

CHAPTER ONE - INTRODUCTION

The subjects chosen by students in the senior secondary school are considered important in shaping educational and occupational futures (Ainley, Jones and Navaratnam, 1990).

The observation by Ainley et al. (1990) highlights a number of relevant issues pertinent to the development of curriculum and the practice of education in schools. As an educator and curriculum adviser in NSW secondary schools for the last twenty years it has been observed that the choosing of subjects for the senior years, undertaken by students, is not an isolated event but the culmination of a process of interactions. There is also a range of interrelated factors operating at various levels within society that impact upon the decision making processes of students, both directly and indirectly.

The factors that indirectly influence students include policy directions and decisions made by governments, educational systems and schools. Direct influences can come from family, teachers, friends. Further, gender, ethnic background and socio-economic status of students affect subject choice decisions.

The following research seeks to explore the complex interaction of these issues using a case study approach at a comprehensive public high school, by discussing them with year 10 students of 1996 who were making choices for their senior studies beginning in 1997.

Context and Purpose

The curriculum that is available to students in the final years of secondary school is a source of continued contestation. Since the beginning of public education in NSW there has been constant debate about the structure and purpose of the curriculum. In the early years the most pervading argument was that the final years of schooling should focus the student towards tertiary study. In recent years the final years have been viewed as a preparation for adult life, stressing the vocational

and other relevant skills necessary for this, or that it is not an end in itself but part of a progression of education and training that should continue over the life time of the individual (McGaw, 1997). The subjects students choose will have varying levels of importance and possible consequences for both students and secondary schools. The shift in views expressed above represents a change in attitude to the senior years of schooling and suggests that the final years of secondary education can serve the interests and intentions of a broad group of students. Discussion concerning the nature and purpose of the HSC continues in NSW in 1997 and the release of the recommendations for reform of the Higher School Certificate (McGaw, 1997) serves to highlight the level of feeling within the community about the issue. Such a discussion cannot be understood without some consideration of changes in retention in the senior school.

During the 1980's a major focus for education was school retention. The McKinnon report (1984) in NSW, the Beasley report (1984) in WA, the Hughes report in Tasmania, the *Directions for the Eighties* document in the Northern Territory and the *Education 2000* report in Queensland recommended changes that related to the changes in society (Beare, 1989). In 1980 only 35% of students were finishing the final years of schooling (Bureau of Statistics, 1993). In the same year the percentage of teenagers in full time work was 36%. However by the end of the decade the retention rate was 55% (Finn, 1991: 16) and by 1992 was 77.1% (Bureau of Statistics, 1994) with the percentage of teenagers in full time work dropping to 28% in 1990 (Finn, 1991: 16). Since 1992 across Australia the percentage rate of retention appears to have plateaued. Although retention rates have stabilised the rapid increases in the senior student population during the 1980's has had very significant implications for schools in NSW. The student population in schools is more representative of the broader community than ever (Williams 1987) and this diversity requires a curriculum capable of meeting their needs. This, in turn, poses a challenge to the academic tradition in the senior secondary school. Staff feel threatened by this as the subjects they teach become less important to the 'new' group of students and they are forced to be much more competitive in promoting their subjects to prospective students. This level of

contestation in the school can effect the decision making processes of students as faculties compete for students (Johnston and Spooner, 1992).

If retention was the focus for the 1980's the major focus for education in the 1990's is how to manage this diverse student population and curriculum. Collins (1992) stated that with a more diverse student population staying on to finish the final years of schooling, a wide range of subjects has been made available to them. Since the 1980's both federal and state governments, through curriculum corporations or education departments, produced reports and policies in an attempt to manage the changes occurring in education. By the mid 1990's many of those policies had been introduced but the implications are still being felt within the school system. In NSW many new subjects, such as Personal Development, Health and Physical Education and Drama were introduced within new Key Learning Areas outlined in the Carrick Report (Carrick, 1989) and implemented under *Excellence and Equity* (Ministry for Education and Youth Affairs, (MEYA) 1989) to cater for changing interests and demands. In the context of student choice it is necessary to understand how these courses developed and monitor the nature of the overall curriculum being offered. In *Excellence and Equity* (MEYA, 1989: 22) the need for breadth, diversity and flexibility in overall curriculum provision was stressed, particularly in the senior school. It also stressed that assessment be rigorous and credible supporting the need for courses to add 'value' to the extra two years of education.

Teese (1989) suggests that the curriculum is modified by an interaction of social and school forces. During the 1980's schools were able to develop courses to suit the needs of their students. By the end of the decade there were 10000 school developed Other Endorsed Studies (OES) in NSW (MEYA, 1989) on offer to senior students. With the changes occurring in the curriculum Ainley, Robinson, Harvey-Beavis, Elsworth and Flening (1994) suggest it was necessary to monitor the nature of the curriculum which is experienced by senior secondary students. The economic rationalist attitudes of the late 1980's supported this view and the number of courses developed by schools dropped dramatically as a consequence of the implementation of *Excellence and Equity* (MEYA, 1989). The OES were

dramatically rationalised and less than 20 Board of Studies Content Endorsed Courses (CEC's) introduced to schools as a consequence of *Excellence and Equity*.

National level discussions at the end of the 1980's culminated in the Australian Education Council (AEC) recognising the changing nature of secondary education in all states of Australia and the trend towards a 'convergence' of the full-time curricula was reflected in the increased vocational emphasis of many senior secondary school programs (Finn, 1991: 1). An issues paper prepared by the AEC was finally accepted by the Ministers for Education at a state and federal level and the Finn Report (1991) was commissioned. The report recommended a commitment to two years of post - compulsory education, a curriculum that must be appropriate and relevant for the abilities and interests of all students, that the curriculum be broad and balanced with an appropriate mix of general and vocational education, that the curriculum be adaptable to flexible learning contexts and that the curriculum be clear as to the expected outcomes in terms of knowledge, skills and attitudes (Finn, 1991: 6 - 7). The growth in participation rates during the 1980's had prompted schools and TAFE Colleges in all states to explore more flexible approaches to tertiary entrance and more efficient ways of working together to provide for the diversity of student needs that was both focused towards tertiary study and alternative post- school education and training pathways (Finn, 1991: 1). The Finn Report (1991: 7-8) recommended the 'convergence' of 'general' and 'vocational' education, although recognising that it was not completely possible, and concluded there were certain essential things that all young people needed to learn in their preparation for employment which they referred to as 'Key Competencies'. This idea of key competencies did not gain acceptance in the school sector.

The Mayer Committee report (1992) followed by detailing the key employment competencies students should gain from school and the Carmichael Committee (1992) proposed the establishment of the Australian Vocational Certificate

Training System (AVCTS) to ensure that by the year 2000, 95% of 15 - 19 year olds were in some form of formal training.

Since then vocational education has been given a greater emphasis in education nationally. The Federal Keating Government supported vocational education across Australia through the establishment of the Australian Student Traineeship Foundation (ASTF). This group supported vocational education programs in line with best practice models and industry endorsed standards. In NSW schools vocational education has been supported through the establishment of a Directorate in the Department of School Education and the McGaw recommendations (1997) support the continuation of vocational education subjects and their development in secondary schools.

The initiatives to introduce vocational education has increased the range of courses available to students in the senior secondary school to over 120 (Board of Studies, 1996). The provision of alternative courses has gone some way to supporting the convergence of academic and vocational courses within the school system.

Significant research has been undertaken over the years in relation to gender, ethnic background and socio - economic factors affecting student participation and subject choice. This research is invaluable in seeking to understand the nature and dimension of decision making at this level. It also assists in the process of developing theoretical and practical models that may be used to guide practitioners in helping students and their parents with the task of making subject choices for the senior years of schooling. Intrinsic factors (interest, enjoyment) and extrinsic factors (relevance to work, future studies) are areas where some research has taken place in recent years (Hobbs, 1987; Ainley et. al., 1990: 1994; Haeusler & Kay, 1997).

McKenzie and Alford (1990) suggest that, given a more heterogeneous senior secondary population, it is necessary that perspectives on educational participation

be elaborated with information about participation in various fields of study by different groups of students. Ainley et al. (1990; 1994) undertook important but broad studies of student participation in senior secondary schools across Australia. They found significant differences between male and female patterns of subjects studied, differences between English speaking students and non - English speaking background (NESB) students and levels of achievement in subjects in the junior school as they relate to the interest in these subjects in the senior years of schooling. The 1994 study replicated the findings of the first but added information about the patterns of study undertaken by Aboriginal students. Along with studies undertaken by Hobbs (1987) in Queensland, these studies form an integral backdrop to the current research as they indicate the trends, over time, of students' course selection patterns and they analyse some of the reasons for subject choice that students, in general, and sub groups, specifically are undertaking. A problem for the individual school from the Ainley et al. (1994) study is that it shows general trends that may or may not be relevant to the school given a different context and set of interacting factors. Certainly these trends require consideration but more attention is needed to research these issues at the school level. Spooner and Johnston (1992) went some way in addressing this problem in their study of girls education in a Victorian and Queensland school. Haeusler and Kay (1997) confirm some of the findings of Hobbs (1987) and Ainley et al. (1990; 1994) in their study of secondary schools in the Riverina of NSW.

At the school level some students face a dilemma when choosing subjects. The dilemma is deciding between courses they are interested in, enjoy and feel comfortable in doing (intrinsic factors) or taking courses they feel are going to give them a better TER or cover the prerequisites for entry to university courses (extrinsic factors). To some extent it is this dichotomy that is the focus of recent research (Ainley et al., 1994). The intrinsic and extrinsic interests of students can underlie the varying attitudes towards specific courses in the senior secondary school. For the most capable students there is generally no dilemma but potentially it can be for the less 'academic' students. There is a perception that some courses, such as higher level Maths, Physics and Chemistry are scaled up for TER purposes and these courses tend to have a high status reputation within schools (Haeusler

and Kay, 1997). This is evidence that the academic tradition still pervades the thinking of students, parents and teachers for the selection of subjects in the senior secondary school. The academic rigour that was suggested in *Excellence and Equity* (MEYA, 1989, 25) can cause some angst among students who seek to undertake courses with practical components.

The dichotomy between intrinsic and extrinsic factors contributing to subject choice represents a difference in reason for subject selection. On one hand is the selection of subjects for their own value, as perceived by students, and on the other hand is the influence of possible future education and career ambitions. However, recent research (Hobbs, 1987; Elsworth and Day, 1989; Kidd and Naylor, 1991; Ainley et al., 1994) indicates that the links between intrinsic and extrinsic factors are very strong. Ainley et al. (1994) further suggest that a theoretical model of subject selection could be developed to incorporate these two very strong and significant factors, though they didn't venture to develop such a model. Jones (1988), Elsworth and Day (1989) and Johnston and Spooner (1992) have developed theoretical and practical models as a means of conceptualising the complex inter-relationships between the various factors that impact on students subject selection. However, these models don't appear to be widely accepted as they are not referenced in other research.

All of these areas of research need to be further investigated at the school level so as to assist schools in their understanding of the student population and to better provide for student intrinsic and extrinsic needs. This is the purpose of this research study.

Problem

Retention rate rises over the last fifteen years have changed the nature and 'clientele' of senior secondary schools in NSW with curriculum offerings being broadened to cater for the more diverse student population. It could be argued, given the increased participation rate, that society expects students to stay at school until the end of year 12. However, the TER is still perceived as a major

influence on students' subject decisions and that there are certain courses within the overall curriculum that are considered to be more important than others. Haeusler and Kay (1997, 32) suggest that there is limited empirical evidence to indicate why students choose particular subjects for the HSC. If, as teachers suggest, it is on the basis of pre-conceived beliefs about the possible contribution of marks awarded in particular subjects in the TER, then universities selection procedures may be having unintended and possibly undesirable effects on the selection of subjects. Moreover, if as Oates (1990) suggests the subjects studied in the senior years are shaped by the interactive influence of interests, aptitudes and opportunities, then the students' selection of subjects in turn affect the curriculum offerings within schools, thus reducing the diversity of opportunity for all.

Research overseas and in Australia has been concerned with student choice in relation to retention, gender studies, ethnic background and socio - economic status. These factors are external to students and ones over which they have little or no control. The work of Ainley and colleagues indicate the trends, at a national level, on participation and the patterns of subjects students choose along with some insights into why students make the choices they do. Although these broader trends are available from this research there is a need to manage the process of subject selection for the final years of schooling at the school level for individual students and groups of students. There is a need to draw the wider research and evidence together to develop guidelines for managing the process of subject decision making at the school. Although schools have a process for subject selection, and the case study will develop this further, do they really know what influences students subject choice and why they make the choices they do? By bringing all the factors together schools could better provide for the diverse needs of their students. Certainly a general model that Ainley et al. (1994) suggest would be useful.

