic self-efficacy showed a tendency to choose vocational subject pathways, and students with high academic self-efficacy were inclined to select an academic subject pathway. Female students were found to have lower levels of academic self-efficacy than male students. However, a high level of career maturity was found to compensate to some extent for low academic self-efficacy. One student with an average level of academic self-efficacy chose a challenging academic subject pathway after exploring his future career options thoroughly, and establishing a sound career plan with specific academic goals.

8.4.3 RQ 3: How do students make use of school-based subject selection processes?

*The school-based subject selection process was influential to both the student and parents, when combined with career information and students consulted teachers who they trusted and liked on subject choice more than Guidance Counsellors.*

Students used the school-based subject selection process to reconfirm their initial subject pathway and career choices. A minority of students in the three case sites made substantial changes to their original choices. However, the activities promoted by the school to develop a plan for senior secondary studies, heightened the involvement of the parents in the choice decision on subjects and future careers. It was found that when the schools combined both subject information and individual career information, it had a more persuasive effect on the student and their families. Next, it was found that the students used the school-based subject selection process to seek the opinions of teaching staff, mainly on subject choice. The career Guidance Counsellors at the three schools were under-utilised by the students and their families for career and subject advice. It is possible that the students and their families had a more established relationship with the teachers, and therefore had more trust in their opinions and knowledge of the best course of action for the individual student.
8.4.4 RQ4 How do contextual factors such as family and the school environment, influence students when making subject pathway choices?

*Students tended to choose aspirational careers similar to those within their family's scope of occupations.*

Families were found to be a powerful influence on the career choice of the student, and subsequently, their choice of subjects, even though the majority of students claimed that their subject and career choices were their own. It was found that amongst the interviewees, the majority had chosen occupations represented within the network of their families. The two students who did not choose an occupation similar to those within their family, had invested considerable time and energy into exploring their future options and mapping a solid plan to achieve their desired occupational goal. Consequently, career maturity featured as a salient characteristic for those students who chose a fresh option for a future occupation.

Lastly, in the school environment, the interview transcripts revealed that peers had a mixed effect on students when choosing their future subjects for senior studies. For the females in this study, peers were a source of information, affirmation and concern as they chose between the two subject pathways. The male students marginally influenced their peers on the subject pathway choices, and to some extent it is possible that the culture of the schools may have affected the way that peers reacted to the pathway choices made by students for their senior secondary studies.

8.5 A Diagrammatic Overview of Findings

The following diagram summarises how Year 10 students make their subject pathway choices for their senior secondary studies. Students were found to assess information according to how much they trusted the source and this was determined to some extent by the depth of their relationship with that source, and how closely that information resonated with their "personal first-hand experiences, social networks and social identities "(Dyke et al., 2008).
The conceptual overview provided in Figure 8.1 supports this discussion and highlights the variety of factors that influence students' subject pathway choices. This figure is divided into three clusters of influence. The student is represented as self-referent at the centre, with the family and school cluster of referents intersecting the student. Running from left to right is a line representing element of time in the life of the student. The family cluster of references to the left representing short term influence as compared with the family cluster of references which are longer term. The elements listed inside the peanut shape represent items that are more influential than those outside the shape. The student's personal experiences and characteristics are central to this diagram, and encompass such elements as the gender, academic self-efficacy, past academic results, and any work experience they may have undertaken.

The influencers were divided into cold referents and hot referents. The concept of hot and cold referents is adapted from a model on the sources of influence on decision making by Dyke, Foskett and Maringe, which associated cold sources of information as less trustworthy and hot sources of information as less risky and more valued by adolescents (Dyke et al., 2008). The young people in the study valued "their own first-hand experience, personal social networks and social identities "more than the "expert educational systems" developed to provide impartial advice on subject choice (Dyke et al., 2008, p. 109). 'Relationships of trust' were central to adolescent decision-making and were based on personal relationships (Dyke et al., 2008, p. 110).

