

Chapter 1: Introduction

1.1 Statement of context and nature of the problem

Educational practices exist within a cultural context and in our egalitarian society the term gifted can be an offensive notion that echoes an elitist philosophy (Goldberg, 1981; Braggett, 1994; Boag, 1990:48).

Braggett (1994) documents the depth of feeling against the notion of giftedness which “is fairly common” (Braggett, 1994:14) in Australian society. He goes on to cite a newspaper report that a small government grant had been awarded for a study of the needs of gifted students in Australia. This report triggered a series of phone calls and *Letters to the Editor* that criticised the funding and indicated that the money should be redirected to needy children who actually require assistance. These responses singled out those who needed remedial help, those whose school performance was below average and indicated that the gifted were already well catered for in Australian education.

Gross (1993) outlines the extreme egalitarianism that characterises Australian society and suggests that these attitudes have their origins in the country’s beginnings. She accounts for the general resentment and distrust of the intellectually gifted as being the consequence of an equation of intellectual giftedness with social and economic privilege. “Many Australians view high intellectual ability as an inherited, and therefore unmerited, passport to wealth and status through success in school and access to higher-level employment” (Gross, 1993:45).

In such a prevailing social climate additional provision is seen to be “tantamount to unwarranted privilege” (Braggett, 1993: 816). Even our colloquial language reflects this perspective. The “Tall Poppy” syndrome refers to the common observation that many like to see people who are

privileged “cut down to size [or] suffer a major reverse in status” (Feather, 1989: 239).

These attitudes are based on an outmoded concept of giftedness, which assumes that ability is innate, fixed in quantity and easily measured (Braggett, 1993). It also assumes that giftedness occurs in the minority, that the gifted have a head start that is denied to others and that they are the lucky ones, while the rest suffer disadvantage by comparison (Braggett, 1994). Therefore, it assumes that the gifted do not need additional programs or resources because they already have advantages that others do not possess and that it “would be elitist to do more for them with resources that should be directed to the underprivileged” (Braggett, 1994:14). In the words of the then Australian Teachers’ Federation President Di Foggo, “we’re not anti the gifted and talented - just the allocation of resources to them” (Boag, 1990:49).

Inadequate teacher education makes it difficult to address these negative images. Only in the last few years have universities begun to include course offerings on gifted learners in their teacher training programs (Gross, 1993). Gifted education content, where it does exist, is generally restricted to a one-hour lecture in a general curriculum or education psychology course (Gross, 1993 & 1994).

As a result, many Australian educators hold erroneous assumptions about the gifted (Braggett, 1994). As the 1988 Senate Select Committee has found the “greatest barrier to overcome before appropriate education can be provided for all gifted students may be the negative attitudes of some teachers towards such students” (Senate Select Committee, 1988:104).

Some teachers believe that gifted students can fend for themselves and “do not require additional assistance in order to achieve their potential” (Braggett, 1994:18). They are perceived as privileged with the ability to do well, to

study effortlessly, to work independently and to obtain employment with ease (Goldberg, 1981). In reality this is not the case. Some gifted students may achieve on their own, but most do not. It has been stated in the USA that as many as “half our gifted students do not perform up to their abilities in school” (National Commission on Excellence in Education, 1983 in Davis & Rimm, 1994:281), while studies of high school dropouts indicate that “between 10 and 20 percent of the students who do not graduate are in the gifted range of abilities” (Lojoie & Shore, 1981, Nyquist, 1973 and Whitmore, 1980 in Davis & Rimm, 1994). Australian findings also support this notion. The Senate Select Committee of 1988 made reference to the many academically gifted students who not only fail to achieve their potential but actually drop out of school in large numbers (1988:4). Case studies present the human picture of giftedness at school as one of boredom, frustration, anger and self doubt (Bailey, 1991; Baum, Owen & Dixon, 1991:3; Comerford & Creed, 1983; Braggett, 1994:19, Boag, 1990).

Others believe that regular academic programs are quite adequate for the gifted (Braggett, 1994:15) because these students arrive at the correct answer and cover prescribed work in less time than do their peers. While this may indicate a student’s knowledge and abilities, it may also indicate inappropriate questions, or simple or closed questions, which do not challenge the student to think critically or divergently. Therefore, this belief fails to recognise that gifted students “possess unique needs which can only be addressed through appropriately designed curricula” (Passow, 1982 in Westberg and Archambault, 1997:44). Thus, gifted students “require differentiated educational programs and/or services beyond those normally provided by regular school programs” if they “are to realize their contribution to self and society” (Marland, 1971:ix).

Another false assumption is that gifted students come from privileged, affluent homes and so do not need further opportunities (Braggett, 1994:15). However, this is not the case as gifted children come from all cultural and

economic backgrounds (Davis & Rimm, 1994). Finally, it is assumed that by separating gifted students and allowing them to work with others of like minds this will develop in the students “an inflated self-esteem and an over-weening sense of their own importance” (Gross, 1997:21; Southern, Jones & Ficus, 1989; Fiedler, Lange & Winebrenner, 1992). However, research undertaken by Kulik (1991, in Davis & Rimm, 1994), Clark (1983 in Gross, 1993) and Marsh (1991 in Gross, 1997) has failed to find any data to support such a contention.

These issues directly affect the educational provisions for gifted and talented students. Generally the degree of support offered within government schools is directly affected by the prevailing social climate (Braggett, 1993; Gross, 1994) and this has resulted in the gifted being “largely neglected [sic] on the grounds of equity” (Boag, 1990: 48). Australia lacks “a cohesive national policy and program for the education of bright children” (Boag, 1990: 49) and this has resulted in many schools currently seeking to provide for the gifted within a mainstream setting, usually within the regular classroom itself. Leder (1985) found that the stereotyped attitudes of teachers towards the gifted are generally translated into classroom practice, resulting in a reluctance among Australian educators to develop differentiated educational programs (Gross, 1993).

1.2 Statement of the problem

This investigation has been undertaken to add to existing data on a key aspect of gifted education: how to facilitate a change in teachers’ attitudes to giftedness that will result in appropriate curriculum modifications for those students.

This research study focused on testing the hypothesis that involvement in the professional development program run by the Experimental School would

change positively teacher attitudes toward giftedness and the appropriate educational provision for gifted students.

1.3 Statement of research questions

The research questions that guided the collection and analysis of data for the study were:

Question 1:

Do teachers involved in a specially designed professional development program display an increased positive attitude toward the gifted?

Question 2:

Are there any aspects of the program which participants believe contributed markedly to shifts in their attitude toward gifted students?

Question 3:

Do the aspects identified by participants as contributing markedly to this shift in their attitude reflect in any way the support strategies suggested in the “Making Change Happen”(Queensland Department of Education, 1994) model of professional development?

Question 4:

Are significant changes in teacher attitudes toward the gifted transferred to their classroom practice?

(i) Is there an observable application of curriculum modification by teachers in their lesson preparations?

(ii) Is there an obvious knowledge base concerning giftedness underlying teacher actions?

(iii) Are there detectable instances when teachers have used specific instructional and management strategies within their classrooms, which are aimed at the individual needs of the gifted?

1.4 Definition of terms

The main terms relevant to this proposed research are defined below.

(i) **Giftedness**

For the purposes of this research project giftedness will be understood within the framework of Gagné's Differentiated Model of Giftedness and Talent (DMGT) (1985, 1993, 1995, 1997). This model distinguishes between giftedness and talent by proposing that gifts are the untrained, and spontaneous natural abilities of an individual and that talent is the transformation of these high aptitudes into the well-trained and systematic characteristics of a particular field of human activity or performance. These fields can be extremely diverse and the valuing of these talents is based on cultural values, beliefs and traditions (Braggett, 1985; Frasier, 1989; Gagné, 1985; Gibson, 1995). By acknowledging that the process of talent development only manifests itself when individuals engage in systematic learning, preparation and practice Gagné's DMGT presents us with a possible understanding of the issue of underachievement amongst the gifted. Furthermore, it affirms the significance of intrapersonal and environmental catalysts - the developmental aspect of the concept. (See Figure 1).