Questions

There are broad educational, environmental, political, economic and social forces operating at one level with the school and its community at another level. Between these forces are individual students trying to make important choices that are to

shape their future. In an attempt to understand the complexity of the inter-relationship between the various factors the following questions were used to guide the research:

What subjects do students choose?

This research study explores the influences and reasons behind the decisions that students make regarding their choice of subjects for the senior years of schooling.

What are the influences on students to choose the subjects they do for the senior years of schooling?

Students make decisions about the subjects they select for the final two years influenced by a wide range of factors that relate to the social milieu in which they live. Society has a range of economic, social and political influences that affect the education of young people. In particular this question seeks to explore the range of internal and external school issues and policies that impact on the school and the student. These factors are complex and include political and educational policies, rules governing educational attainment and entrance requirements to post school institutions. Many of these factors are external to the student and don't appear to affect them directly. However, some can have an important impact on students and the decisions they make for their senior school studies. These include the influences of their family, their socio-economic status, their ethnic background, gender and Aboriginality.

Why do students choose particular subjects for their senior years of schooling?

The reasons for selecting particular subjects are an important question in this research study. Although students are influenced by a range of factors it is important to know and understand the reasons behind their choice. This question seeks to understand the nature of the student interests and preferences for subject selection such as the intrinsic, extrinsic, instrumental and organisation reasons for their choice in the context of a particular school environment.

The latter two questions seek to make distinctions between influences and reasons for choice. As mentioned previously there are many influences on students in

relation to their selection of subjects for the senior secondary school. These influences are regarded as either indirect, such as government and educational policy, or direct, such as family, gender, ethnicity, socio-economic status and Aboriginality. Also the reasons for subject selection can include enjoyment of the subject, a particular interest in the subject, ability to undertake the course, the importance of the subject for future study and/or work, impact of family, friends and teachers and the impact of the organisation of the school. This research seeks to determine if these influences and reasons are significant. For instance, family can be an influence on choice but do students choose subjects because of this influence or do they choose for reasons such as interest or enjoyment of the subject?

Significance.

The impact of increased retention, the implementation of *Excellence and Equity* (MEYA, 1989) and the development of vocational education courses has meant that schools have gone through a great deal of change in recent years attempting to cater for the needs of the students they serve. The above questions are significant in the context of education in NSW at present for professional, practical and theoretical reasons.

The professional significance relates to understanding the range of decisions that students are required to make while in secondary school. McMahon (1992) suggests there are significant times in the life of a student for decision making at high school. One of these is the change from year 10 to year 11 where subject selection for the senior years corresponds to making some decisions about career futures. She suggests that support services are critical for students at this time as inappropriate decisions could be made based on inaccurate information.

The suggestion by McMahon (1992) is supported by Johnston and Spooner (1992) in their approach to developing practical models for the process of subject selection for senior students. Schools manage the process of subject selection in various ways depending on the nature of the school. What Johnston and Spooner (1992) proposed was a checklist of considerations that the school might employ to make the subject selection process more inclusive of the various inter-related factors that

influence subject choices. From a practical, school based level a process model might be useful and would assist in helping students make the 'best' choice for them.

The theoretical significance of the above questions relate to the possibility of developing a model of subject selection that Ainley et al. (1994) suggested and that others such as Jones (1988) have attempted. In developing a theoretical perspective it incorporates the complexity of factors relating to subject selection and also draws together the dichotomy between subject interest and subject selection for education and career futures.

Assumptions and Limitations

An assumption is made that in practice the choices that students have and make are a compromise between a range of interrelated influences and reasons, some of which are in competition with one another. Therefore references made in the literature to these intervening factors can be explicated in the light of practice within a particular school at a given time. Every attempt will be made to do so. However, a limitation of the research was, due to time, an inability to cover all the factors that are referred to in various research articles. The major factors are considered in depth in Chapter Two using the research of Ainley et al. (1990; 1994) as a reference point.

As the research study was conducted in one school as a case study it may be seen as a limitation in relation to the broader educational community. However the research highlights the specific curriculum that is offered in one particular school and the subjects that students chose and why. Because each school is different it may be difficult to generalise the results from this research to other schools. However, given the evidence available other schools could use similar studies to assist them in gaining a greater understanding of their students as they make their subject choices for the final years of secondary schooling.

A further limitation of the study due to time constraints, was the lack of data associated with achievements in the junior school and how that achievement related

to subject choice. However, the factor was picked up in the interviews though a wider sample would have been more useful.

Terminology

For the purposes of this research the following definitions of key terminology are used.

Curriculum: the formal courses that students study in the senior school including those that are examined at the Higher School Certificate (HSC) and those that are assessed at the school level but are counted for the award of the HSC. They also include courses that are taught by other providers external to the school such as TAFE, Open High School, Distance Education, and Saturday School. This narrow definition of curriculum has been chosen on purpose because it directly relates to the courses that students choose for their senior secondary education and so serves the purpose of this research.

Vocational Education: Courses that are taught through the school that offer dual accreditation and a structured work placement as well as counting towards an HSC. Included in this area are the Joint Secondary Schools TAFE (JSST) programs that are competency based and developed in conjunction with industry.

General Education: The broad curriculum within the school that prepares students for life and for work (Carrick, 1989: 151). In this sense all courses within the school are vocational in that they lead to some post school options for students that include further study and/or work.

Academic tradition: University entrance requirements promote certain subjects as being of a higher status and students who are seeking tertiary entrance are encouraged to pursue these subjects and achieve success or otherwise through examination. Connell (1985: 87-88) referred to this as the competitive academic curriculum (CAC). It is also based on concrete learning principles using textbooks, organised in an hierarchical way, tested through competitive exams and is focused on content stressing abstract and theoretical concepts.

Academic courses: These are courses that are perceived to be the most important for tertiary entrance. Although many courses count towards the Tertiary Entrance Rank (TER) there are some that are perceived to have greater 'merit'. They include 3/4 unit Maths, Physics and Chemistry (Haeusler and Kay, 1997).

Socio-economic status is a term used to describe a person's overall position or social standing. It is determined by individual achievements, the most important of which are educational, employment and occupational status and income and wealth (Ainley et al., 1994: ix).

Thesis overview.

In the following chapter literature relating to a number of the inter-related factors associated with subject selection are reviewed. This includes an overview of the major policies that affect the provision of curriculum, especially in NSW schools and an analysis of retention and participation in the senior years of schooling and the trends that are emerging as they relate to gender, ethnicity, socio-economic status and Aboriginality. It also includes an overview of the research conducted into other indicative factors that relate to the individual student. The chapter finishes by looking at some of the current models for subject selection.

Chapter Three explores the methodology of the study, explaining why a case study was used and the various research methods that were employed to ensure validity in the research. The research design is explained and justified in this chapter.

Chapter Four places the research into the context of the particular school and specifically of the processes the school employs to assist students with the selection of subjects for the senior years.

Chapter Five begins the examination of the data in the context of the case study. A profile of the cohort of students is presented as well as the influences on their choices discussed. Students' preferences for certain subjects, along with the

reasons for the preference, is analysed as well. Data from a questionnaire and from selected interviews are used to examine influences and preferences.

Chapter Six continues the analysis of the questionnaire and interview data to examine the selection of subjects that students choose as well as to discuss the reasons for the students' choices.

The final chapter (Chapter Seven) draws some conclusions from the case study research and makes some recommendations that arise from the research and where future research may be warranted.

CHAPTER TWO - LITERATURE REVIEW

Introduction

The subjects that students ultimately choose for the senior years of schooling are not chosen in a vacuum; they are chosen in a particular time and place, influenced by a range of factors that are directly and indirectly related to the student. Such factors include social expectations, economic considerations, changes in government and educational policy, the school community of which they are part, family background, their interests, abilities and future career aspirations and opportunities. Why students choose the subjects they do for their senior years is the major focus for this research and the following review of the literature addresses the historical and current developments in research that has had a bearing on this issue.

The inter-relationship between the factors associated with subject selection is complex. Research in Australia and overseas has, over time, sought to explore the importance of the individual factors and their relationships in an attempt to understand the influences on students and the reasons why students make the choices they do. Some of the influences are indirectly related to the students' choice but they set the framework in which the choice takes place. These include government policy, education policy, systemic requirements and social and economic situations. Influences that are directly related to the students' choices are family, gender, school and school community and their own individuality including interests, abilities, values and personality. The research to date has largely focused on national, state or regional trends in relation to subject selection or has focused on specific factors such as gender, retention and participation rates or ethnicity. Little research has focused on all the issues as they relate to subject selection in the school context. However, in recent years there has been the emergence of at least two models for subject selection. One, developed by Jones (1988) was specifically in relation to technology subjects. The second, developed by Johnston and Spooner (1992) was a process model which detailed practical procedures that could be used in the school context. Those aspects of special interest include the school factors that provide support for students and their parents in the subject selection process.

The model proposed by Johnston and Spooner (1992) provided guidelines for the process of subject selection and was useful in this present research study in the context of a particular school which is the focus of the case study outlined in chapter four. Ainley et al. (1994) suggested a broad conceptual model but it was not fully developed. The suggestion by Ainley et al. was based on the concept of bringing together the psychological career interest focus of subject selection with the sociological influences and reasons that directly and indirectly affect students' subject choices. This linkage is further explored later in the chapter.

The approaches suggested by both Johnston and Spooner (1992) and Ainley et al. (1994) are important for this study as they represent two different approaches to subject selection for the senior years of schooling. This study attempts to bring together these two approaches by using a case study to show the process of subject selection in a comprehensive high school, which utilises aspects of the process model outlined by Johnston and Spooner (1992). Also, by utilising data gathered in a particular high school to determine the influences upon and reasons for subject selection into the senior years for a particular cohort of students the factors used in the Ainley et al. (1994) study are used.

The aim of this review is twofold. Firstly to develop a conceptual model of subject selection based on the relevant factors of influence upon students and their subject selection and the reasons students select subjects in a manner that assists in explaining the relationship between the inter-related and, at times, complex factors. The second aim is to examine the research that has occurred in relation to these major factors relating to subject selection, mainly in Australia, but with inclusions of relevant research from elsewhere.

Outline of a conceptual model of subject selection.

Before exploring the research it is first necessary to broadly outline and explain the main factors that contribute to the development of a conceptual model of subject selection as presented in Figure 4 on page 46. There are three main areas to explore. They are the indirect influences upon students, the direct influences upon

students and the reasons why students make the selection they do. The areas are more fully explained in relation to the relevant research.

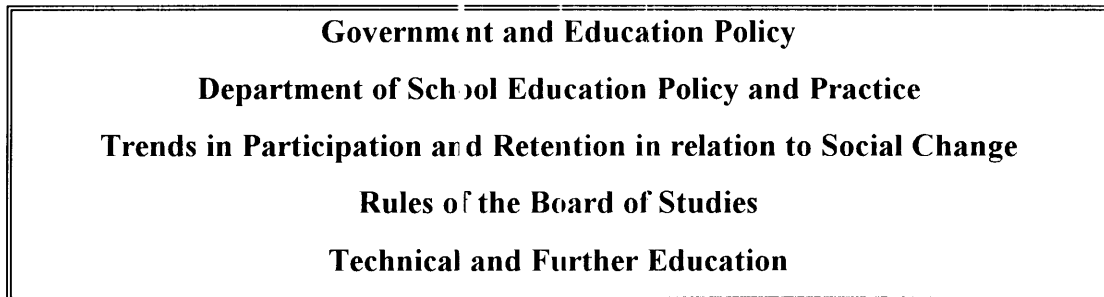


Figure 1: The Indirect Influences on Students' Subject Selection

The main factors in figure 1 are those of government policy at both a federal and state level as it relates to education policy, education practice and social change. The response by education departments and other statutory authorities to government policy and social changes in recent years is very important for the decisions that students make in indirect ways as they set the guidelines, rules and procedures for the students' futures.