For the students in this study the cold referents were those with less influence on subject choices. These were factors identified in this study such as peers, subject selection processes at the school, Guidance Counsellors and their personal interests and abilities identified in career inventories. The hot referents confirmed as powerful agents affecting pathway choices were those such as parental occupational aspirations, parental academic aspirations, teachers' perceptions and occupations within the family network.
The line moving through the diagram represents the concept of time, and it may be possible that an influencing element that can determine whether these referents are hot or cold, is the amount of time that the students have had to develop familiarity and relationships with these factors. For example, a student may approach a teacher for advice because they have known them longer than a guidance counsellor, or the family occupations may be more influential than subject selection activities at the school because the students has been exposed to their family environment more than recent career activities promoted by the school subject-selection process.

![Diagram](image)

**Figure 8.1**  *Diagrammatic view of factors that affect subject choice*

Further discussions on the conclusions of this study highlight contributions to new knowledge and policy. This is followed by an acknowledgement of the limitations of this study and recommendations for further research.
8.6 Conclusions of the Study

8.6.1 Contributions to New Knowledge

There were two conclusions made from this research that contribute to new knowledge.

Academic self-efficacy, gender and parental education levels

This thesis concludes that there seems to be a significant relationship between academic self-efficacy, gender, and parental education levels.

Under-utilisation of career Guidance Counsellors

The second conclusion that generates new knowledge concerns the preference shown by the students in this study to consult with their teachers more than the career Guidance Counsellor at their school for subject choice and career advice. When the students have less interpersonal communication with the career guidance counsellor than their teacher, they seem to show a preference for using their existing relationship with the teacher to obtain subject choice information. This has strong implications for career Guidance Counsellors as they need to consider avenues to develop interpersonal relationships with the students, preferably in the first years of secondary school as students could be formulating their concept of a career aspiration at this stage.

8.6.2 Contributions to School Administrative Practice

There are a number of conclusions made from this research that contribute to practice.

Career Inventory Tools

This thesis concludes that despite the use of the career inventory tool SDS in assisting students to choose appropriate careers and subsequently subject choices, the majority of students did not act on the advice provided by this activity. Participants had completed this activity without the benefit of a professional to interpret and explain the career suggestions and the relationship to their interests and abilities. This finding implies that school
administrators and career Guidance Counsellors need to review the administration of the career inventory tools to ensure that trained and experienced personnel are on hand to assist the students to take advantage of the outcome generated by their responses.

School-Based Subject Selection Activities

The second contribution to practice concerns the school-based subject selection activities. Parent information evenings where representatives of occupations and industry were present were claimed to have enabled the students and their parents to assess together the benefits and working conditions of occupations. Participants reported a confidence in their decision when these interactions were with their parents. Next, students with career maturity benefited from engaging with professionals in their aspirational occupation in internet forums, such as Whirlpool and CNet where they could link with a professional in their chosen field and question them at a time and place suitable to them. This finding implies that engagement with industry at Parent Information Evenings and in virtual forums such as those previously mentioned, would most likely assist students and their families to make more informed decisions about future careers.

School Culture

The third conclusion refers to the culture of a school with respect to academic or vocational subject pathways. This conclusion implies that those in leadership positions in schools need to review the school's academic culture to encourage the promotion of an environment that fosters and supports a healthy appreciation for the talents of all students.

Career Maturity

The last conclusion that contributes to school administrative practices concerns the nurturing of career maturity. Career maturity has been identified as a predictor of "successful post-school transitions" (Patton, Creed, & Muller, 2002), and the schools, at least, would benefit
from a whole school approach to a programme encompassing career planning and exploration in the early years of secondary school because early intervention could develop more complex perspectives on career choice and attainment.

This conclusion implies that school administrators need to consider the benefits to students of a structured career selection programme to promote career maturity, not as a 'bolt on' activity in the year of subject selection, but as an integrated curriculum element.

8.6.3 Contributions to Policy

There are two conclusions made from this research that contribute to policy.

Career Guidance

The benefits of investing in substantial career programmes in secondary schools that commence in Year 8 could assist students. By appreciating the responsibility for preparing students for successful post-school transitions, educational policy-makers can broaden the career horizons of students beyond the scope of their family network, and reduce the percentage of students that do not 'earn or learn' in the immediate years following graduation.