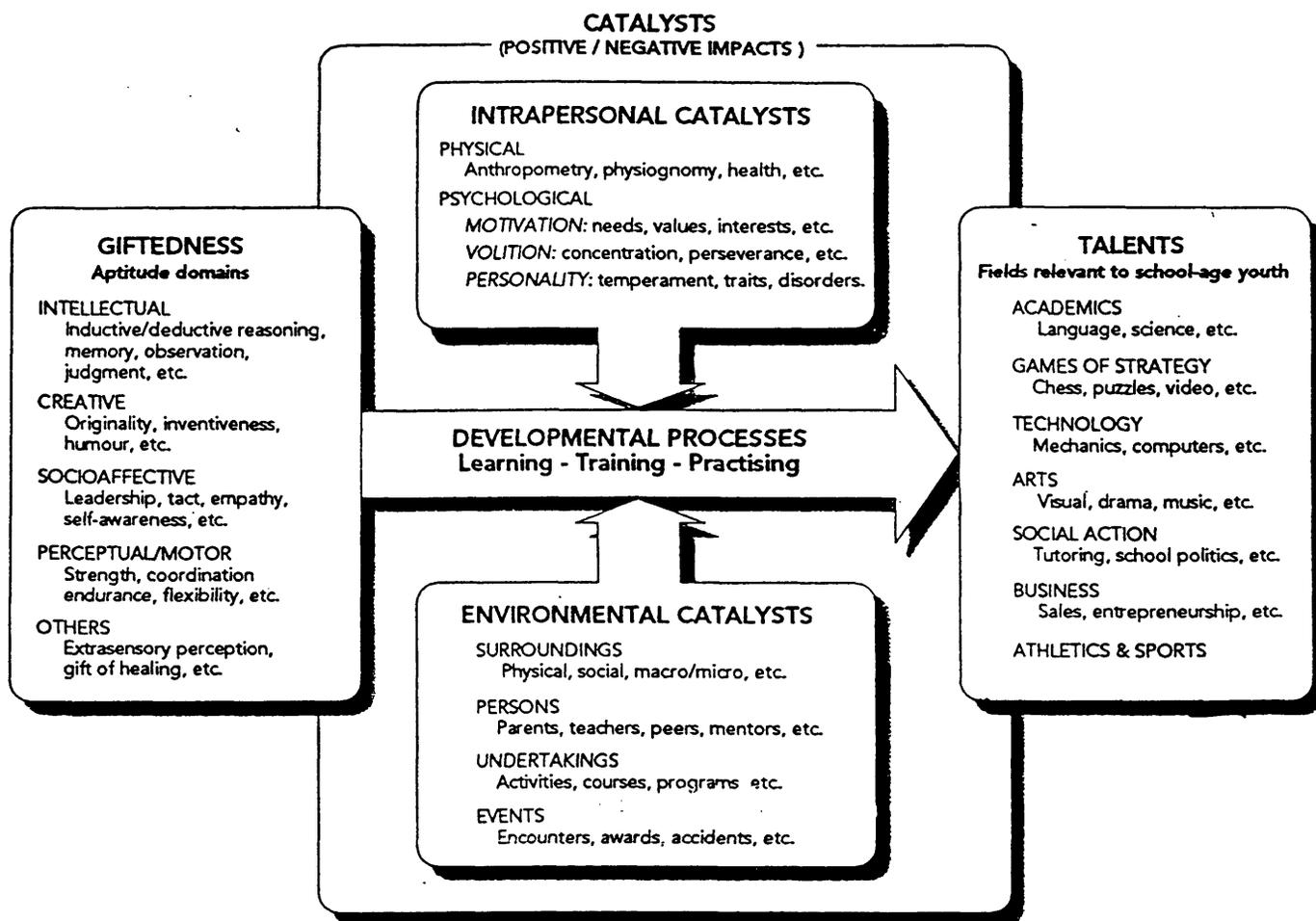


Figure 1: Gagné's differentiated model of giftedness and talent (Gagné, 1997:3)

Print (1983) raised the valid concern that many definitions of giftedness are not operational. Therefore, in an attempt to operationalise Gagné's DMGT (1997) this research project has referred to Frasier's Traits, Aptitudes and Behaviours (TABs) (in Queensland Department of Education, 1994) as this provides ten definitions and descriptors of some of the traits, aptitudes and behaviours employed by the gifted as they initiate, create, evaluate, complete and disseminate original products or contributions in their talent field or fields.

(ii) School program

The school professional development program under consideration can best be described as a "series of activities or learning experiences designed to achieve certain objectives within a specified time period" (The Penguin Macquarie Dictionary of Australian Education, 1989). Working through an action research process (Kemmis & McTaggart, 1988) the program has been based on the framework suggested by The Zigzag model of professional development, "Making Change Happen" (Queensland Department of Education, 1994). For a detailed explanation of this model see Chapter 3: A

Conceptual Framework. As a result of participation in this program it is hoped that teachers will be able to:

- address issues and work on solutions to real problems: for example, how to increase student access to and participation in more appropriate curriculum so that underachieving gifted students can be identified
- share ideas and collaborate to improve the quality of outcomes
- increase their levels of awareness of the issues of gifted education by moving through the stages of development to the point where some are able to network in support of other teachers (Rankin et al, 1990).

(iii) **Professional Development**

Professional development within the context of this research project is best defined by Bolam (1982 in Eraut, 1995: 620) who sees it as;

Those education and training activities engaged in by primary and secondary school teachers and principals, following their initial professional certification and intended mainly or exclusively to improve their professional knowledge, skills and attitudes in order that they can educate children more effectively.

Hence, professional development can be seen as the professional growth that a teacher achieves as a result of gaining increased experiences and examining her or his teaching systematically. This professional growth has been classified by Little (1992, in Glatthorn, 1995) in the following ways:

growth in knowledge

growth in skills

growth in judgement

growth in the contribution made to professional community.

A professional development program also needs to recognise that this growth in teacher knowledge, skills and attitudes may be influenced by both personal

and contextual factors (Glatthorn, 1995). Personal factors include cognitive development, career development and motivational development, while contextual factors include the community, the school system, the school itself, the teaching team or department and the classroom.

(iii) **Attitudes**

When defining the concept of attitude not all social psychologists agree; however most perspectives of attitude recognise the following characteristics:

- a tendency or predisposition towards reacting to a given stimulus
- a very personal and highly subjective reaction
- a link to behaviour and opinions.

For the purposes of this research project attitudes will be used to refer to “how people typically feel about or react to other people, things or ideas” (Kubszyn & Borich, 1987 in Buchanan & Feldhusen, 1991:279).

These feelings or reactions are “rarely the product of reason and logic” (Oppenheim, 1966:106). Instead they represent “a deep-seated, unconscious predisposition towards a stimulus” (Oppenheim, 1966:107). Understanding this about attitudes however is not enough, for it is also important, within the context of this study, to understand where attitudes come from and hence how they may be changed.

Thurstone (1977:128) suggests that attitudes are the sum total of an individual’s “feelings, prejudices or biases, preconceived notions, fears, ideas, threats and convictions”, and as such are learned generalisations (Sherif & Sherif, 1973; Newland, 1976; Osgood, Suci & Tannenbaum, 1977). Mueller (1986) suggests that attitude incorporates opinions, beliefs, feelings, prescriptions, statements of fact and statements about an individual’s own

behaviour. He sees a direct relationship between values and attitudes (Mueller, 1986:5). Therefore, an attitude towards a person synthesises all associated sub attitudes and values. An attitude towards the education of the gifted for example, would encompass attitudes towards students, education, intelligence, school, giftedness, equity, and so on. Smith (1973) agrees with this contention, adding that attitudes are learned either gradually or suddenly, at varying levels of emotional intensity.

Oppenheim (1966) elaborates on this notion by suggesting that attitudes vary in depth. Shallow attitudes are those which are susceptible to day-to-day experiences, and so tend to be flexible, while deeper attitudes are more permanent and therefore more rigid (Oppenheim, 1966:109), being built up over time. Oppenheim (1966) goes on to contend that attitudes may shift in intensity and direction from one day to the next, as well as being continuous and variable. Thurstone also supports this contention by suggesting that we need to “take it for granted that people’s attitudes are subject to change ... from one day to the next” (1977:129).