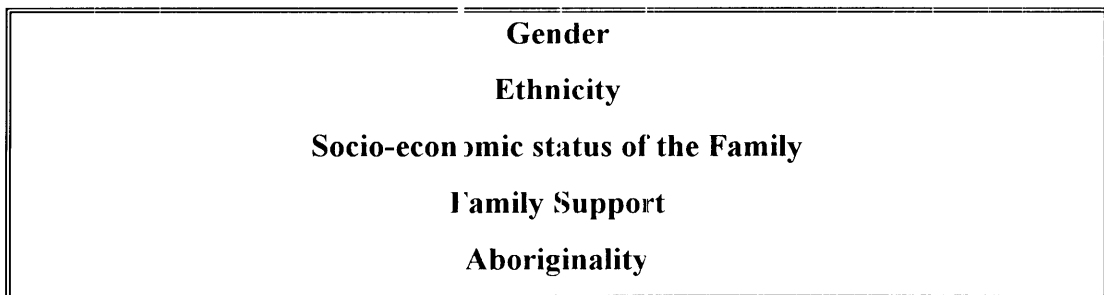


Figure 2. The Direct Influences on Students' Subject Selection

The factors in figure 2 are those that have been identified through research as having a direct influence on individual students. Much has been written about these factors, with the exception of Aboriginality, mainly in isolation from one another. It is the inter-relationships of these factors that are important for individual students as they make decisions about their future studies

The third area, in figure 3, is the reasons why students select the subjects they do for their senior years of schooling. These factors are very closely associated with the direct influences as suggested in figure 2. The relationship between the individual factors that represent the broad outline of a conceptual model of subject selection is complex and an area where various forms of research could be undertaken to help assist in understanding the inter-relationships.

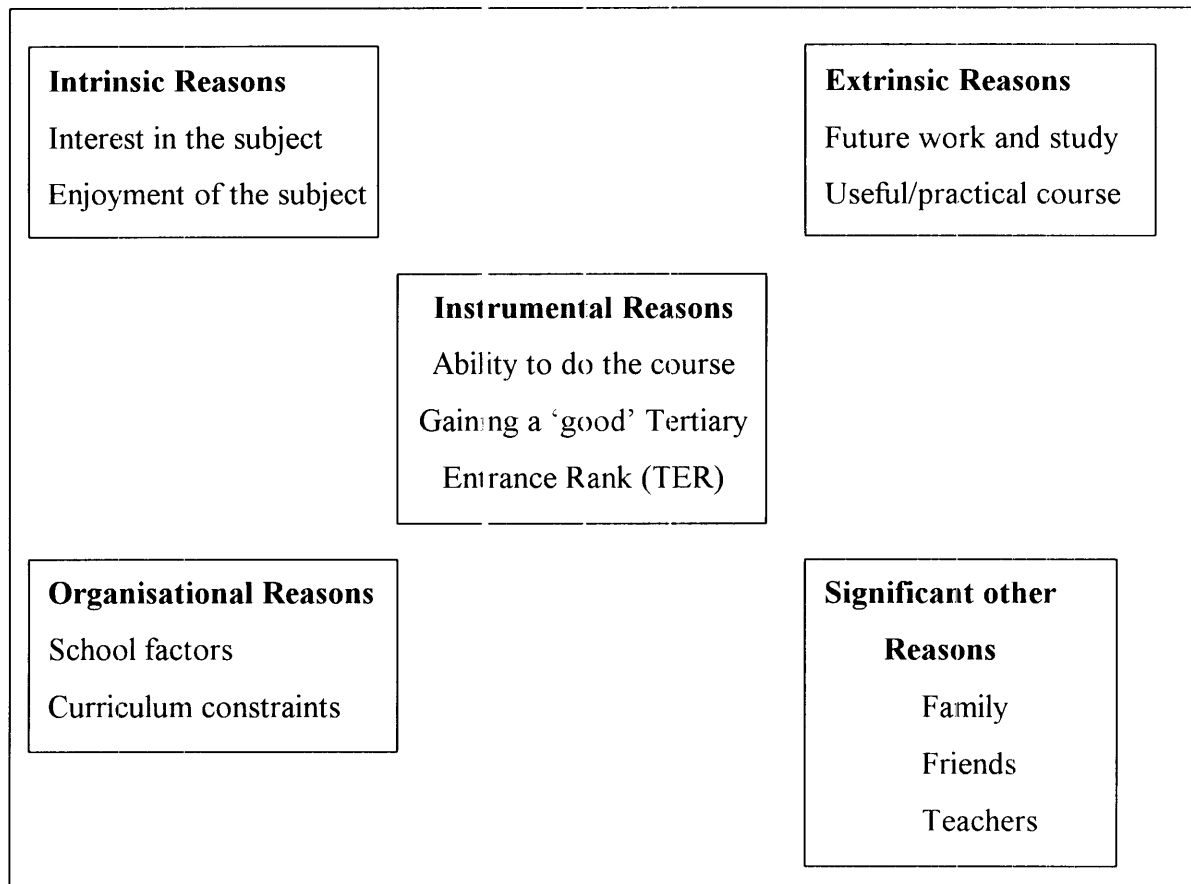


Figure 3. Reasons for Subject Selection - Other Indicative Factors

The factors in Figure 3 are categorised under five different reasons; intrinsic, extrinsic, instrumental, organisational and significant others as these categories have been used in other research studies such as Ainley et al. (1994) and Haeusler and Kay (1997). The above Figures 1 - 3 attempt to show the major factors contributing to the influences upon students and the reasons why students choose the subjects they do for their final two years of school. The relationships between the factors will become clearer through the following discussion of the relevant

literature and then brought together in a conceptual model of subject selection on page 46.

Indirect Influences on Students' Subject Selection: Government and Education Policy

The creation of numerous curriculum policy documents have consequently exerted a significant influence over the formulation of curriculum intent by curriculum developers, both at systemic and school levels (Print, 1993). The school, as a deliverer of education, has to respond to these changes and does so in the context of the community and students it serves. The curriculum that is offered and the regulatory framework that is used for its delivery is also a reflection of the needs of the community. Within this framework the complex interaction of students' subject selection takes place. Certainly as Collins (1992) suggests, there is a more diverse range of students staying on to complete a full secondary education and consequently new courses have been developed to cater for students in their senior years. However to understand the process that has occurred, and the forces on the curriculum, both internal and external, it is necessary initially to review changes that have occurred in Australia, and in NSW in particular. The reasons to do so is to firstly understand the influence of the academic tradition within education as it applies to the senior years of schooling and to determine if that tradition remains a dominant feature of education (Connell, 1970; Laird, 1982).

Some would argue that the historical development of the curriculum and the policies that drove it, up until very recently, have concentrated on the compulsory years of schooling and has left the final years relatively untouched. These final years have been traditionally designed for those who wished to attend a tertiary institution. It is also necessary to understand the social and economic changes that have occurred, especially since the early 1980's, that have influenced government reviews and policy associated with curriculum development, provision and implementation. In the context of social change it is important to understand the effects that policy has had at the school level as it relates to the provision and delivery of curriculum to students and the range of options available for their subject choices.

The Academic Tradition - the development of curriculum and education policy

The academic tradition in the secondary school grew out of the extension of the primary school curriculum at Fort Street Primary School in 1855 and later strengthened with the opening of Sydney Grammar School in 1857 to supply students to the newly formed University of Sydney. The tradition was legitimised by the University of Sydney in 1867 with their implementation of the Junior and Senior Public Examination. After the formal establishment of state secondary schools in 1880 the academic curriculum was the approved one as the university directly influenced its practice (Laird, 1982).

The Wallace report of 1934, although never implemented, proposed: a more representative Board of Examiners to oversee the development of policy for secondary education, an extension from three years to four years for general education with the inclusion of English, Maths, History, Geography and General Science as the core curriculum, and the adoption of a system of school accreditation where schools could issue certificates without sitting for external examinations (Laird, 1982, 14). The Board of Secondary School Studies recommended the four years of general secondary education for policy proposals to the then Labor government in NSW during the 1940's. The government rejected the idea in favour of the existing three years general secondary education plus two years for matriculation. The reason given at the time, by the government, was that the extra costs that families would endure with their children at school for an extra year was not warranted. This was at a time when the retention rate to the senior years was less than 15% (McGaw 1997: 4) with the majority of students leaving to find work and/or apprenticeships. This policy stayed in place until the end of 1965 when the Leaving Certificate in NSW was offered for the last time.

The Wyndham report of 1957 reflected the need for curriculum change and endorsed the Wallace recommendation and Board of Secondary School Studies policy position of four years of general secondary education, with an emphasis on the personal development of the adolescent, and the additional two years aimed at matriculation. The report and its later implementation in 1962 has been the

foundation of the secondary school in NSW for the last thirty years. What the Wyndham report aimed to implement in the early years of secondary school was a situation where schools had a greater independence in the development of school-based curriculum and where the health and physical fitness, mental skills and knowledge, communication skills, leisure and spiritual values and where the vocational development of the student could be nurtured and developed. The report was finally endorsed in 1961 and to be made operational in 1962. The short time frame, the lack of resources and teacher inservicing meant that the Wyndham Scheme, as it became known, initially floundered (Laird in Cohen & Maxwell, 1985).

The implementation of the Wyndham Scheme challenged, for the first time, the academic curriculum and its dominance in the junior secondary school especially in relation to school-based curriculum and the development of a vocational focus. However, in the senior years which were designed to cater for those seeking to matriculate to a tertiary institution, the academic curriculum remained largely unaltered and unchallenged. Although there was an opportunity, at the school level to develop school-based curriculum, the reality was that the academic tradition was slow to change.

However, there were signs that the strength of the academic tradition was under threat in the 1970's (Laird, 1982: 21) in the junior school from a number of sectors led by the release of the '*Aims of Secondary Education in NSW*' (Department of School Education, 1974) reasserting the aims of secondary education espoused by Wyndham and advocating the development of school-based curriculum. Further, there were forces emerging within the P & C Association and the Teachers Federation to remove the external examination of the School Certificate.

During the 1970's and 1980's, although changes were occurring to the curriculum in the junior secondary school the curriculum for the two final years, the Higher School Certificate (HSC) course as it became known, changed little except for some names and levels of subjects. The intention of these final two years remained the same and very much orientated to tertiary entrance. It would be the late 1980's

before any major changes were seen to the senior curriculum and any threat to the academic tradition mounted again.

Post 1980's - signs of change.

The pressure for changes in education policy and direction were starting to emerge throughout the 1970's as a reflection of the changes in society at the time. The release of the '*Aims of Secondary Education*' (NSW Department of Education, 1974) opened up the development of school-based curriculum and experimentation with the delivery of curriculum. This was assisted at the Federal level by the Schools Commission which sought to develop curriculum to meet the changing needs of students through the Transitional Education and Participation and Equity Programs. Both these programs funded schools to provide alternative curriculum's for students in an attempt to keep students at school and provide a program of study that was meaningful and useful for them. The McGowan report of 1981 in NSW advocated the development of vertical semester courses and a number of schools experimented with their implementation including The Entrance High School (Cohen and Maxwell, 1985) and Quirindi High School. This change to the timetable structure of the traditional school provided for the whole range of students from talented to those requiring extra assistance. The curriculum allowed students to advance in courses they preferred and in which they had ability, but at the same time meet the requirements for the School Certificate.

The changes in NSW were mirrored in other Australian states with the release of the Beasley report (1984) in WA, The Hughes Report in Tasmania, the *Directions for the Eighties* document in the Northern Territory and the *Education 2000* report in Queensland which all advocated changes reflecting changes in society (Beare, 1989) such as the changes to employment opportunities for young people and an increasing emphasis on educational attainment. A number of combined factors had a major impact on schools, the curriculum it developed and how it was implemented.

Nationally there was a drop in employment opportunity with a contracting economy in the early 1980's. This meant that many teenagers had fewer options at

the end of their School Certificate. The number of apprenticeships that traditionally employed many students, especially boys, was diminishing. The changes in technology, especially related to computers, was impacting on the retail and banking sectors that traditionally recruited a large number of girls as juniors. At the same time the number of part time jobs was increasing as were the number of women in the workforce, especially married women. Added to this was the increasing demand, in the community, for well trained people and the need to upgrade the qualifications of some occupations such as nursing (Johnston and Spooner, 1992). The federal government also encouraged students to stay on at school with initiatives designed to support students wishing to go to university after leaving school and the increasing employment opportunities for students with twelve years of schooling as compared to ten years (Johnston, 1990).

The consequence of these factors was a rapid increase in the retention of students into the senior years of schooling across the country (see page 2). To cater for this increase and responding to the reports such as *'Future Directions of Secondary Education in NSW'* (Department of Education, 1983: 1984), schools in NSW opened up the curriculum by developing a range of school-based courses. These courses were designed by the school, and endorsed by the Board of Studies, to provide alternatives for students who were required to undertake a very academic course of study that they did not want or could not cope with. By the end of the 1980's there were 10000 of these courses operating in NSW schools (MEYA, 1989) that reflected the needs, resources and demands of the local community. In 1987 the Joint Secondary Schools TAFE (JSST) courses were developed providing senior students access to TAFE programs while still at school. These courses counted towards an HSC and later, credit towards post school courses at TAFE. The JSST program, and later TRAC (Training for Retail and Commerce), became the forerunner to the vocational education programs currently in schools with the assistance of the Federal Government through the Australian Student Traineeship Foundation (ASTF). The changing nature of the student population which led to a change in the curriculum provision in schools challenged the position of the academic tradition to some extent. Not that it necessarily competed with the academic course structure but added another dimension to the senior

school that had not been there before. Because of the rapid growth in retention these courses grew in a corresponding fashion but in a haphazard way. The realisation was emerging in schools and at a systems level that a diverse senior school student population was here to stay and a more organised infrastructure was required to cater for the diversity of needs (Ainley et al. 1994).