Family Education

The second conclusion that contributes to policy concerns educating families in career exploration. The families of the participants could benefit from developing skills in career exploration. To enhance the outcomes of their advice to their children, a wide-ranging programme to provide information for parents on how best to assist their child investigate options would ensure that the career programme provided by the school was supported and enhanced by parental involvement. This conclusion implies that educational policy-makers need to consider avenues of connecting with parents, and providing up-to-date, accessible career information for students' subject choices and career planning.
8.7 Recommendations

The conclusions of this research identify a number of issues emanating from adolescent subject selection for senior secondary studies. The following recommendations address key issues, and support the reduction in students choosing subject pathways not pursued upon graduation.

Recommendations should be considered and implemented by school administrators, families and educational policy makers.

1. Develop mentoring programmes with industry and in virtual communities to provide direction and clarity in career planning. Such mentoring programmes would support the school's career programme, the students' career development and result in students choosing more widely than their family occupational networks and enhance confidence in academic goals.

2. Review the role and responsibilities of career Guidance Counsellors in schools. Greater recognition of their role in providing career and subject advice will support students in making comprehensive decisions regarding their subject choices and career goals when coupled with earlier intervention in accessing career advice.

3. Provide accessible professional development programs for secondary school teachers in their area of speciality. Information on the expanse of careers associated with their faculty area will enable them to provide appropriate career advice, as well as subject choice information, when approached by students.

4. Promote opportunities for parents to engage with the career Guidance Counsellor and industry representatives at the commencement of their child's secondary schooling. Making connections with career Guidance Counsellors and industry representatives has implications
for the student as their family become better informed about the opportunities and current industry practices impacting on their subject choices in Year 10.

8.8 Limitations of the Research

This research is situated in Queensland and concerns the context and motivations of a limited set of students over a short time period. This research has some limitations that are important to note.

The first refers to the assessment instruments, notably the implementation of the self-report surveys. In the first administration, 100 students across the three case sites undertook to complete the survey. In the second administration, 69 of the original self-selected to complete the second instrument. The aim of this study was to provide singular perspectives of the participants after obtaining a measure of the whole group behaviour from quantitative data. Where applicable, only paired data were used for statistical analyses. The limitation refers to the small sample size from which to draw inferences. The findings of case studies are not meant to be generalisable, and the subjects were not selected to be representative of a very wide population, so no claims can be made about these students’ experiences being typical of all Year 10 students, even within the diocese or state.

A second limitation of the research is the small number of female students who participated in this study. The school leaders at the all-girls school, Barclough College, agreed to participate in this study, but only 11 of the students returned consent forms from their parents and only two students agreed to be interviewed. As a consequence, the overall balance of female students to male students was distorted in favour of male students.

8.9 Recommendations for further research

This research may be a catalyst of further research into this topic.
• Replicate this study for students in non-Catholic schools. The difficulty of students who do not make seamless transitions to 'earning or learning' is a national issue (Garrett, 2012). Across Australia, all students must make subject choices and career decisions in Year 10, so value may be gained in considering the feasibility of transferring this study to different school sectors or different States or Territories of Australia.

• Further research to identify if academic self-efficacy, career maturity and mothers’ educational levels have an effect on subject choice and career decision-making.

• It is acknowledged that the study captured only a slice of changes made in students’ choices. Longitudinal studies following students from Year 8 to five years after their graduation from senior secondary schooling would provide further information on how students make the transition to the workforce in relation to the subject pathway choices they made at school.

• Further research with a larger cohort of female students would contribute to the existing bank of studies on females and subject pathway choices in Australia.

This research has identified several potential issues for school administrators and policy makers regarding the management of subject selection for Year 10 students in Queensland. The need for a more comprehensive review and the development of early career intervention has been established. This research confirms the results of similar research in this area, and identifies additional findings for consideration when further investigations are made into this topic.

8.10 Conclusion

This thesis took as its starting point the potential dissonance between the subject pathways students took at school and their post-school destination. The findings of this study provided particular insights into the way the students interacted with their families and the school environment and how they came to terms with the subject pathway choice they made and the
implications it had for their future career. The majority of students in this study took responsibility for the subject pathway decision, citing that it was 'their own' and confirmed the support of their family saying "they just want me to be happy". The intentions of governments, families and schools are to assist students as they embark on the next step towards adulthood, and a first move in this process needs to be understanding students' perceptions about what is helpful in making career and subject choices.