Finally, for the purposes of this study we need to understand the relation between behaviour and attitude. Are actions a true index of attitude? Since La Pièrre (1934 in Worchel, Cooper & Goethals, 1988: 323) showed that people’s attitudes are not always consistent with their behaviour the question of attitude-behaviour consistency has been a focus of study for social psychology. Wicker (1973:180), in a study of empirical research on attitude-behaviour relationships between 1950 and 1969, concludes that there is very little relationship between attitude and overt behaviour. He suggests that this may be due to several attitudes contributing to one behaviour, one attitude producing several behaviours, competing motives, or the inability to respond verbally or intellectually to a stimulus. Actions may also be distortions of attitude, intentionally misrepresented or modified to give responses that are likely to be considered desirable (Thurstone, 1977:129). Cook and Selltiz (1977) suggest that this possible discrepancy between private and overt

responses could be a function of three characteristics of the instrument used to measure attitude:

- The extent to which the purpose is apparent
- The extent to which implications of specific responses are clear
- The extent to which responses are subject to conscious control.

They go on to suggest that there is in fact a relationship between attitude and behaviour by suggesting that the “language in which the individual reports his [sic] feelings about the attitude-object” (Cook & Selltiz, 1970:24) is an expression of behaviour. In a similar way Thurstone (1977:128) perceives that opinions act as the verbal expression of attitudes. This research project supports this contention, working from the assumption that opinions are an index of attitude. However it also recognises the limitations of this assumption. Opinions can be intentionally misrepresented or modified and that is why an attempt is made to compare attitudes with behaviours.

Chapter 2: Review of related literature

2.1 Importance of the teacher in gifted education

An acceptance of the dynamic nature of Gagné's Differentiated Model of Giftedness and Talent (Gagné, 1997), acts as a catalyst to understanding the important role of the teacher as part of the process. Talent is a complex interaction of abilities, and personal and environmental factors that can be developed over time. Significant persons, such as parents and teachers, and important environments such as the home and the school enhance or retard the transformation of these high aptitudes into the well-trained and systematically developed skills characteristic of a particular field of human activity. The teacher therefore, actually contributes positively or negatively to the development of a student's talent. Hence, as Braggett (1994) suggests, the school has a crucial role to play in identifying giftedness, in providing a facilitative environment in which expressions of giftedness may emerge, and in the training and development of talent. There is also considerable evidence, which supports this notion that nothing matters in the school more than the teacher (Dunkin & Bidler, 1974; Callahan & Renzulli, 1977; Gage & Berliner, 1979 in Baldwin, 1993).

The identification of the gifted is clearly linked to the important role of the classroom teacher. Many bored, underachieving, culturally different and socio-economically disadvantaged gifted remain unidentified because of their teachers' biased perceptions of giftedness (Baldwin, 1985, Borland, 1986, Commonwealth of Australia 1988 in Gross, 1993; Braggett, 1985). At the level of provision Whitmore (1980 in Davis & Rimm, 1994) adds a practical dimension to our understanding of the importance of the teacher by suggesting that the teacher is the most critical factor in developing appropriate educational experiences for the gifted. On a performance level Rosenthal (1968, in Clark, 1988) gives us a clear picture of how important the teacher's attitude is to the performance of the student. Evidence suggests that the level

of expectation communicated by the teacher can become a self-fulfilling prophecy (Kolb & Jussim, 1993).

With Australian schools experiencing an increased push for heterogeneous grouping of students and in-class provision for the gifted student (Braggett, 1993), there is an increased demand for the appropriate education of all teachers to meet the needs of the gifted (Baldwin, 1993).

If teacher attitudes affect students so powerfully, it would be fruitful to examine the data on the attitudes of educators toward the gifted.

2.2 Teacher attitudes toward the gifted

In her research Eales (1985) suggests that how we feel about giftedness depends on how we feel about ourselves. This perspective may explain the conflicting data on the reactions of teachers towards the gifted.

Based on an informal survey of teachers entering postgraduate education courses at an Australian teacher education institution Gross (1993) reports that the attitudes of a majority of Australian teachers towards the gifted range from apathy to overt hostility. These attitudes are mirrored by evidence presented to the 1988 Senate Select Committee which heard that some teachers were resentful of the gifted, others felt threatened by them, some believed it was undemocratic to help them, and others expressed a desire to see gifted children 'sat upon' to prevent their becoming precocious (Senate Select Committee, 1988:104). Leder (1985) suggest that these attitudes reflect community perspectives and are based on stereotypical views that assume an exclusive concept of giftedness that is sometimes twenty to fifty years out of date (Braggett, 1994:23).

A review of the literature indicates that such stereotypical views suggest that the gifted are:

(i) Middle-class (Goldberg, 1981; Start 1987 in Gross 1993; Braggett, 1985, 1994; Gross, 1994)

This stereotypical view of giftedness was crystallised by an article in the New South Wales Teachers' Federation's journal which described academically gifted high school students seeking early admission to university as "the sons and daughters of middle-class yuppies trying to steel [sic] more and more privileges under pretension to greater abilities" (Poulos, 1990:8). This view of giftedness fails to recognise that there are gifted young people among the economically and socially disadvantaged (Senate Select Committee, 1988:119) who "may never have their abilities recognised or fostered" (Gross, 1993:129) because of subjective identification procedures.

(ii) Outstanding (excellent, exceptionally good, superior) academic achievers (Braggett, 1991; Gross, 1994)

This stereotypical view of giftedness recognises only those students who top their class in the main academic subjects (Braggett, 1994). An example of this perspective of giftedness is reflected by the work of Lewis Terman, whose longitudinal study of 1500 gifted American children began in 1921. The subjects of Terman's study were students with intelligence quotients in the top one percent, measuring above IQ 135 on the 1916 revision of the Stanford-Binet Intelligence Scale (Senate Select Committee, 1988:10). This definition restricts giftedness to the kinds of thinking required by teachers in school examinations, disregarding other forms of school and non-school related ability. It also confines giftedness to performance and the "educationally-oriented" (Braggett, 1994) student. This can be a false image because a gifted student can have a high IQ and low performance or aspirations. In this view giftedness is naturally equated with general ability as measured by intelligence tests. Many teachers and parents still think of giftedness in terms of fixed IQ scores. This inevitably raises questions about selection procedures, cut-off

points, measured intelligence and the top one percent of the population. It also restricts giftedness to the type of thinking included in tests of general ability. These tests often have a heavy emphasis on verbal abilities, meeting time restrictions and thinking convergently (Braggett, 1994).

(iii) Anglo-Saxon (Braggett, 1985, 1994; West 1984 in Gross, 1993)

This stereotypical view of giftedness is linked to an understanding of giftedness, which is based on the dominant culture's values, beliefs and traditions. The under-representation of non-English speaking students in special programs for the gifted (Senate Select Committee, 1988; Braggett, 1994) is the direct result of selection and identification processes that are largely language and culturally specific. Braggett observes that some teachers experience difficulty in recognising gifts that the dominant culture does not value (Braggett, 1985). Recent work by Frasier (1989) and Gibson (1995) has attempted to provide alternative ways of seeing giftedness. The traits and behaviours identified by Frasier (1989) and Gibson (1995) endeavour to be culturally inclusive, thus attempting to redress some of the limitations of selection and identification outlined above.

The literature goes on to suggest that these stereotypical views have led to considerable reluctance among Australian educators to develop differentiated educational programs (Goldberg, 1981; Commonwealth of Australia, 1988; Gross, 1993, 1994).

However, this reluctance is not peculiar to Australian educators. If we accept the findings of Goldberg (1981) and Fetterman (1988) then Australian attitudes towards the education of academically gifted students are no more negative than those in most other industrialised societies. It seems that "ambivalence toward the gifted is a cross-cultural phenomenon" (Fetterman, 1988:95). While almost every nation recognises the value of the gifted, this recognition is juxtaposed with ignorance. A lack of understanding of the

particular learning needs of the gifted often results in a confusion between equality of opportunity and equality of provision.

How can we tap into the attitudes that teachers hold about the gifted? Van Tassel-Baska (1992) claims that acceleration and grouping are the lightning rod issues that test the level of acceptance which gifted programs enjoy in any educational community.

2.3 Teacher attitudes towards the issues of acceleration and ability grouping

Gross (1997) believes that the under utilisation of ability grouping and acceleration with gifted students in schools (Goldberg, 1981; Southern, Jones & Stanley, 1993) arises largely from a genuine lack of awareness, among teachers and administrators, of the research support for these two strategies. When teachers and administrators have limited access to the research literature on acceleration and ability grouping they tend to rely on the sources of information, or misinformation, which are more readily available to them. For example, Southern, Jones and Fiscus (1989) found that teachers gathered their opinions on acceleration from the popular press, from colleagues or even from their experiences with students who were neither gifted nor accelerated.