The economic downturn of the mid to late 1980's occurred in parallel with the emergence of an economic rationalist attitude to education at a national level. Discussion and policy design talked about a national curriculum, greater accountability in education, streamlining the use of education resources and the need for agreed key competencies in learning (Bartlett, 1991). At the national level the Federal Minister's paper *Strengthening Australia's Schools* (Dawkins, 1988: 4) set out clear directions for curriculum development by stating; 'We need a curriculum that is sound in content and which instils positive habits of learning, and attitudes and values such as initiative and responsibility, the pursuit of excellence, teamwork and competitiveness'. The link between education and the economy was clearly established in this document.

Three reports released in 1989, *Excellence and Equity* (MEYA, 1989), *Schools Renewal* (Scott, 1989) and *The Carrick Report* (Carrick, 1989) set the agenda for change in schools in NSW. *Excellence and Equity* (MEYA, 1989, 9) brought into being the current structure within the senior school through the creation of Key Learning Areas (KLA's). In the secondary school they were English, Maths, Science, Human Society and its Environment, Modern and Classical Languages, Technology and Applied Studies, Creative Arts and Personal Development, Health and Physical Education.

The large number of Other Endorsed Studies (OES) courses was drastically rationalised after the implementation of *Excellence and Equity* and converted to Content Endorsed Courses (CEC's) which offered an alternative to students who wished to stay on at school to gain an HSC but not necessarily want to undertake tertiary study. These courses proved to be popular with students although they were not regarded by some as having the same status as other subjects within the

school curriculum. Research and anecdotal evidence suggests that the academic tradition was being exerted in a number of ways within schools. Firstly, parents expected their children to take courses that would enable them to go to university (Maas, 1988; Haeusler and Kay, 1997). Secondly, it was common practice that schools placed the CEC's on the one line of the timetable as a type of gesture to those who were not able to cope with the more academic courses. Thirdly, these less academic courses became labelled as so called 'vegie' courses. This related in particular to courses such as Maths in Society and latter Maths in Practice. Fourthly, the Board of Studies, a statutory body which controls the curriculum in NSW, maintained an academic tradition in the senior school through the rules governing senior studies and the Tertiary Entrance Rank (TER) which is a score ranking students for the purpose of tertiary entrance. Through these mechanisms operating overtly and covertly within the school community, students, parents and the wider community saw the TER as the students' result in the HSC and to some extent a measure of a students worth. The literature (Haeusler and Kay, 1997) and experience suggest that the TER is an important factor especially when related to subjects such as 3/4 unit Maths, Physics and Chemistry.

Schools Renewal (Scott, 1989), known as the Scott Report, argued for major reforms of the structures governing primary and secondary education in NSW and advocated a major devolution of responsibilities and authority for the administration of schools to the regional, community and school level (Scott, 1989: 7). One of the outcomes was the establishment of School Councils with the devolution of some authority to the school community, especially in relation to school finances. However, the nature of the curriculum in the senior years had changed with the introduction of the KLA's outlined in *Excellence and Equity* (MEYA, 1989). At the same time the Education Reform Act of 1990 (MEYA, 1992) ensured the central control of the curriculum through the Board of Studies. It could be argued that schools had lost control of the very thing that was necessary to provide for the needs of their students; the curriculum. The advances made in school-based decision making during the 1980's were changed through government policy and became more restrictive and structured (MEYA, 1989).

What the reforms achieved was a fulfilment of a political agenda to make schools more accountable at a time when curriculum control was to be more centralised.

The *Carrick Report* (Carrick, 1989) was instrumental in recommending the establishment of the KLA's, outlined in *Excellence and Equity* (MEYA, 1989) and the establishment of an independent Board of Studies (Carrick, 1989: 141). The establishment of the Board outside the Department of School Education and the consequent development of curriculum requirements, pathways and acceleration options have had a major impact on the curriculum thinking within schools; such as the mix of subjects to offer, how to meet the needs of all students in the senior years of schooling and programming other relevant courses to meet these needs such as JSST, TRAC and Vocational Education. The Board of Studies, through the rules governing the HSC, still ensures that the academic curriculum is maintained even though the vocational courses are offered within the school or through TAFE.

In contrast, a recommendation of the *Carrick Report* (Carrick, 1989: 151) was to support the notion of a broad curriculum which balances general education for life with education for work. It emphasised that general education is a preparation both for life and work. Carrick felt that maintaining differences between the academic tradition and the vocational education strands within the curriculum was counterproductive given the changing nature of society, technology and economy. He supported the idea of a general education that argued for the convergence of the two strands of vocational and general education into one unified curriculum structure on the grounds that all education was a preparation for both life and work.

The *Directions* (MEYA, 1993: 1) document released by the NSW Minister for Education recognised that society and education were changing, that the traditional division between academic and vocational studies was no longer appropriate and that the inflexible system that students were in, also had to change. The paper set out the various pathways that students could take towards their HSC. This was the first time that alternatives to the traditional academic pathway were set out in

government and education policy. This recognition and change in NSW was consistent with developments and reports generated at a federal level (see below). Thus, growing out of the economic rationalist debate of the 1980's, was a realisation that society and the workforce had indeed changed and it became clear the traditional approach to the curriculum was no longer providing young people, or society with the knowledge or skills needed for their full participation in the social, cultural, economic and political life of their society (Middleton, 1992: 7).

At the federal level the *Common and Agreed National Goals for Schooling in Australia* (AEC, 1989), the Hobart Declaration, *Young People's Participation in Post Compulsory Education and Training* (Finn, 1991), *Employment Related Competencies for Post - Compulsory Education and Training* (Mayer, 1992) and *Australian Vocational Certificate Training System* (Carmichael, 1992) all supported and promoted policy that would bring about greater accountability of education, supported the development of nationally agreed upon goals for secondary education, promoted the development of skills and competencies that would be 'essential' for people entering the workforce in the future, and provided an opportunity for entrepreneurial influence in education.

Finn (1991) advocated the convergence of academic and vocational education and along with Mayer (1992) supported the aim of the Hobart Agreement (1989) that schools should provide a foundation for further education and training, in terms of knowledge and skills, respect for learning and positive attitudes to life-long learning (MEYA, 1989: 12). Carmichael (1992) advocated a nationally recognised qualifications framework that clearly defined the levels within various training programs that students could follow starting at level 1 on completing year 10 and that allowed transferability of knowledge and skills from one job to another, from one training institution to another and from one state to another. These reports and their recommendations at a national level, along with the changes in the NSW education system, started to bring together the two strands of academic and vocational education. In NSW the pathways advocated in the *Directions* (MEYA, 1993) paper are now more accessible to students, there are courses, for example, that provide for a TER, are nationally accredited by industry, offer dual

accreditation and allow for credit transfer of courses from school to TAFE (Dept. of School Education, 1995).

The academic curriculum, although still in place, does not have the same degree of control over the directions that students can follow. The rules governing tertiary entrance are still controlled by the Board of Studies (Education Reform Act, 1990) however McGaw (1997) recommends changes to the curriculum by the Board, and how tertiary entrance procedures should occur and how the university entrance score is calculated. The pathways of the 1995 HSC students indicate that 37% intend attending university in 1996, 33% intend to undertake vocational training and 20% intend finding work (McGaw, 1997: 2). The intention that the final two years of schooling would lead to matriculation for tertiary study does not appear to be as relevant in the 1990's as compared to the years up until the early 1980's.

Recent changes in policy, design and structure of the curriculum allow a student a greater choice on leaving school. The implications of the policies and how they relate to the process of subject selection in a particular school are examined in Chapter Four. Policy revision and directions in NSW schools in recent years have attempted to manage the increase in retention and provide a range of subjects and courses in the senior school curriculum that caters for the needs of their students and the future pathways they wish to follow. Students are staying on at school longer and fewer are going straight to university from school. There is a recognition, through the policies already in place and recommendations proposed, that schools need to provide a curriculum to cater for all students irrespective of their future post school options. How that is achieved within the school context is a difficult and continuing problem. What subjects students choose and why they choose the courses they do remain important questions.

Retention and trends in participation.

Retention to the final years of schooling is not a major issue in itself but it is crucial, taken in conjunction with subject participation data, gender, socio-economic status data and ethnic background, in developing an understanding of some of the influences on student subject choice. Getting students to stay on at

school does not appear to be the issue as it was in the early to mid 1980's although it was the intention of government to increase the participation rate of students in full time education or work related training to 95% by the year 2000 (Finn, 1991; Carmichael, 1994). To understand the changes in retention and its impact on the senior secondary school, in terms of for example subject and gender participation during that time, it is important to consider the trends that have occurred.

In 1957 the retention rate of students into the final year of schooling in Australia was 16% (McGaw, 1997: 4). By 1992 the figure was 77% (Australian Bureau of Statistics, 1992). The fastest increase was during the 1980's. There are a number of inter - related factors that provide an explanation for the increase in the number of students staying at school. They include government policy, social, economic and school factors. Ainley et al. (1984: 135) suggest that it is inappropriate to seize on one factor as a determinant of school retention but rather to interpret developments in terms of an interactive framework.

During the late 1970's and early 1980's there was a decrease in the availability of full time work, especially for young people. Earley (1981) suggests that the decline in job opportunities in the late 1970's was more rapid for girls as traditional sales and clerical jobs were restructured. In 1977 the number of girls staying on at school passed that of boys and has remained higher since (Johnston, 1990; Ainley and Sheret, 1992). The number of apprenticeships that traditionally took year 10 leavers, especially boys, also declined rapidly in the early 1980's (Sweet, 1988). At the same time there was an increase in the amount of part time work which was more attractive to students. One explanation proffered for retention in the early 1980's was the tendency for students to remain at school as an alternative to unemployment. The Ainley et al. (1984) study, on the other hand, found no direct correlation between local youth unemployment rates and local school retention rates. A Department of Education, Employment and Training (DEET, 1987) study confirmed these findings in a number of regions on a national level. Other explanations include structural changes in the workforce demanding higher levels of education from employees and changing community attitudes to education which placed more value on staying at school longer (Johnston, 1990).

As employment opportunities decreased, unemployment increased from 5.6% in 1981 to 9.9% in 1983 (Sweet, 1988: 31) prompting the Federal Government to take some action to provide for young people in the post - compulsory years of education. A number of Federal Government policies and programs can be identified which have supported an attempt to accelerate retention rates (Johnston, 1990: 1). The Participation and Equity Program (PEP) launched in 1984 (Commonwealth Schools Commission, 1983: 1) was designed to keep students at school, especially the more disadvantaged, and to foster equality in educational outcomes. In NSW secondary schools the Transition Education program provided alternative courses for students under the PEP program. Although these courses provided students with some useful skills there was no credit transfer for these skills into further training in the TAFE sector or into employment. Then, as now, the government emphasised the need for an educated population, that it was an investment in the future of Australia (Johnston, 1990) and that more opportunities emerge for those that have more education.

A clear influence on retention which emerged from research was that of socio-economic status. A DEET (1987) study found a positive correlation between socio-economic status and students completing secondary education. Williams (1987: 42), using nationally generated data, supported these findings and found that 67% of students from professional families completed year 12 as compared to 25% of students whose father's occupation was classified as unskilled. By the late 1980's McKenzie (1990) found that the lower socio-economic group participation had increased to 47% with the percentage of students from professional families remaining the same.

Maas (1988), researching low income families in Victoria, found that education was valued by most parents and they aspire for their children to stay at school to complete year 12 and move to tertiary study. This study may indicate a change in social attitudes to education reflecting a growing importance of education to financial security. The Maas (1988) study also indicated that parents encouraged

their daughters to stay at school longer than their sons reflecting the change in the job market for girls compared to the apprenticeship and TAFE options for boys.

Financial factors in influencing young people to stay at school have been studied. The Chapman and Thomson (1981) study in South Australia suggested that financial considerations were a deterrent to continuing in school. Financial assistance schemes such as AUSTUDY have been found to be crucial for some families in deciding if students should stay at school (Meade, 1982; Ainley et al., 1984; Braithwaite, 1986; 1989). Any change to government policy in this area is significant in supporting the continuation of students participation in the senior years of schooling and beyond.