Australian educators frequently voice concerns regarding the differentiation of curriculum through the use of ability grouping and acceleration strategies (Gross, 1994, 1997; Goldberg, 1981; Senate Select Committee, 1988; Evans, 1996; Mackenzie – Sykes, 1996; Matison & Southern, 1996; Vialle et al , 1998; Braggett, 1998).

Australian awareness of, and attitudes towards ability grouping of gifted students are vividly illustrated by the lack of Australian writings on the topic. The bibliography of Australian writings on giftedness, creativity and talent edited by Braggett (1986) contains only four entries under the headings “ability grouping”, “grouping” or “streaming” and of these four entries three

were written in the 1930's and one in 1964. Furthermore, no distinction is made between the three methods. Another indication of attitudes toward ability grouping of gifted students is that while most Australian states permit a certain degree of ability grouping and a minority of states have created a limited number of full-time self-contained classes for the gifted (Senate Select Committee, 1988) the Ministry of Education of the state of Victoria issued the following caution against grouping on ability within its schools: "Ensure that test-scores and general measures of ability are not used to stream students into particular classes" (in Gross, 1993:209). More recently, a review of papers presented at the 1996 and the 1998 National Conferences for the AAEGT finds little mention of ability grouping. Of over a hundred papers, only one addresses the issue of establishing specific groups for gifted learners (AAEGT, 1996). On the contrary the focus for provision for gifted learners is very much centered upon an in-class approach where the class is of mixed ability.

Similarly, Australian awareness of and attitudes toward the acceleration of gifted students are again illustrated by the lack of Australian writings on the topic. The bibliography of Australian writings on giftedness, creativity and talent, edited by Braggett (1986), features only seven entries on acceleration and, of these, no fewer than five report on a single acceleration program, University High School in Melbourne. The contemporary picture is little better. A review of papers presented at the two most recent national conferences held by the AAEGT found that of the 42 and 60 papers presented respectively, only a total of 6 addressed the issue of acceleration (AAEGT, 1996 & 1998). Interestingly, two of these papers focused on presenting the case for acceleration, while three outlined successful school programs and one addressed the question of the debate which surrounds the issue. It is not surprising that Gross (1993) has concluded that when acceleration is used it is often as a "last-ditch attempt to alleviate boredom or social isolation when several other strategies have been tried and have proven ineffective" (Gross, 1993:199).

Goldberg (1981:8) found that a major deterrent to the provision of a differentiated curriculum for the gifted in Australia was the fear that "any

school procedures which single children out as more able than the generality might jeopardise their sense of identity with, and acceptance by, the remaining children". The Victorian Teachers' Union has played on this concern by stating that when children are accelerated "serious social and emotional adjustments often occur in the short term and, more frequently, in the long term" (Victorian Teachers' Union, 1986 in Gross 1997:19). In 1988 the Senate Select Committee noted that ability grouping of gifted students had been criticised as generating arrogance and conceit, depriving average ability students of appropriate role models, and creating a hot-house atmosphere leading to stress and burn out (Senate Select Committee, 1988:63).

Although these inaccurate perceptions of provision for gifted students can be refuted by the substantial bank of empirical research conducted over the last sixty years which attests to the value, for intellectually gifted students, of acceleration (Feldhusen & Moon, 1992; Gross 1993; Southern, Jones & Stanley, 1993; Rogers, Van Tassel-Baska, 1992; Kulik & Kulik, 1984) and ability grouping (Feldhusen & Moon, 1992; Kulik & Kulik, 1987; Rogers & Span, 1993), it is important to note that these misconceptions are still influencing teaching practice.

2.4 Relationship between attitudes and practice

Since La Pière (1934 in Worchel, Cooper & Goethals, 1988) demonstrated that people's attitudes are not always consistent with their behaviour the question of attitude-behaviour consistency has been a focus of study for social psychologists.

While Leder (1985) has found that the stereotyped attitudes of teachers towards the gifted are generally translated into classroom practice, and Dawes (1972) has found that ignorance of a topic will tend to produce a negative attitude, other researchers (Hansen & Feldhusen, 1994; McBride, 1988) have

found that increased knowledge and experience can change attitudes and change practice.

Hansen and Feldhusen (1994) have explored the positive relationship between teacher education and its impact on practice. They compared the teaching skills and classroom climate of 54 teachers who had completed three to five graduate courses in gifted education and were teaching gifted students as part of their practicum with those of 28 teachers who were assigned to teach gifted students but had no graduate coursework in gifted education. Not surprisingly, the results showed that teachers trained in gifted education “demonstrated greater teaching skills [and] developed more positive class climates than teachers who had no education in gifted education” (1994:115).

Similarly, McBride (1988) found that experience in school programs for the gifted resulted in teachers with greater awareness that made more use of enrichment and extension procedures; with greater depth, breadth and scope of knowledge; and with more positive perspectives and greater sensitivities to individual needs.

Bégin and Gagné (1994a), after a detailed analysis of the research on the predictors of a general attitude toward gifted education, found that there was only a weak link between attitude and the respondents’ education levels and their degree of contact with gifted children. Bégin and Gagné explained this lack of a significant result by identifying four major problems pertaining to the methodologies of the studies under investigation:

- (a) the diversity of attitude questionnaires used
- (b) the size, diversity and nonrepresentativeness of the samples used
- (c) the small number of predictors introduced
- (d) inadequacies in statistical procedures.

2.5 What changes teacher attitudes toward the gifted?

Research evidence demonstrates a wide spectrum of beliefs about what changes teacher attitudes toward the gifted. However, it is generally accepted that educators need exposure to coursework and involvement with gifted and talented students to change negative attitudes (Davis & Rimm, 1994).

The following United States research indicates that exposure to coursework has a positive influence on the effectiveness of teachers in understanding and providing for the gifted. Weiner and O'Shea (1963) discovered that the attitudes of teachers towards gifted learners are influenced favourably if they had even one course in the education of the gifted. Gear (1978) found that specialist instruction in gifted education improves teacher effectiveness in identification, and Hansen and Feldhusen (1994) reported that such specialist education leads to an improvement in teaching skill and classroom climate. In addition, Orenstein (1984) found those school districts that provided continuous education for their teachers were identified as having the most effective gifted programs. Davis and Rimm (1994) asserted that indifferent teachers could become more receptive to gifted programs when exposed to issues in gifted education. Finally, Whitlock and Dacetle (1989) reported that those identified as outstanding teachers of the gifted had pursued professional growth through courses and workshops.

These research findings are supported by Gross (1994) who assessed attitudes toward the gifted in 67 Australian educators who completed 75 contact hours of lectures conducted during three school vacations over the Australian school year to fulfill the requirements of a Certificate in Gifted Education. A comparison of pre- and post-test scores demonstrated strong positive changes in teacher attitudes towards gifted and talented children. The effect size of 1.18 indicates a strong positive attitudinal shift. This study also identified six factors which 24 randomly selected course participants believed had contributed to their attitudinal changes. These factors clearly demonstrated the

link between carefully planned and well-conducted professional development programs and the positive attitudinal shifts measured in the initial stage of the study. However, the following questions still remain:

- (a) Are the differences obtained the result of the education itself or did the subjects choose the courses because they were already favourably disposed toward gifted education?
- (b) In what way did this study attempt to address the impact of the 'Hawthorne Effect'? (see discussions p60)
- (c) Would the same results be achieved with non-volunteers?
- (d) Did the significant attitudinal change transfer into classroom practice?

Copenhaver and McIntyre (1992) explored the impact of prior knowledge on the intensity of attitudinal shifts. They surveyed 85 teachers enrolled in a graduate course on curriculum for the gifted by asking them to complete an open-ended questionnaire in which they stated the characteristics which came to mind when they thought of gifted and talented students. Teachers with previous inservice experience listed considerably more positive characteristics than teachers who had no previous study in gifted education. Similarly, teachers who were experienced gifted education teachers also listed considerably more positive characteristics than teachers who were not experienced gifted education teachers. Consequently, Copenhaver and McIntyre (1992) recommended that an overriding implication of their findings was that "effective teachers of the gifted need more specific preservice and inservice coursework and involvement with gifted students" (Copenhaver & McIntyre, 1992:151). However, the following questions still remain:

- (a) What are the reasons for the perceptual differences as measured by Copenhaver and McIntyre (1992)?
- (b) Is there an interaction between years of teaching gifted students and the degree of teacher education in gifted education?

While education and inservice are generally recognised as critical factors in changing negative attitudes it is important to understand which specific aspects of coursework make the difference.

Feldhusen, Haeger and Pellegrino (1989) attempted to address this question by comparing the attitudes of 45 Indiana school administrators who had undertaken a 50-hour program in gifted education with the attitudes of 51 administrators who were given two half-day inservice sessions. No significant differences in attitude toward the gifted were found between the two groups at the start of the study. However, while the inserviced administrators displayed almost no change in attitude over the two inservices, attitudinal changes among the longer trained administrators were significant at $p < .01$ level. Again this raises questions about the impact of the duration and academic level of the inservice course undertaken by the treatment group.

Questions concerning the length and content of the course and its impact upon results were also raised at the conclusion of Gross' study in 1994. Gross' (1994) study provides us with an understanding of the specific aspects of a course which teachers perceived to have been significant in inducing more positive attitudes toward gifted students. The six most frequently mentioned aspects are listed below:

- (a) Receiving, as course handouts, research-based papers written by visiting professors, which had been published in internationally recognised journals;
- (b) Having as course leaders some of the international leaders in gifted education;
- (c) The course emphasis on developing special programs for the gifted, as well as in-class enrichment;
- (d) The feeling of empowerment that resulted from course participation;

- (e) Meeting other teachers with an interest in gifted education;
- (f) An added insight into one's own development as a gifted person.

Coupled with the experience of education and inservice is the impact of the experience of contact with the gifted learner. In a study of Year 1, 2 and 3 classrooms in Queensland state schools McBride (1988) found that involvement in programs for gifted and talented students does positively affect teacher values and beliefs about gifted education. Anecdotal evidence presented to the Senate Select Committee also supports the notion that after exposure to gifted learners teachers' attitudes changed (Senate Select Committee, 1988:105).

Similar findings were reported by Korynta (1982) who surveyed 201 Grand Forks elementary school teachers, 61 of whom had access to inservice sessions on gifted education and who were located in schools that provided programming for the gifted. These teachers were found to hold fewer stereotypical ideas about gifted children and were more aware of the need for special programming.

By contrast, however, in a study of 225 school administrators in Texas, Griffin (1984) found no significant relationships between administrators' attitudes toward the gifted and study in gifted education at the university level. Similarly, in a study comparing the attitudes of school administrators, teachers of the gifted and regular classroom teachers, Ferrante (1983) found no significant relationship between strength of attitude and extent of education in gifted education. Experience in a gifted program, however, did result in more positive attitudes toward gifted education than observed in regular classroom teachers. This contrasts with the findings of Gustin, Peng and Maid-Jabbair (1988) who found no significant differences between teachers who were experienced gifted educators and those who were not.

These contradictory results need to be examined with caution as Bégin and Gagné (1994a, 1994b) point out. After reviewing more than thirty reports which examined teacher and community attitudes towards the gifted, they noted that many of the studies had methodological flaws, which seriously limited their validity and generalisability. These methodological flaws fell into four main categories. Firstly, the measurement of attitude was dependent upon instruments which were developed locally, had unknown psychometric properties or had confused attitude toward the gifted with factual knowledge about the gifted. The second flaw concerned the small size, the lack of diversity and the nonrepresentativeness of the sample populations used. The third related to the small number of pertinent and appropriate predictors used, and the final limitation was associated with the inadequacies of their statistical procedures.

Therefore, it was the intention of this study to avoid these methodological flaws. Firstly, it would use a reliable and valid measure of attitude. Secondly, it would introduce a sufficient number of pertinent and adequate variables. Thirdly, it would use appropriate statistical methods to analyse the data and finally, it would increase the validity and generalisability of findings pertaining to the teacher attitudes toward the gifted (Bégin & Gagné, 1994a, 1994b).

2.6 What is the need for the research?

After reviewing the literature related to this issue it appears that it would be beneficial to investigate the effectiveness of a program of professional development in changing teachers' attitudes toward gifted students, gifted education and their classroom practice.

Therefore, this study was designed to:

- A. Observe and measure the intensity and direction of shifts in attitude towards gifted students among teachers employed in a school that provided access to a series of support strategies aimed at providing for their particular stage of development (see Appendix C: “Making Change Happen”: A model of professional development).
- B. Investigate the “crystallising experiences” (Gross, 1994) which participants believe have contributed to their attitudinal changes.

The anticipated outcomes of this study are as follows;

(i) Contribution to existing knowledge

This study has implications for gifted education specialists, curriculum specialists, administrators, teacher educators and policy makers as it contributes to our general awareness and understanding of the issues at hand. Therefore, it is anticipated that our understanding of how to change teacher attitudes toward the gifted will be enhanced as a direct result of the findings of this proposed research.

(ii) Effects on practising educators

The research results will provide practising educators with an understanding of how attitudes towards gifted education undergo change.

The research results will provide both the Experimental School and the Control School with a profile of teacher attitudes toward the gifted that can be used to plan future professional development.

The research results will provide the Head of Department, Learning Support and Enrichment (Experimental School) with an appreciation of the effectiveness of her professional development program.

(iii) Influence on future programs or teaching methods

The primary intention of this study is to provide an evaluation of the current professional development practices at the Experimental School. Therefore, it is anticipated that the coordinator of the professional development program at the Experimental School will benefit from the findings of this research in two ways:

- (a) The measurement of the effectiveness of the professional development program will assist at a general level in the planning and development of future professional development.

- (b) The collation and analysis of the “crystallising experiences” (Gross, 1994) that interviewees believed contributed to their attitudinal changes will provide a detailed list of explicit examples that can be incorporated into future professional development programs at a specific level.

Chapter 3: A conceptual framework

3.1 Making your professional development count

The general principles that underpin this study relate to the link that exists between shifts in attitude and good quality professional development. However, this good quality professional development does not occur in a vacuum and must by necessity recognise participants' position within their career cycle and their degree of professional expertise. The literature and the participants of professional development both indicate that good quality professional development embodies the principles of effective learning, has substance and worth and is adequately supported and resourced (Queensland Board of Teacher Registration, 1991, 1996).

(i) Stages of career cycle development

The literature provides us with a clear picture of the stages involved in a career cycle. Bolam (in Queensland Board of Teacher Registration, 1996:7) suggests five stages of development. The first is the preparatory stage, when you first wish to apply for a new job. The second is the appointment stage, when you are selected for a new job. The next stage is the induction, which equates to the first two years of your post. This is followed by the in-service stage, which is divided into several categories: three to five years in the post, six to ten years and eleven years plus in the post. The final stage outlined by Bolam is the transitional stage, which involves promotion and/or redeployment.

Leithwood (in Queensland Board of Teacher Registration, 1996:9) also suggests a five-stage career cycle. However, this cycle reflects developmental stages as opposed to the simple chronological divisions of Bolam. Leithwood identifies the first stage as the launching of the career, followed by the stabilising stage that involves the development of commitment and the sense of feeling at ease in the position. New challenges and concerns, where you diversify within your position follow this, or you seek added responsibilities, or you build an alternative career. The next stage identified by Leithwood is

called reaching a professional plateau. This stage involves a process of re-appraisal or stagnation. The final stage of Leithwood's career cycle involves preparation for retirement, which may accompany a sense of disenchantment or serenity.

Enhancing this notion of career cycle Leithwood offers a developmental outline of professional expertise (in Queensland Board of Teacher Registration, 1996:10). This developmental outline can easily be applied to a teaching context. At the lowest level of the cycle teachers are developing survival skills. This involves knowledge about and limited skills in use of several teaching models. At the next level teachers are becoming competent in the basic skills of instruction. This is where teachers have well-developed skill in the use of several teaching models. This is followed by an expansion of one's instructional flexibility. At this level teachers experience a growing awareness of the need for and existence of other teaching models and so efforts are made to expand their teaching repertoire. Next teachers acquire expertise. They have skill in the application of a broad repertoire of teaching models and so reach a professional plateau. The next level involves a contribution to the growth of colleagues' instructional expertise. Leithwood's final level of professional expertise involves the participation in a broad range of educational decisions at all levels. At this level teachers are informed and committed to school improvements, accepting responsibility for these improvements and able to exercise leadership in their implementation.

(ii) Good quality professional development

In a recent review of the contemporary literature The Queensland Department of Education (1990) investigated the issue of what makes good quality professional development. Their findings can be summarised as follows.