McKenzie (1990) found for Australia as a whole the composition of the student population staying on at school changed during the 1980's reflecting more closely the general population of young people. Participation grew more rapidly from students from lower socio-economic backgrounds and more rapidly among those from English speaking than from non - English speaking backgrounds (Ainley and Sheret, 1992: 4).

The increases in retention brought a greater diversity of the student population to the senior school. It could be expected that the curriculum pattern and the subjects selected by students would change. Studies undertaken by Byrne (1987) and Hobbs (1987) in Queensland and Parker and Offer (1987) in Western Australia indicate that girls are less likely to select higher level Maths and the physical sciences. These subjects have a significant influence for tertiary course selections, especially those seen as being vocationally orientated such as Medicine and Engineering. Ten years later however, Teese et al. (1995) found in a national study that girls had made significant inroads into higher level Maths and Chemistry courses therefore increasing their participation in tertiary courses in high demand. Ainley et al. (1990; 1994) using longitudinal data from the national *Youth in Transition* (in Ainley et al., 1994) study found significant changes to participation in the Human Society and its Environment KLA where traditional subjects such as Geography, History and Economics decreased. In NSW Business Studies and Legal Studies have been

incorporated into the curriculum since 1990 and have shown significant participation rates. The Arts KLA improved participation, so has Personal Development, Health and Physical Education and Computer Studies. In the sciences participation in the physical sciences has decreased but increased in the biological sciences.

The *Youth in Transition* study (in Ainley et al. 1994) indicated a decrease in the proportion of students enrolling in external, public examination subjects indicating a rise in the number of CEC's that were not publicly examined. It may also indicate a change in attitude by the school community to these courses. These findings, along with a greater acceptance by the wider community of education as necessary for future education and/or work suggest that the senior secondary school has a changing focus and that the academic curriculum may not be seen as important as it was. Research suggests a different student population in senior secondary schools require different courses to be taught in different ways to serve different post school options. In NSW 9.5% of the 1995 HSC year graduates were not eligible for a TER but eligible for an HSC. Since the early 1980's changes in NSW secondary schools curriculum have broadened opportunities for all students and policies have encouraged the convergence of the academic and vocational education strands rather than encouraging the different or alternative pathways, for example JSST, that dominated the 1980's. There appears to be a greater acceptance of the diversity of students and curriculum at the school level.

An understanding of the trends do provide the structural parameters within which students make particular subject choices. However the process is more complex than the manipulation of policy and curriculum by government and educational systems or studying trends in retention and participation. It is useful to consider issues of gender, ethnic background and socio-economic status to add another perspective to the question of subject choice in the senior school.

Direct Influences on Students' Subject Selection

Gender

Much of the earlier work centred around gender where support for particular subject clusterings was a reflection of a certain mental type and that girls and boys were different and showed different abilities and interests (Lewis, 1913; Pritchard 1935; Shakespeare, 1936). Gender differences were examined and found to be related to subject preferences. Where gender differences are explained, it tends to be in terms of the different mental lives that girls and boys are said to lead (Ainley et al. 1994). These differences in gender were not seen as evidence of social processes but rather inherent differences. Brown and Fitzpatrick (1981), although supporting the earlier research, also suggested there was a strong socialisation process taking place, related to gender, that schools for example reproduced and grouped students accordingly and therefore choices were made in this context.

In recent years considerable literature has been developed concerning subject preference and choice, especially for girls, (Hobbs 1987; Johnston, 1990; Johnston and Spooner, 1992, Ainley et al. 1994; Teese et al., 1995). Both Hobbs (1987) and Ainley et al. (1994) found that males predominate in the Maths, physical sciences and technical studies subjects while females predominate in Home Economics, languages other than English, and in the arts courses. Females were more likely to choose a mixed or eclectic course rather than a specialised course (Johnston and Spooner, 1992). Although girls are taking Maths and Science courses they tend to choose those that are less likely to be prerequisites for tertiary courses leading to specific vocationally orientated careers. Teese et al. (1995) suggest that boys tend to be more vocationally orientated than girls but girls tend to predominate in English, languages and humanities.

Teese et al. (1995) examined the pattern of course enrolments for females and males in the senior secondary curriculum in Queensland schools between 1966 and 1992. Other than the addition of more courses they found that the gender bias between courses remained relatively unchanged. Johnston and Spooner (1992), in a study of two independent girls' schools, found some evidence to suggest that the subject preferences of girls is moving more towards that of the boys but that the

reverse is not true. They also found that most girls choose Maths in the senior school, not because they think it is relevant but because they think they need it. Stobart et al. (1994), investigating factors influencing students' entry patterns in subjects, noted that girls tended to view Maths in very functional terms - a hurdle to be cleared but it is unlikely to be of any further use.

If, as Johnston (1990) and the Board of Studies (1996) suggest, the traditional academic curriculum in the senior years tends to favour males, but more females are enrolled in the senior years than ever before, what are the implications for females in relation to their choice of subjects? The reason that males appear to be favoured relates to the nature of the prerequisite nature of some courses for tertiary entrance and study. This is explained in more detail below. Teese et al. (1995) found that school is not benefiting girls as they are over represented in subjects that lack effective vocational links as mentioned previously. The courses that are in highest demand at university such as the Health Sciences, Science based courses and Engineering and have specific vocational links tend to also have specific subject prerequisites attached to them, in particular the higher Maths and sciences. These are the subjects that girls tend not to take to the same extent as boys at the senior secondary level

The research makes the point that subject choice within the curriculum hierarchy is crucial, with the result that females are not gaining advantages they should, given the high representation in the senior years of schooling. One major implication is that the choice influences one's chances of entry to a tertiary institution. As Johnston and Spooner (1992) point out this influence occurs in three ways, usually in combination with one another. Firstly, the combination of subjects that students choose is important in order to gain the best possible TER, that is, choosing subjects and courses in which they believe they can achieve good results. Secondly, certain subjects tend to receive a scaled up weighting at the HSC, such as higher courses of Maths, Physics and Chemistry as they tend to be taken by the more able students (Cooney, 1997). These courses are, in reality, only scaled up for individual students if the student performs well in the course (Board of Studies, 1996). Thirdly, universities place prerequisites on certain courses which influences the

course chosen in the senior school as well as effectively maintaining a curriculum structure in the school to cater for these fields of study. For instance, entry into Engineering and Science courses require 2 or 3 unit Maths with either/or Physics and Chemistry. In schools where students study 5 - 6 subjects, and where English is compulsory there is only one or two other possible choices. This effectively maintains a curriculum structure in the school that favours the academic tradition (Lamb, 1996) which caters for males more effectively than females. For instance English takes one choice, Maths one choice then Physics and Biology one choice and Chemistry one choice. Physics and Chemistry, because of their requirement as pre-requisites for some tertiary courses have to be on different lines on the school timetable. Unless the school is very large there tends not to be enough students to warrant splitting the subject across different lines. Girls who want to study humanities and the arts usually have more difficulty gaining the combinations of courses they want due to the lack of flexibility in, or organisation of the school timetable. This is for similar reasons to those above; the arts and humanities tend to compete against one another for the remaining two spaces on the timetable and, as research suggests, girls select more humanities and language courses. Consequently they are more likely to have to compromise their course selection pattern (Johnston and Spooner, 1992). Because of the competitive nature of courses on the school timetable it could also be argued that girls are being forced to undertake studies in Maths and or Science for their final years of schooling. Ainley et al. (1994) suggest that there is an increase in the number of girls undertaking Chemistry. The reason could be the competitive nature of the timetable or it may be the requirement of tertiary institutions for health related courses, such as nursing that attracts significant numbers of females.

Although girls achieve well in school the options and opportunities for them post school are less secure than for boys (Yates, 1993). Teese et al. (1995) found that superior performances in English, Languages and Home Economics did not result in girls gaining any advantage in relation to tertiary selection. Girls might stay at school longer than boys to prepare for an entry to base - level clerical and typing careers or to enter nursing. They appear to be advantaged educationally but in

terms of schooling, work and income patterns, they are actually entering less secure and/or less well rewarded employment (Yates, 1993: 32).

At the tertiary level females outnumber males in undergraduate courses. Williams (1993: 27) suggests that much of the improvement in female participation rates has been due to an 'upgrading' of nurse and teacher education, with nursing especially being considered a 'typical' female career choice. Graetz (1991) argues that despite the achievements at school females are less likely to undertake trade courses and higher degree programs.

Gender is considered a significant factor in subject selection and the question of girls' disadvantage is addressed in this research study. However the complexity of subject selection suggests that other inter-related factors are also significant. Another such issue is social background, particularly socio-economic background.

Socio-economic Status

In Australia research has well documented the relationship of low socio-economic status with educational disadvantage (Connell, 1980; Keeves, 1987; Williams et al., 1993). Studies by Ainley et al. (1990), Johnston and Spooner (1992) and Teese et al. (1995) suggest a strong relationship between socio-economic status, as measured by parental occupation, and subject selection at the senior school. Teese et al. (1995: 91) suggest that social structure is the platform on which gender identities are constructed and reconstructed according to the flow of cultural values and perceptions through which different social groups seek to maintain the distinctiveness and the security of their life-styles as well as their economic well-being. Girls from upper class homes, when they choose to do Physics, achieve higher grades than boys except from their own social background. Likewise, boys from upper class homes who choose courses on English Literature achieve higher grades than girls except from their own status group. Teese et al. (1995) concludes that the socio-economic groups of the students have more significance in the choice of subjects than does gender and that the participation of males and females in the range of curriculum options is of lesser significance.

Wood (1976) argued that subject choice was a myth and suggested that students of lower ability and from working class backgrounds had no choice as the school reinforced social structures and allocated children to their position in society. Taylor (1983) also took this view which was one that denied any choice to students at all. Yet the argument that the school, as a reflection of the social structures in which it exists, is the only determinant of the choices of students, is simplistic. Many factors relating to the 'fabric' of the school are important such as school climate, school leadership and management and curriculum. Certainly the structure of the school, its curriculum and timetable do shape choice as Breton (1972) suggests but it is one of a number of complex factors.

Ainley et al. (1990: 61) found that the enrolments in the physical sciences were higher by those students whose parental occupation was professional or managerial. They found that the participation rate in Maths - Science course combinations of students whose parents had completed a higher qualification was double that of students whose parents finished at the School Certificate or equivalent. Jones (1990) and Airley et al. (1994) confirm this when researching single sex schools. They found that many of these schools, being independent and having clients from a higher socio - economic group, resulted in many of the students choosing subjects that are more vocationally orientated than those that are more self development and interest orientated.

Family Support

Johnston and Spooner (1992) working in two independent girls' schools in Queensland and Victoria found that parental support was a major factor in subject choice. They also found that where there was family support and encouragement, financial support, and where parental expectations were realistic and parents understood the education and school system that students made more informed subject selections for their senior years of study. Connell et al. (1982: 186) found in earlier studies that families are very powerful institutions, and their influence over their young members registers in every part of their lives. Relationships are vital and the relationships within the family will affect the discussion about subject selection and post school options of students. Without supporting deficit theory,

which categorises people into groups and makes assumptions about them, it is important to note that different outcomes emerge from students who have the same family background suggesting other factors exist to work in parallel with the family, both positively and negatively. In developing a conceptual model for subject selection the family variable is one that is not easily defined or logically determined. It must be recognised that family support mechanisms exist and research can not necessarily unlock the complexity within the family and its place in society. Just as the socio-economic status of students is significant in subject selection so too are the cultural influences that exist within the family network.

Ethnic Background

Where a student is situated within society is not just a reflection of the economic status of their parents. In Australia cultural diversity is reflected in our society and some research has focused on the factor of non - English speaking background (NESB) to determine if there is a significant difference between NESB students and English speaking background students.

Ainley et al. (1990) found that NESB students were more likely to take Maths - Science combinations of courses. Year 12 participation of NESB students was double the rate of other students. Hartley and Maas (1987) found in their study of Vietnamese students that both males and females had high participation rates in Maths - Science courses and that girls were moving into the 'non - traditional' areas of Engineering and Electronics. Myhill et al. (1994) in a study of NESB youth in South Australia and Western Australia found that recent arrivals were more likely to choose the Maths - Science course combinations than students who had been in Australia four or more years. One reason suggested was that new arrivals had poorer English and found they were able to cope better with these subjects than the humanities. However, those students who had been in Australia for four or more years, had a higher participation rate in the Social Sciences than English speaking students.

Johnston and Spooner (1992: 14) found for some cultural groups there was an expectation that the males would undertake subjects in order to secure a good

financial future whereas education for females was seen as a preparation for marriage and family life. Their research suggested cultural influences on the way students choose subjects for senior or secondary studies but they suggested further research was necessary to determine if cultural influences were significantly different to groups of English speaking background students. One such area is in relation to the Aboriginal and Torres Strait Islander students.