Good quality professional development emphasises:

Sound leadership

A recognition of adult learning principles

Worthwhile evaluation

Sense of ownership

An appropriate site
The provision of adequate and suitable time
Access to appropriate support materials and equipment.

In addition to these findings the Queensland Board of Teacher Registration (1991) proposed that to create a learning community within schools there was a need for:

Adherence to the principles of effective learning
Balance between top-down and bottom-up processes
Adequate planning and design
Authoritative knowledge sources
Sound evaluative practices.

Therefore, good quality professional development can be seen to embody the principles of effective learning, be of substance and have credibility and worth and be adequately supported and resourced.

In 1995 the Queensland Consortium for Professional Development in Education undertook a survey of 4000 teachers throughout Queensland to ascertain which aspects of their professional development they valued (Queensland Board of Teacher Registration, 1996). The random sample comprised teachers who were in the 25-39 age range, and had four years of teacher education. The survey data concerning formats and strategies identified as being most valuable were noticeably consistent regardless of respondents' gender or their usual sector of employment. Participants valued the opportunity to network and interact with colleagues. They valued seminars and workshop or short courses. They also valued visits to and/or exchanges with other schools. The survey results and the respondents' comments seem to indicate that teachers value professional development that is current, practical and relevant to immediate classroom and curriculum needs and which provides opportunities for them to interact with their peers.

3.2 Successful classroom practices for gifted students

This study is looking to apply instructional and management strategies that have come from good quality professional development as a demonstration that teachers' attitudes towards the gifted and gifted education can be changed. Therefore, it needs to consider what it takes for teachers in classrooms to implement these strategies.

Evertson, Sanford and Emmer (in Westberg & Archambault, 1997) investigated the ways that junior high teachers in the United States adapted their instruction in heterogeneous classrooms and found that a few teachers used appropriate techniques for managing the classroom and for providing differentiated instruction, but the implementing of these modifications required "a high degree of teachers' energy, commitment and determination" (in Westberg & Archambault, 1997:43).

Westberg and Archambault (1997) undertook a multi-site case study to describe ten elementary schools and classrooms with a reputation for implementing differentiated practices to meet the needs of the gifted. To select schools, individuals with a knowledge of a large number of school districts were contacted and asked to name districts that had a reputation for meeting individual student needs, once a district had been named by three different sources contact was made with the appropriate administrator and permission was sought to conduct the study in one elementary school within the district. Common themes emerged across the ten sites that help us to understand how to ensure that differentiated instruction is occurring to accommodate the specific learning needs demonstrated by gifted students.

(i) Teachers' advanced knowledge and education

Westberg and Archambault (1997) found that several of their researchers discussed the advanced experience and knowledge of the classroom teachers who were the focus of the investigations. The majority of the teachers had graduate degrees and all had been involved in a variety of professional

development experiences over the years. Whether the instruction was formal or informal, the teachers “applied what they learned through various professional development opportunities to increase their repertoire of teaching strategies” (Westberg & Archambault, 1997:47).

Besides being knowledgeable about various strategies, the teachers involved in this study appeared to be life-long learners who expressed curiosity about new topics, issues and skills. Most, although teaching for many years, continued to be interested in improving their practices (Westberg & Archambault, 1997:47).

(ii) Teachers’ willingness and readiness to embrace change

The researchers also found that the teachers involved in this study were willing to make changes in their practices. They felt comfortable experimenting with new techniques, strategies or materials and were willing to spend time and effort to make these changes to their existing practices occur. Factors which Westberg and Archambault (1997) suggest influenced the teachers’ willingness to embrace change included the culture of the school, administrative support, effective leadership and the teachers’ personal nature as risk takers.

(iii) Collaboration

According to Friend and Cook (Westberg & Archambault, 1997:48), collaboration includes: voluntary participation, parity among participants, mutual goals, shared responsibility for participation and decision making, shared resources, and shared accountability. Although collaboration was not found at every site, these characteristics describe the types of collaboration observed by the researchers of Westberg and Archambault’s (1997) study.

(iv) Teachers’ beliefs and strategies for differentiating the curriculum

Because teachers in this study were aware of the diversity among their students they tailored their instruction to suit students’ individual needs.

Although the teachers used various strategies to organise learning opportunities for meeting students' needs the common theme was one of challenge and choice (Westberg & Archambault, 1997:49).

Tomlinson (in Westberg and Archambault, 1997:49) states that a paradigm shift is necessary to understand the role of a teacher in a differentiated classroom. In this paradigm teachers are not dispensers of knowledge but organisers of learning opportunities and in the classrooms observed through Westberg and Archambault's study (1997) this was exactly the role undertaken by the classroom teachers.

(v) Leadership

While not observed at all sites in the study, some of the teachers felt that the influence of a significant leader had a direct impact on their attempt to provide differentiated instruction for the gifted students in their classrooms.

(vi) Autonomy and support

Many teachers involved in the study discussed the autonomy and support they felt for implementing new practices and many researchers discussed the supportive atmosphere or collaborative culture of the schools. It appears that most of the sites had a culture that supported teachers as they worked to improve their repertoire of teaching strategies and thus provide for the gifted students within their classes.

These six themes help to clarify what impacts on the implementation of successful classroom practices for gifted students.

3.3 "Making Change Happen": A model for professional development

Using the Creative Problem-Solving Process (CPS) of Parnes (in Dalton, 1985) as a framework, "Making Change Happen" (Queensland Department of

Education, 1994) combines Hill and Eckert's (in Queensland Department of Education, 1994) model for identifying strategies which can be used within a process of collaboration with the idea of providing appropriate support strategies for classroom teachers at the various levels of their awareness (Rankin et al, 1990). See Appendix C for a tabulated representation of this model.

The general principles outlined in this model underpin the professional development program undertaken at the Experimental School. Using this model, teachers could:

- address issues and work on solutions to real problems (a problem-solving perspective)
- share ideas and collaborate to improve quality outcomes (a collaborative planning perspective)
- increase their levels of awareness of the issues they had identified (an awareness perspective)
- move through the stages of development to the point where they were able to network in support of other teachers (a supportive strategies perspective).

These four principles are described below.

(i) A problem-solving perspective

The Creative Problem-Solving Process (CPS) of Parnes (in Dalton, 1985), lends itself to dealing with real problems. The five steps involved in solving problems creatively are:

- Fact finding
- Problem finding
- Idea finding
- Solution finding
- Acceptance finding.

This problem-solving principle advocates that the school community undertook a process of data collection and reflection based upon current practices (Fact Finding). This process of data collection and reflection

provided site-specific information about the school community and was used as a basis for defining issues and problems (Problem Finding). Goals were then clarified and possible solutions were brainstormed (Idea Finding). An action plan was then developed and implemented (Solution Finding). Further data collection was then used to monitor the effects of strategies and for the purposes of ongoing planning (Acceptance Finding).

This process of critical self reflection and inquiry, also reflects the features of Kemmis and McTaggart's (1988) Action Research Spiral. Halsey (in Cohen & Manion, 1994:186) defines action research as "small scale intervention in the functioning of the real world and a close examination of the effects of such intervention." Action research involves the analysis of a problem, which is followed by a search for and experimentation with possible solutions. Then comes reflection on the process and the outcomes, and a reanalysis of the situation, which leads to further experimentation, and so on, in a spiral of renewal. As action research is situational, participatory, self-evaluative and collaborative (Cohen & Manion, 1994) it provides an excellent framework for actualising this model of professional development.

(ii) A collaborative planning perspective

For this model of professional development to be effective, the staff at the Experimental School had to have input into deciding what action the school would take to address the identified issues or problems. Therefore, the planning committee implemented Hill and Eckert's (in Queensland Department of Education, 1994) model of collaborative processes. This model utilises three easily identified forms of collaboration:

- Comfortable collaboration which included the chatty, supportive sharing of anecdotes and experiences among staff
- Structured collaboration which occurred when the administration set up procedures for teachers to work together to implement new approaches
- Critical collaboration which involved reflection by staff as a whole group, as well as by individual teachers.

Table 1 describes Hill & Eckert's Forms of Collaboration in more detail.

Table 1: Forms of collaboration

Comfortable Collaboration	Structured Collaboration	Critical Collaboration
<ul style="list-style-type: none"> • goal - sharing what works 	<ul style="list-style-type: none"> • goal - set by leader 	<ul style="list-style-type: none"> • generate new knowledge by group
<ul style="list-style-type: none"> • within comfort zone 	<ul style="list-style-type: none"> • out of comfort zone - work with people from different perspectives 	<ul style="list-style-type: none"> • discomfort and with dissonance
<ul style="list-style-type: none"> • chatty testimonials of ideas that work 	<ul style="list-style-type: none"> • structuring tasks for shared learning 	<ul style="list-style-type: none"> • critique of practice, habits and expectation
<ul style="list-style-type: none"> • sharing and connecting experiences 	<ul style="list-style-type: none"> • tasks are devised by teacher 	<ul style="list-style-type: none"> • analysis of values and practices within the broader social context
<ul style="list-style-type: none"> • positive interpersonal relationships 	<ul style="list-style-type: none"> • cooperative skills and group maintenance 	<ul style="list-style-type: none"> • promote intellectual conflict and exploration of consciousness
<ul style="list-style-type: none"> • informal and loosely structured groups 	<ul style="list-style-type: none"> • structured for democratic participation 	<ul style="list-style-type: none"> • groups guided to critically reflect on practice
<ul style="list-style-type: none"> • focus on what we know 	<ul style="list-style-type: none"> • focus on creating shared knowledge 	<ul style="list-style-type: none"> • focus on uncovering concealed knowledge

Hill & Eckert (in Queensland Department of Education, 1994:18)

This model of collaboration enabled the staff at the Experimental School to move beyond individualistic, self reflection to become more critical reflectors of their own actions.

(iii) An awareness perspective

Another important component of this model of professional development involved providing information and support for staff so that the issues and problems identified by the school community could be better addressed. At the Experimental School, as in any setting, teachers were at very different levels of awareness and this factor needed to be taken into account when

planning any form of professional development. O'Donohue (in Rankin, et al, 1990) proposes that there are stages of development in educators just as there are stages in any sphere of human endeavour. Table 2 outlines these stages of development:

Table 2: Stage of development in educators

Educators may be:
<ol style="list-style-type: none">1. Unaware2. Sensitive to needs3. Seeking knowledge and information4. Ready to cater5. Understanding what needs to be done6. Providing skills and using new strategies7. Successfully implementing in the classroom8. Providing opportunities for meeting of like minds

O'Donohue (in Rankin, et al, 1990:19)

Teachers at the Experimental School were measured against these stages of development to ascertain where they fitted in relation to their understanding of giftedness and the educational provisions for the gifted.

(iv) A supportive strategies perspective

The question of how to move a teacher's development along the continuum was further addressed by the work of Rankin et al (1990) when they developed a series of support strategies for educators who wished to apply these stages of development to their school practices. Once a teacher's level of awareness had been identified the appropriate support strategies could then be used to move that teacher through the stages of development to the point where they were able to network in support of each other. Table 3 links a detailed list of indicators and strategies to each of the stages of development suggested by O'Donohue (in Rankin, et al, 1990).

Table 3: Appropriate support strategies for classroom teachers at various stages of development

The teacher who is...	Indicators	Strategies
1. Unaware	<p>Outside referral e.g. guidance officer, parent, other professional</p> <p>No requests from school for assistance</p>	<p>(a) Use “significant others” to influence</p> <p>(b) Run general seminars and promote these well</p> <p>(c) Promote yourself and your role at all levels</p> <p>(d) Contact Principal and negotiate</p> <p>(e) Offer staff awareness talk</p> <p>(f) Send resource package</p> <p>(g) If called in to a teacher, identify an effective strategy used by the teacher, praise this and build on it</p> <p>(h) Individual interview: speak with child round table with stakeholders (if urgent)</p>
2. Sensitive to needs	<p>Teacher contact</p> <p>Request for consultant’s assistance</p> <p>Teacher follow-up from seminar/workshop</p>	<p>(a) Advertise further for awareness raising</p> <p>(b) Provide materials for classroom use and background information</p> <p>(c) Visit to help assess situation and clarify appropriate strategies; offer follow-up e.g. consultant designed, independent study, mentor (requiring little change by the teacher)</p> <p>(d) Identify an effective strategy used by the teacher, praise this and build on it</p>
3. Seeking knowledge and information	<p>Attends “basics” workshop</p> <p>Consultant intervention: evidence of knowledge/awareness and request for more information</p>	<p>(a) Facilitate classroom linking and exchanges</p> <p>(b) Invite to master classes</p> <p>(c) Establish mail link</p> <p>(d) Invite to informal discussion groups with resources</p> <p>(e) Encourage further information sharing through networks</p> <p>(f) Offer advice on strategies for individualisation that suit the particular classroom</p>
4. Ready to cater	<p>Shows signs of being prepared to change (through planning)</p>	<p>(a) Provide constant external motivation via newsletters, networking, classroom demonstrations, keeping principal informed</p> <p>(b) Keep advised of networking, inservice - process sharing</p> <p>(c) Assist in making appropriate choices to trial in classroom</p>

5. Understanding what needs to be done	Requests additional resources for special needs Is putting new skills into action	(a) Offer individual consultation to provide resources and strategy options (b) Assist with development of skills through coaching (c) Involve in level 8 initiatives (d) Prepare a proposal for school/teacher (e) Assist with curriculum differentiation e.g. Bloom
6. Practising skills and using new strategies	Participating in advanced workshops or trialing management / provision	(a) Monitor, assist, offer feedback and help evaluate (b) Involve to a greater degree in networking and inservice
7. Successfully implementing in the classroom	Evidence of well-managed classroom Environment ideal for "Bubble-Up"	(a) Approach to model for others (b) Provide leadership and coordinating opportunities (c) Encourage more student interaction (d) Offer advice using gifted and talented models e.g. Maker, Krathwohl (e) Assist with use of metacognition (f) Assist with monitoring, review and evaluation
8. Providing opportunities for meeting of like minds	Demonstrating innovation More global in concept A networker, entrepreneur and organiser Working outside the classroom	(a) Offer organisational support - promotion (b) Involve in committees (c) Assist with research opportunities (d) Support with evaluation

Rankin, Hole, Langdale and O'Donohue (1990:20)

In summary, "Making Change Happen" (Queensland Department of Education, 1994) was believed to provide a working methodology for addressing the professional development needs of the Experimental School. This study then attempted to evaluate the effectiveness of this model in facilitating a change in teachers' attitudes to giftedness and in facilitating appropriate educational provision for gifted students within the school setting.

Chapter 4: Research methodology

4.1 Rationale

In selecting a research methodology, careful consideration was given to the nature of the problem to be investigated. As the research questions guided the collection and analysis of data, the methodology used needed to provide possible answers to these questions.

4.2 Data-gathering methods

The research problems proposed for this study were perceived to be complex, and in need of a combination of data-gathering methods to provide richer, more descriptive results as they were concerned with mapping any changes in attitude as well as showing whether and how this change was reflected in practice. It was considered necessary to use methodological triangulation, or multiple methods of collecting data. This process of qualitative cross-validation allowed for a comparison of information from multiple data sources to determine whether or not there was convergence of information on a common finding (Wiersma, 1995:264). It was hoped that this procedure would enhance “both the reliability and the validity of the findings” (Moon in Buchanan & Feldhusen, 1991:168). Table 4 displays the relationship between the research questions to be examined and the methodologies used by this study.