Aboriginality

Limited research has taken place in relation to the retention, participation and selection of subjects by Aboriginal students. In NSW secondary schools the retention rate for Aboriginal students to year 12 was 29.2% in 1993 compared to 66.6% for all students (DSE, 1994). This represents a considerable increase from 10% in 1982 (Johnston, 1990: 10). Some of the improvement in retention may be attributed to the 'Staying On Program' developed by the Department of School Education that assists schools with students from a lower socio - economic status and schools where there are significant Aboriginal student participation. Maxwell et al. (1997), in their study, found that the participation rate for Aboriginal students was low compared to the rest of the population although Ainley et al. (1994) found that location had a significance in enrolment and participation patterns of Aboriginal students.

The Ainley et al. (1994) study found that Aboriginal students tended to have low enrolments in the physical sciences, Maths and languages other than English, and high enrolments in technology subjects and subjects in the Personal Development, Health and Physical Education K1A.

Summary of Indirect and Direct Influences on Students' Subject Selection

The indirect influences of government and educational policy, along with the more direct influences of socio-economic status, gender, and ethnic background are necessary and important factors in the study of student subject choice. These factors and data generated from their study suggest patterns and trends that are useful in developing an understanding of the major influences on students as they make their choices. They are important indicators in guiding research questions and

are good reference points on which to make broad judgements about subject selection processes. However, the issue of the subject selection by students for the senior years of schooling is very much a contemporary issue as it changes from year to year as new courses are added and as different students select courses they think are appropriate to them. There is specific research at the school level that focuses on a particular variable such as gender. However, there are no case studies of individual schools which seek to explore the issue of subject selection to assist them in future practice. There is a need to examine what actually happens at the school level in relation to subject selection to determine if the trends at national or regional levels are similar or different to what happens in the school, as individual schools, even in the same district, vary (Teese, 1995).

Reasons for Subject Selection - Other Indicative Factors

In recent years research has sought to personalise the questions asked of students to find out what subjects they choose for their final years of schooling and why they make the choices they do. These reasons are referred to as 'other indicative factors' (see page 18). Broadly defined the factors are intrinsic, extrinsic, instrumental, organisational and significant other reasons for choosing particular subjects (Ainley et al., 1994: 143). Intrinsic reasons are those associated with interest and enjoyment of the subject. Extrinsic reasons are those associated with future work and study, and subjects are considered useful and practical. Instrumental reasons are those associated with gaining a good TER or 'good' marks and relate particularly to tertiary entrance requirements. Organisational reasons are those associated with the school, timetable lines and how courses are offered. Significant other reasons are those associated with family, friends and teachers.

Students frequently use terms such as interested in the subject, enjoy the subject, have ability to do the subject or the subject will be useful later on, to describe their reasons to choose particular subjects (Hobbs, 1987; Ainley et al., 1990;1994; Haeusler and Kay, 1997). Hobbs (1987) researched the subject selection of students in the senior secondary school in Queensland. This research indicated that students chose subjects that interested them, were needed for their future career,

were seen as useful and in which they did well. Ainley et al. (1990; 1994) using *Youth in Transition* data, a large national data base, found that both intrinsic and extrinsic reasons were identified by students as major factors in choosing subjects. They found that the reasons given depended on the subject selected and they differed between males and females. Ainley et al. (1994: xxi) identified the following factors as significant in reasons why students choose the subjects they did.

- * female students tended to nominate intrinsic reasons whereas males tended to nominate extrinsic reasons.
- * Enjoyment or interest were the most frequent reasons mentioned for choosing subject areas such as arts, physical education, technical studies, languages, humanities and biological and other sciences.
- * Relevance to work or further study were the most frequent reasons for choosing subject areas such as physical sciences, Maths, Economics and Business and Computing Studies.
- * Compulsion was the most frequent reason mentioned for studying English.

Haeusler and Kay (1997: 35) researched students in the Riverina region of NSW. Using the criteria of job help, future, TER and prerequisite, they found a consistent pattern of importance was selected by those students undertaking Maths and Science and more 'traditional' academic subjects than for Creative Arts and Social Science subjects. They suggested that there was a hierarchy of career importance placed on these subjects from Science and Maths at the top, then English, with Social Science and Creative Arts seen as the least relevant to students' goals. In terms of interest, subject choice was seen as more complex and associated with gender. Creative Arts then Social Science were rated most important by students in this study in relation to interest. The influence of parents, as a reason for subject selection, was rated low by students except for the selection of Maths and to some extent Science. They suggest that this may reflect the importance of these subjects placed on them by the school and the relationship Maths has to the TER and scaling. The results of the Haeusler and Kay (1997) study suggest that Maths is studied to serve instrumental functions and because of anticipated success, not because of intrinsic interest.

Studies by Garratt (1985) and Haeusler and Kay (1997), when asking students to give reasons for subject selection found that students indicated that their parents had little influence on their subject selection. Johnston and Spooner (1992) suggest that parents indirectly affect their children's subject choices through a complex interaction of factors such as role models, stereotypes, financial circumstances, expectations and information. Overseas studies, Abendroth (1985), in the USA and Beukes (1986), South Africa, by contrast, found that parents had a significant influence in the subject choices of their children.

Some difficulty arises in relation to the understanding of influence of parents and reason for subject selection. In some studies students were asked to give the main reasons for selecting the subjects they did for the senior secondary school. What these studies indicate is that students put reasons of interest in the subject, enjoy the subject, the subject is needed for future studies in front of parents as a reason for doing the course. In other studies students were asked who were the main people who influenced their choices of subjects and parents were indicated before friends, teachers and school counsellors. Thus the differences arise from methodological considerations.

In relation to advice by teachers and counsellors students rated their influence on subject selection as insignificant (Garratt, 1985; Beukes, 1986; Ainley et al., 1994; Haeusler and Kay, 1997). Myhill et al. (1995) in their study of NESB youth found that access to Careers Education and counselling was an important factor in subject selection and future education and/or work aspirations. They also found that the lack of information, especially in community languages, a lack of understanding of the school by NESB parents and the processes within the school were barriers to informed choices in the senior school.

Both Ainley et al. (1994) and Haeusler and Kay (1997) found that the size and type of school were regarded as insignificant as reasons for selecting subjects by the students sampled. Ainley et al. (1994) found that where the senior year cohort was less than 50, students were limited by the selection of subjects offered by the

school. The research found that the degree of disadvantage didn't drop appreciably until the cohort was over 200. Fra ne Factor theory (in Ainley et al. 1994) suggests that students can only choose what is offered but the way the school develops a balance between the competing factors is important as the curriculum provided may or may not benefit all students. Usually the demand by students for courses is a crucial factor in supplying the course. This may change from year to year and schools have to weigh up the cost of resources to offer subjects that may not run from year to year. Johnston (1990) suggests that the organisation of the senior school has to be flexible enough to cater for the diversity of the student population and the range of curriculum choices they make. How subject choice is organised in the school affects many aspects of the student's experiences at school as well as options for post school education and training. In practical terms this is difficult in a public high school where schools are staffed on the overall enrolment of students from years 7 - 12.

Instrumental reasons were mentioned by students selecting Maths and Science (Ainley et al., 1990; 1994, Haeusler and Kay, 1997) as being relevant to gaining good marks in the HSC and to a lesser extent gaining a high TER. It is suggested that the 'scaling' procedures at the HSC and the prerequisite provisions at a tertiary level for Science, Maths and health related courses require one or more of the Maths - Science course combinations to gain entry are factors in these choices. Haeusler and Kay (1997) suggest that the changes in the 'scaling' procedures in the last few years have had an impact on the enrolment patterns in Maths courses in NSW secondary schools. The TER was found to be of decreasing importance in students' choices compared to other factors such as assistance in finding a job, prerequisites and future studies.

'Other indicative factors' are a major focus for this research study as they are specific to the student and the choices they make. They represent an important development in the research seeking to find answers to the question of why students choose the subjects they do for the senior years of schooling. These indicative factors may also be useful, in the longer term, in helping to develop

strategies that could be implemented at the school level to assist students with their subject choices. One of the most important factors is that of interests.

In the literature the factor of interests appears as an intrinsic factor as well as having an important impact in relation to extrinsic factors, especially in terms of career futures. In the Ainley et al. (1994) study it was suggested that a convergence of thinking between the psychological, career guidance focus of interests and the sociological focus of interests, is starting to emerge. It is worthwhile, in terms of the development of a conceptual model of subject selection to explore this issue a little further.

Interests in Relation to Subject Selection

The concept of subject interest appears in the literature as having a variety of meanings to different people. In the Hobbs (1987), Ainley et al. (1990; 1994) and Haeusler and Kay (1997) studies, 'interests' referred to finding a subject enjoyable and interesting and was linked to the factor of intrinsic reasons for subject selection. This is distinct from interests in relation to relevance to work on leaving school or future educational plans that the above studies regarded as extrinsic reasons for subject choice. Noting this, Ainley et al. (1994) suggests, from the literature, that a convergence of the two concepts is emerging which may be able to assist in developing a conceptual model of subject selection. Ainley et al. (1994: 19) found that the factor of interests was found to be very strongly related to subject preference which took into account, by the student, both school subjects and preferred future employment and/or training. These findings support the notion of convergence between the intrinsic and extrinsic aspect of interests and suggests that students select subjects based on both. They will choose some subjects because they like and enjoy them and others because they maybe useful and/or necessary for future education, training and/or work.

Russell and Smith (1979) suggested that sex stereotyping of occupations leads to particular subjects being taken by students. The later work of Graetz (1991) and Williams (1993) mentioned in relation to gender supports this finding. In their work, Russell and Smith (1979) were making the link between vocational

aspirations and subject choice, recognising the influence of vocational psychology in relation to career and subject choice. Care and Naylor (1984) took the view that interests were an expression of personality and these traits can be detected underlying any object of interest to the individual. They argue that subjects, as an object of interest, are likely to reflect these traits. Care and Naylor used the work of John Holland (1985) to support their argument. Holland's theory suggests that people choose vocations based on their interests of which there are six basic types; realistic, investigative, artistic, social, enterprising and conventional. He arranged these in a hexagon and suggested that combinations of these identified an area of preference for a future vocation. From this it is argued that students could be assisted with appropriate subject choices.

Ainley et al. (1990) use categories of interest developed by John Holland (1985) and link subject choices to interests in various fields of work. For instance Maths was linked to high investigative interests as was the physical sciences and the choice of the later was linked to low interests in the artistic and social fields. This study also helped to explain some gender differences where girls expressed strong interests in the social relevance areas which supports the findings of Teese et al. (1995).

An analysis of the literature suggests that a convergence of thinking is taking place with regard to what defines an interest in relation to subject preference and choice.

Conceptual Model of Subject Selection

As pre-empted earlier in the chapter there are three main areas that relate to the development of a conceptual model of subject selection. These include; the indirect influences, direct influences and reasons for subject selection. In Figure 4 below, these areas are brought together to indicate the relationship they have to one another and to the student making the choices. The influences and reasons are shown as concentric circles around the individual student and their distance from the centre represents the degree of influence on the student. The outer circle represents the indirect influences of government and education policy as well as the rules governing the senior years of schooling. These policies have an overall

influence on subject selection in the final two years of school. The smaller circles represent the reasons for subject selection and they overlap the direct influences on the student. There is a suggestion in the literature that there is a strong link between the influences of family, socio-economic status and ethnicity and the reasons why students select the subjects they do for the senior years of schooling.

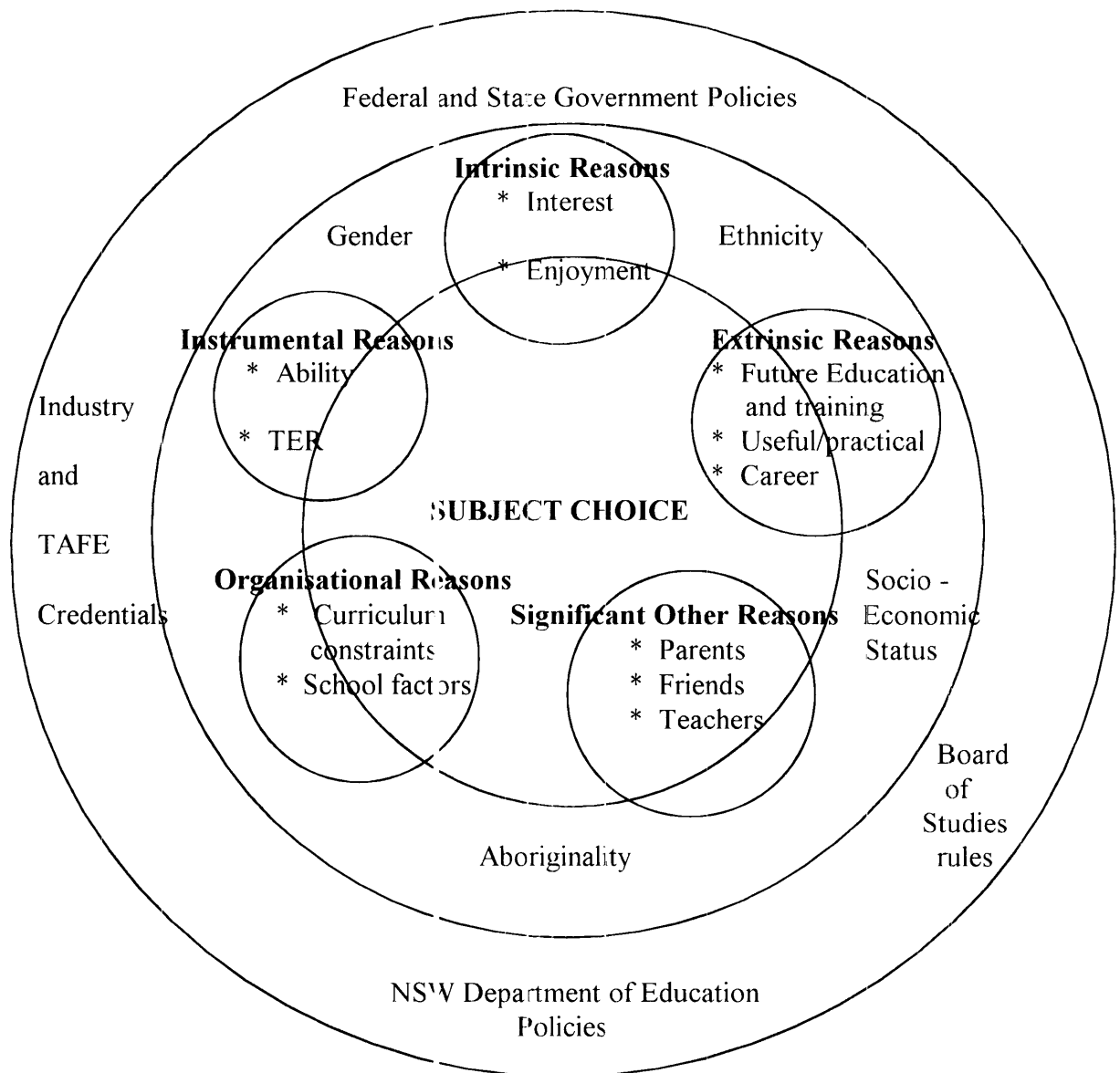


Figure 4. **CONCEPTUAL MODEL OF SUBJECT SELECTION.**

The reasons illustrated in the model are those that are internal and external to the student and directly and indirectly relate to actual subject selection. In the model there is no suggestion that one factor or reason is any more important than another as different students are influenced differently by individual factors to different degrees.

In terms of practice within the senior secondary school the model is a guide to the range of influences on students and the reasons they choose the subjects they do for their final years in the secondary school. Running parallel to such a model has to be a strategy to manage the process of subject selection at the school level so that as many of the influences and constraints can be discussed and worked through before decisions are made (see Chapter four). As McMahon (1992) suggests the decisions that students make for the senior years of schooling corresponds to career decisions as well and it is important to get the pattern of subject selection right for the individual student to avoid changes in subject selection at a later stage or disappointment with the results they receive. The case study in Chapter Four shows how this process works in a comprehensive high school. Also the process proposed by Johnston and Spooner (1992) has merit and is discussed below.

The process that Johnston and Spooner (1992) suggests is in the context of the secondary school and focuses on the background of the student, prior academic achievement of the student and school factors. What is significant about the process is that it is designed for practice within the school and stresses the need for adequate support services to assist students with the subjects they choose. In terms of the content of the process it can be readily incorporated into the model, especially in relation to school factors such as size and support mechanisms within the school. Although the process model proposed by Johnston and Spooner (1992) provides useful guidelines there are a number of other factors which need to be considered. These include, the nature of the school, the inter-relationships within the school and the involvement of significant others, such as parents, in the process of subject selection.

The development of a model of subject selection highlights some issues relating to the selection of courses for the senior years of schooling and the combination of these courses. Firstly, the literature suggests that different criteria are used by students for different subjects. That is, some subjects are seen as being more important for future education and/or training and career prospects while other subjects are seen as interest areas or subjects that a student enjoys. Secondly, the complexity of the inter-relationship of the factors associated with subject selection is different for different students. The inter-relationship of factors such as gender and socio-economic status can be very significant. Trends are useful indicators of what students think and what subjects they choose at a particular time although the degree of importance of each variable for individual students is difficult to determine.

Summary

From the literature it is clear that there are no simple answers to the question of why students select the subjects they do and the influences that are placed upon them in the process. The literature suggests that certain factors seem to be more important than others as influence; and reasons for choosing particular subjects and courses. Further, there appears to be a convergence between intrinsic and extrinsic reasons with the prospect that a theoretical model of subject selection can be developed that incorporates all the factors associated with the choice of subjects. The model developed above attempts to include social influences, government and educational policy, school and geographical factors, student background, psychological and vocational attitudes and values.

CHAPTER THREE - METHODOLOGY AND RESEARCH DESIGN

Introduction

What subjects students choose, what influences their choices and the reasons why they make the choices they do for their senior years of schooling is the purpose of this research study. Subject selection for the final years of schooling is a contemporary issue with a range of inter-related complex factors impacting on students' decision making processes. The review of literature and the conceptual model of subject selection in chapter two explored the relationship of the variables to each other in relation to the student.

This chapter seeks to explore and explain the nature of competing methodologies, the research design and methods used to gain a better understanding of the influences upon and reasons for subject selection in the senior years of schooling.

Competing Methodologies.

There are two broad methodologies used for conducting research. The first is the quantitative method. This is research undertaken in a controlled environment predominately with large numbers of "subjects". Its starting point is the null hypothesis with the researcher seeking facts and/or causes to phenomena with little regard for the subjective state of the individual (Bogdan and Taylor, 1975: 4). Researchers perceive reality in what is often described as an "objective" manner, external to the individual and see the world around them in an ordered way, governed by uniform values and only made possible by those values (Cohen and Manion, 1994). The researcher tends to be motivated to enhance the fields of knowledge in a particular area through the process of "testing" phenomena against the facts of reality and reasoning. An important outcome of the quantitative method is the ability to generalise findings to the real world, to explain nature as it really is and how it really works (Guba and Lincoln, 1989).

For the second method, qualitative, a definition is more difficult. Leedy (1993: 140) defines it as a creative, scientific process that necessitates a great deal of time and critical thinking, as well as emotional and intellectual energy. The researcher must have a true desire to discover meaning, develop understanding and explain

phenomena in the most thorough way possible. Leedy suggests that the researcher is motivated by subjective realities such as a concern with human beings, interpersonal relationships, personal values, meanings, beliefs, thoughts and feelings. The researcher seeks to understand people from the 'inside out' as compared to the objective 'outside in' perspective of the quantitative researcher (Bogdan and Taylor, 1975: 9). The outcome of qualitative research seeks to develop an understanding of the complexities in a particular situation through the interaction of a number of people who are self critical and self analytical of their work. The findings of qualitative research, as a consequence, may not be as readily generalised to other situations as with quantitative research.

In both methodologies there needs to be a systematic process, involving time, energy and critical thinking. They differ in the context in which they collect data, the methods of collecting data and the perspective of understanding they wish to gain from the study. Both methods approach research questions from different perspectives and therefore develop a different view of reality. Historically the quantitative and qualitative methodologies have been in competition with one another with claims and counter claims as to the worthwhileness of each others work in particular settings. The competition has abated with a realisation by each side of the debate that the methodologies have a particular purpose in particular settings or situations. Guba and Lincoln (1989) suggest that restricting research to a particular paradigm is counter productive to developing effective research and understanding the nature of the problem studied. Although they build on the qualitative methodology in proposing their 'Fourth Generation Evaluation' they suggest that the claims, concerns and issues of 'stakeholders' can be explored through a combination of the quantitative and qualitative methodologies. There is now a tendency, especially in the social sciences, for both methods to be used in various forms. The reason to do so is to provide a greater depth of understanding for the research study.

As this research study sought to understand the nature of students' subject selection for the senior secondary school it is asserted that there are a range of variables that assist students reach a particular decision about the subjects they

study for their final two years of school. It is also asserted that the decision that is finally made by individual students is not necessarily the only one possible. Given this underlying belief the research study utilised a quantitative methodological perspective but the researcher was conscious of the need to develop multiple methods of data collection (Maykut and Morehouse 1994).

With this in mind the research study attempted to make use of both the quantitative and qualitative methodologies using triangulation techniques to map out the richness and complexity of human behaviour by studying from more than one perspective (Cohen and Manion, 1994: 233). There are a number of definitions of triangulation as it depends on what the researcher is seeking to do. For this research two definitions are used. Firstly, methodological triangulation is the use of two or more methods of data collection in the same aspect of human behaviour (Duffy, 1987: 131). In this research that involved the use of interviews and a questionnaire as well as document analysis and participant observation. The second type of triangulation used is data triangulation where a variety of sampling strategies are used (Duffy, 1987).

The following explains and justifies the methods used and details the design, collection of data and data analysis.

Research Design

The research study was undertaken in the context of a single school (School A) as a case study where, as a practising teacher, I was ideally placed to be part of the decision making processes affecting student subject choices. This process is clearly outlined in Chapter Four. The work of Johnston and Spooner (1990), as mentioned in the literature, is important in understanding the process of subject selection in the senior secondary school. To fulfil the purpose of the research the following methods of data collection were used. Firstly, a survey was developed in the form of a questionnaire which was completed by year 10 students (N = 111) during term 3, 1996 who were making their subject choices for year 11, 1997. Secondly, 10% of these students were interviewed. These interviews were conducted in Term 2, 1997, six months after the initial questionnaire was completed. The purpose of the

interviews was to clarify some of the survey data and to seek individual student assessment of their situation after being in the senior school for 14 weeks. The interviews also acted as a means of data triangulation. Thirdly, the process of subject selection within the school was evaluated through the analysis of documents and meetings minutes. Although specific documents and meetings relating to this particular group were used extensively, the understanding gained from the process and discussion from previous years was also utilised.

The Case Study

The term 'case study' is used in a variety of ways. Kenny and Grotelueschen (1984: 37) suggest it is typically an intensive investigation of a single group bounded in some way. The investigation serves to identify and describe basic phenomena, as well as provide the basis for subsequent theory development. Stake and Day (1978) argue for a qualitative interpretation which is labelled a "natural orientation". House (1980) argues for a "transactional approach" which, through interviews, focuses on individuals perceptions of given educational phenomena and suggests that case study is entirely qualitative in methodology and presentation. Cohen & Manion (1994: 106) suggest that the purpose of the case study is to probe deeply and to analyse intensively the multifarious phenomena that constitutes the life cycle of the unit with a view to establishing generalisations about the wider population to which that unit belongs. Yin (1989: 23), on the other hand, states that a case study is an empirical enquiry that investigates a contemporary issue within its real life context when the boundaries between phenomena and context are not clearly evident and in which multiple sources of evidence are used.

This present study incorporated a number of features of the above definitions. It was a study investigating a contemporary issue within the boundary of a NSW comprehensive senior secondary school and employed a range of methodologies. As a participant observer in the case study I had access to a wide range of school developed documents, as well as parental and teacher views, and was personally involved in the process of students' subject selection. Within the framework of the case study, a questionnaire was used to generate data and a randomly selected group of students were latter interviewed to assist in developing a greater

understanding of the influences upon and the reasons for the students selection of subjects.

Because subject selection is a contemporary issue, the case study approach was chosen as it allowed for a study of individual students' choices in the context of their school with the influences and constraints of the school clearly evident. Although studies have been done in a range of schools (Johnston and Spooner, 1992; Haeusler and Kay, 1997) most studies developed data that indicated trends rather than individual responses. The case study approach enabled an in depth enquiry into the influences upon, reasons for and processes of subject selection by students entering the senior secondary school.

Given the nature of the research an expectation of the study was that the findings would have some relevance to the school in that the process of subject selection could be more critically evaluated and changed if required.

The Questionnaire

The purpose of the questionnaire was to determine what subjects a particular cohort of students chose, what influenced their choice and why they chose particular subjects. As noted in the literature there are a number of complex inter-related factors that influence students to make the choices they do. The questions asked were based on similar questions asked in reported studies, especially those of Hobbs (1987), Ainley et al. (1990-1994) and Myhill et al. (1994).

The items (Appendix A) sought responses regarding gender, nationality, Aboriginality, ethnic background socio-economic status, participation, retention and attitude to school as well as future intentions concerning work and/or training. These factors, as detailed in the literature in chapter two, provided some useful background to possible influences upon individual students regarding their selection of subjects. The responses were also useful in the formulation of interview questions.

Questions were also asked concerning student preference for subjects given no constraints, the actual subjects they chose and the reasons why they chose certain subjects and not others. These two areas were the central focus of the questionnaire as these data provided the source of the interview questions and were essential in providing a greater insight into the process of subject selection by year 10 students. This last group of questions, sections two and three, although derived from the literature, was specific to the school.

The questionnaire was divided into three sections and designed so the questions could be easily coded for computer analysis as nominal data. Section 1 concerned biographical data and, as indicated above, items were suggested from the analysis of relevant literature. For example, the purpose of asking about Aboriginality was to confirm or refute the findings of Ainley et al. (1994) concerning Aboriginal students and subject selection for the senior years of schooling.

The categorisation of the parental country of origin (Question 3) was based on Myhill et al. (1994). The inclusion of the Pacific was important in this case study although some studies, including Ainley et al. (1990) do not include the Pacific. The reason to do so was because a significant number of the overseas students who were enrolled in the school, at the time, were from the Pacific region. For the purposes of determining ethnic background the country of birth of the father was used. The language spoken at home, for the size of the group surveyed, would have reduced the confidential nature of the survey as the students could be more easily identified.

The occupational categories used in the questionnaire were compiled from the Australian Standard Classification of Occupations (ASCO) major and minor groups (see Appendix B) (Australian Bureau of Statistics, 1990). Students were asked to write the occupations rather than a list being provided for them to choose from as in the Myhill et al. (1994) study. The occupations were coded by the same person to ensure that the same categorisation was used. The ASCO uses eight categories, however it became obvious working through these categories that some groups of

people were not included so three extra categories (9 - 11) were included (Appendix B). These included; unemployed, homeduties and retired.

The responses used in relation to the father's occupation was used as a determinant of the socio-economic status of the students. This method does have some limitations, especially at a time when many women in a family work, and when some women are the sole breadwinner of the family or the status of the mother's occupation is higher than that of the father's. It was felt that the size of the population surveyed limited the number of questions that could be asked in relation to socio-economic status. For instance, asking students to indicate the level of household income was not appropriate for ethical reasons and the need to gain students' honest answers to the questions about subject choice were considered more important.

Question 6, "Do you enjoy school" was asked to determine the students' attitudes towards school in general before asking them about specific subjects. It is assumed that if students enjoy school and so had a positive attitude to school that this would influence their subject selection. There is a suggestion by Ainley et al. (1994) that a positive attitude to school and an understanding of what vocational options are available at the completion of high school are important factors in the subject selection process. Therefore this question, in conjunction with questions 9 (intentions after leaving school) and 10 (career aspirations), is important to explore.

The question, "When you first identified the subjects you most wanted to do, please list your first three choices in order and state the reason you wanted to do them?" students had a separate list of possible subjects (Appendix C) from which to choose. Based on the literature (Hobbs, 1987; Ainley et al. 1990 and Myhill et al. 1994), a range of possible reasons were able to be determined and these were used and coded for computer analysis. The range of reasons included; parents/family and friends, teachers, interest in the subject, enjoy the subject, do well in the subject, necessary for future studies, Tertiary Entrance Rank, organisation of the lines and 'subject I wanted wasn't offered'. For example "I

have done French since year 7 and I enjoy learning it. I plan to use French after I leave school” was coded in relation to ‘enjoy the subject’ and ‘necessary for future study’. It was necessary to add two extra reasons into the coding, no comment and other reasons, to cover the range of statements that students provided. For example, in relation to Modern History, “I like hearing about the past but I want to be recent so I can relate to it more” was coded as other reasons.

The question “When do you intend to leave school?” was designed to determine year 10 students’ intentions as far as the senior years of schooling were concerned. It, along with the question “do you enjoy school?” sought students’ perception of school. As this questionnaire was completed at the end of term 3 of the students’ year 10, many students had little idea of what the expected workload was to be in the senior school. Seeking responses about their intentions about when they preferred to leave school was able to be compared to the comments of students, in the interviews, 14 weeks after starting year 11.

The question, “After you leave school, what do you intend to do?” was designed to compare the aspirations of students in this case study with the wider student population. Also the responses from the question could be correlated with the occupations of the parents.

Section 2 of the questionnaire (Appendix A) was designed specifically for the case study where students were asked to indicate the subjects they choose from the final timetable lines that were given to them. In the corresponding place they were also asked to indicate the reasons they took that particular subject. Each of the subjects in each line was coded and the reasons were coded using the same categories as for question 7 (Appendix A). Students could give up to three responses but it was usual for only one response to be given. As a consequence, the first response was used as the reason for taking each subject.

Section 3 of the questionnaire asked students why they didn’t take certain subjects. The categories used for these reasons were the same as those in question 7 and section 2.

Completion of the questionnaire

The whole of the year 10 group of 1996 (N = 125) were chosen as they had just made their choices for the senior school starting in 1997. All the students present were surveyed at the same time during a Maths lesson. Students completed the questionnaire within 30 minutes with teachers being most supportive by assisting with the distribution and collection of the questionnaire. On the day 113 students returned the form from 125 students on the roll representing a return for the whole year of 90.4%. Of the 12 missing; 10 were absent from school on the day and 2 failed to submit the questionnaire. Of the 113, 2 were considered inappropriate for use due to the lack of information on the return. The number of coded responses from the group was 111.

Analysis of questionnaire data

The coded responses were transferred to an Excel spreadsheet and then analysed using Statview II software. The statistical analysis consisted of the calculation of frequency distributions. The analysis of the data can be found in Chapters five and six.

The Interviews.

From the 111 questionnaire responses 10% of the students were interviewed 14 weeks after the start of year 11. The gender breakdown of the study group was 61 boys and 50 girls. Therefore 6 boys and 5 girls were selected by first selecting a random number and starting from that number on the official student enrolment of boys and girls and the tenth student was chosen. Those students selected were asked if they would be willing to participate in an individual interview. All the students accepted and the interview was recorded. The reason for delaying the interviews so far into year 11 was because by this time any changes that students wanted for their subjects had been made and they had settled into the pattern of work associated with the senior years.

The reasons for interviews were twofold. The first was to explore some of the findings from the questionnaire that were completed at the end of term three the

year before. The questions that were asked of the students were both open and closed questions, the latter seeking specific information about subject choice. Open questions allowed the students to provide information about the way the process of selection was handled by them and how they perceived themselves, in terms of biographical data, within their particular courses at the school. The interview schedule can be found in Appendix E.

The interview questions were designed to elicit data concerning the process that Johnston and Spooner (1992) found in schools as they assist students with their subject selection. The understanding of the process of subject selection, within the context of the case study, was strengthened by the interviews. The interview questions provided an insight into the questionnaire data by explaining why they made the decisions they did and how they arrived at that decision. This confirms some of the findings of Ainley et al. (1990; 1994) concerning reasons why students choose the subjects they do for the senior school. The work of Johnston (1990) and Hobbs (1987) was useful in relation to the question of gender.

The second reason for conducting the interviews was to support the quantitative data with qualitative data. The contrasting data collection methods served as a method of data triangulation in an attempt to add greater depth to the study and add validity to the findings. The interview data enabled the explication of the interaction between influences and reasons.

Analysis of interview data

The interviews were recorded and the responses were content analysed in relation to the questionnaire data. The purpose of the content analysis of the interviews was to determine any trends that may be evident in the individual interviews with the students and to audit the content of the interviews against the data of the questionnaire. As a consequence the interview questions were not always the same. As the interviews proceeded trends emerged and these were enlarged upon. Also the data from the questionnaire were more specific to particular students and these were further used to develop the sequence of the interview questions.

Participant Observation

A participant observer is engaged in the activities that he/she set out to observe (Cohen and Manion, 1994: 107). In the context of the case study evidence was collected through the interactions with a range of people in the school community. These included the students, parents, teachers and the wider community that supported the school. Specific groups within the school were important sources of information such as the executive, School Council sub committees such as Curriculum and Finance and P & C meetings. As a member of all the above mentioned groups I had first hand knowledge of the processes that occurred in reaching decisions and was in a position to have an impact on the discussion and outcome of the decisions made. Official minutes of the above meetings were kept as a record of the discussion and decisions that occurred at the time. However much of the development occurred over a period of years. The evolution of the change is a personal interpretation of the process based upon an analysis of the various meeting minutes (see the following section).

A part of the task of being a participant observer in this case study was to attempt to explain the means by which the established process of selecting subjects for the senior school was conducted. Bailey (1978) suggests some advantages of being a participant observer. Firstly, observation of non verbal interactions assist in bringing meaning to a particular situation. This was important in meetings where the minutes only detail the outcomes and do not provide the background to the situation or show who the main participants were in the discussion. Secondly, as the observations are made over a period of time, relationships are formed which add more depth to the understanding of the personalities involved and brings more meaning to the process being observed and recorded. Thirdly, the data collected is potentially less reactive than to a non participant observer as those involved in the study are more relaxed to the presence of the observer. This compares to structured questions at an interview where full and honest answers may not occur due to a less intimate relationship the observer has with those in the study. Certainly the above factors were of a major advantage in the present case study as personal involvement meant that the context of the study was well understood and

good relationships had been formed with the people involved in the case study beforehand.

Participant observation does have its critics. Cohen and Manion (1994: 110) describe the criticisms of participant observation as subjective, biased, impressionistic and lacking the precise quantifiable measures that typify survey research and experimentation. The criticisms raise questions relating to the validity of the research. The interpretative nature of the research and the observer raises concerns of external validity and the close involvement of the observer with a group raises concerns of internal validity. In order to reduce these concerns the present case study had clear boundaries; that is, the process of subject selection for the senior years of schooling by a group of year ten students. Further the process was supported by a questionnaire which was designed to determine what students chose, what influenced their choice and why they made the final choices they did? These strategies are supported by Denzin (1970) who used the term 'analytical induction' to describe a suitable strategy to assist in participant observation that checks some of the concerns of validity raised by critics.

A criticism of participant observation suggested by Cohen and Manion (1994) was that of bias. In an attempt to overcome such criticism the following procedures were used. Firstly, and as recommended by Maykut and Morehouse (1994) to ensure good qualitative research, the process of subject selection was conducted by a team of people within the school. This team was responsible for the meetings with students and parents, wrote and edited all documentation to parents and students and liaised with students as they made their choices as to particular Board of Studies rules and/or constraints within the school to cater for their subject requirements. Secondly, the questionnaire was modelled on nationally developed and implemented material. The questionnaire that was finally given to the students in the research study was first piloted at another school to check if the language in the questions was easily understood. Thirdly, the data generated from the questionnaire was coded by one person to reduce any problem of bias based on mixed interpretations of answers provided by students.

Documents

Various forms of published information for parents and students were used, as were details of parent information evenings and the findings of surveys instigated by the Local Industry Education Network (LIEN) Committee on Vocational Education (Mitchell, 1996). The information evenings have been conducted each year for a number of years. However for this study, the major emphasis was focused on the 1997 Preliminary year. The LIEN survey, conducted in 1996, sought responses from 1000 students and their parents in the local area of the school. The purpose of the survey was to determine the interest and the possible demand for vocational education courses in 1997. Much of this material was concerned with the process of subject selection within the school. Other data such as a Quality Assurance (DSE, 1993) report was useful data to support the observations and anecdotal evidence gained.

A number of the documents associated with the case study, and especially related to the process of subject selection, were either personally written or I had significant input into their development and later discussion and implementation. All the documents used in the subject selection process were subject to the scrutiny of the school executive.

Analysis of Documents

Many of the documents issued to students and parents were information based the content of which was used to provide information to assist in the process of subject selection. Where content was misunderstood by students and/or parents it was more in relation to a broader lack of understanding about the overall process of subject selection rather than the language of the document. Minutes of official meetings provided an insight into the development of ideas and the changing trends associated with subject selection. New courses were questioned strongly for example, by parents at P & C meetings, as to their content and future usefulness.

Summary of Methods

Within the framework of qualitative research the triangulation methods of interview and questionnaire, supported by participant observation and document

analysis, added to the validity of the research. Both the questionnaire and the interviews were designed based upon the literature relating to the selection of subjects in the senior school. The use of a case study provided an opportunity to probe students regarding the influences upon them and, more particularly, the reasons why they chose the subjects they did for their final years of secondary school.