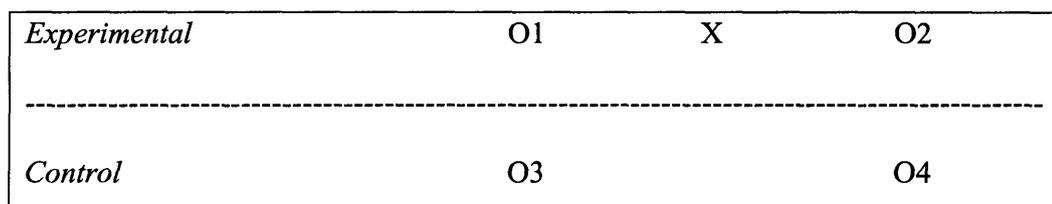
Table 4: Relationship between the research questions to be examined and the methodologies to be used

Research Question 1			
Do teachers involved in a specially designed professional development program display an increased positive attitude toward the gifted?			
Phase	Data gathering instrument/s	Methodology	Sampling procedure
Phase 1 of the study	Questionnaire (App B)	Quantitative	Non random control group pre-test post-test design
Phase 2 of the study	Interviews (App D)	Qualitative	Stratified sample
Research Question 2			
Are there any aspects of the program which participants believe contributed markedly to shifts in their attitude toward gifted students?			
Phase	Data gathering instrument/s	Methodology	Sampling procedure
Phase 2 of the study	Interviews (App D)	Qualitative	Stratified sample
Research Question 3			
Do the aspects identified by participants as contributing markedly to this shift in their attitude reflect in any way the support strategies suggested in the "Making Change Happen" (Queensland Department of Education, 1994) model of professional development?			
Phase	Data gathering instrument/s	Methodology	Sampling procedure
Phase 2 of the study	Semi-structured interview (App D)	Qualitative	Stratified sample
Research Question 4			
Are significant changes in teacher attitudes towards the gifted transferred to their classroom practice?			
Phase	Data gathering instrument/s	Methodology	Sampling procedure
Phase 2 of the study	Semi structured interview (App D)	Qualitative	Stratified sample
Phase 2 of the study	Document analysis (App F)	Qualitative	Stratified sample
Phase 2 of the study	Nonparticipant observation (App E)	Qualitative	Stratified Sample

Due to the nature of the research problem, a quasi-experimental design was employed for this study with a combination of quantitative and qualitative methodologies. Phase 1 of the study utilised quantitative methods, which involved the analysis of data collected from both the Experimental School (n = 50) and the Control School (n = 28), through the use of a survey by questionnaire. Phase 2 of the study utilised qualitative procedures, which involved gathering data from the Experimental School only (n = 10), through the use of non-participant observation, interviews and document analysis. In both phases data were gathered directly from individuals in their natural environment for the purposes of studying attitudes.

Phase 1 of this study employed a non-equivalent control group pre-test post-test design (Leedy, 1993). Figure 2 portrays the schematic relationship between the two groups and is based on symbols and conventions from Campbell and Stanley (in Cohen & Manion, 1994). The experimental group refers to the teaching staff at the Experimental School, whereas the control group refers to the teaching staff at the Control School. The experimental manipulation or treatment, represented as X, was experienced by the Experimental School only, and involved the teaching staff being exposed to a specifically designed professional development program. The dashed line separating the parallel rows in the diagram indicates that the experimental and control groups have not been equated by randomisation. O1 and O3 represent the pre-test measurements, while O2 and O4 represent the post-test measurements.

Figure 2: The relationship between the Experimental School and the Control School



An attempt was made to minimise the differences between the Experimental School and Control School, in the non-equivalent control group design outlined above, by attempting to match as closely as possible, and on as many variables as possible, the two groups in a kind of quasi-randomisation before beginning the experiment (Leedy, 1993). Therefore, in selecting the Control School the following variables were taken into account:

- (a) Both schools are secondary, girls' schools in metropolitan Brisbane
- (b) Both are independent schools with church affiliations where the respective orders take an active involvement in daily activities
- (c) Both schools are directed by the same syllabus requirements
- (d) Both share a similar school ethos and share a long and valued tradition
- (e) Both schools are bound by similar routine daily requirements
- (f) Both schools are similar in the ethnic composition of their students. Table 5 summarises data gathered as part of the 1998 annual census.

Table 5: Profile of student population at the Experimental School and the Control School

DESCRIPTOR	EXPERIMENTAL SCHOOL	CONTROL SCHOOL
Students who speak English as a second language (ESL)	8.5%	7.9%
Aboriginal or Torres Strait Islander students	0.3%	0.4%

- (g) Both schools are structured along similar departmental divisions

- (h) Both have a similar staff profile when considering issues such as gender, age, years of experience and qualifications. Table 6 summarises data gathered through the biographic cover sheet as part of the pre-test phase of the research project.

Table 6: Staff profiles of the Experimental School and the Control School

DESCRIPTOR	EXPERIMENTAL SCHOOL	CONTROL SCHOOL
Gender		
Female	96%	75%
Male	4%	25%
Age Range		
20-29	16%	4%
30-39	30%	14%
40-49	30%	43%
50+	24%	39%
Years of Experience		
0-4	6%	4%
5-9	22%	0%
10-20	46%	40%
21+	26%	56%
Qualifications		
up to 4 years trained	42%	29%
Post graduate studies	40%	46%
Masters or Doctorate	16%	25%
Other	2%	0%

4.3 Data-gathering instruments

The following data-gathering instruments were used for this study:

(i) Quantitative

Questionnaire

As early as 1928 Thurstone proposed a method for the measurement of attitude (Thurstone, 1977:127). This methodology was based on the assumption that statements of opinion symbolised attitudes and therefore, attitudes could be measured by developing scales of opinion statements.

Self report measures (Cook & Selltiz, 1977: 27) by definition call for the individual's own account of his/her reactions to the attitudinal object and are one of the most frequently used methods of securing data from which inferences are made about an attitude. Self report measures are based on two main assumptions. Firstly, that the respondent is aware of her/his attitude with respect to an object, or can determine his/her attitude through introspection. Secondly, that the respondent is both willing and able to report her/his attitude without distortion, either intentionally or unintentionally.

Any assessment of the adequacy of self report measures as an indicator of attitude needs to take into consideration the susceptibility of this measurement technique to other influences. The probability that a respondent's overt responses may deviate from their private responses is due to three characteristics of the self report measure. Firstly, the purpose of the instrument is obvious to the respondent. Secondly, the implications of answers are apparent to the respondent, and finally the respondent can consciously control his/her responses. The following techniques have been devised to address this susceptibility (Cook & Selltiz, 1977:27):

1. Make the purpose and the implications of the responses less apparent.
2. Make it easier to give answers that may be considered undesirable.
3. Make it harder to give, falsely, answers that may be considered desirable.

“Opinions about the gifted and their education” (Gagné & Nadeau, 1991) is a 34-item self report measure constructed to measure a subject’s attitudes towards the gifted and their education across six factors:

- (a) Needs of gifted children and support for special services
- (b) Objections based on ideology and priorities
- (c) Social usefulness of gifted persons in society
- (d) Rejection of gifted persons by others in the immediate environment
- (e) Attitudes towards ability grouping
- (f) Attitudes towards acceleration.

Subjects are asked to indicate their agreement or disagreement with each item on a 5-point Likert scale (1 = totally disagree; 2 = partially disagree; 3 = undecided; 4 = partially agree; 5 = totally agree).

Although this instrument was originally used with French-speaking Quebecois, it has been used on a wide scale in the Australian context by educators in Queensland, South Australia and New South Wales (Gross, 1994; Skabe, 1996). An analysis of the adequacy of this instrument indicated the following:

- Techniques had been designed to make it easier to give answers that may be considered undesirable thus reducing the probability that overt responses would deviate from private responses. At the simplest level respondents were given assurances of anonymity, and the questionnaire included a statement which assured respondents that “there are no correct or incorrect answers” (Cook & Seltiz, 1977:28). Other techniques were built into the instrument itself. Some of the items were worded in such a way that an unfavourable reply was likely to be considered acceptable (Cook & Seltiz,

1977:28). For example, Item 26: “Tax-payers should not have to pay for special education for the minority of children who are gifted”.

- Some items were also presented in such a form as to permit a “judgement of value” rather than a “judgement of fact” (Likert, 1977:150). Phrases such as “gifted children should” or “our schools should” or “tax-payers should” constantly appear throughout the questionnaire.
- Items were also worded in a reverse direction and placed at random throughout the questionnaire to stop respondents filling in the scale carelessly by going down in one column. This is known as a response set (Burns, 1994:337) and forces respondents to read and judge the statements carefully, thus increasing reliability and validity (Burns, 1994). For example, Item 3: “Children with difficulties have the most need of special education services”.
- Seiler and Richard (1977:171) have demonstrated that if a scale is constructed and scored by the Likert method, 20 or 25 items are usually enough to produce a reliability coefficient of .90 or more. “Opinions about the gifted and their education” (Gagné & Nadeau, 1991) is a 34-item questionnaire and so was considered, through a rule of thumb, to have a high reliability coefficient.

The scale was prefaced by biographic items eliciting the participant’s age, sex, level of education, years of teaching experience, grade levels and subject areas generally taught, and whether the respondent had undertaken any previous formal study in gifted education, or attended inservices, seminars or conferences on gifted children. The information obtained from the biographic cover sheet was used for two purposes. Firstly, it was utilised to profile the staff at both the Experimental School and the Control School. These data facilitated the matching of the two schools on as many variables as possible, thereby minimising the differences between the two groups. Secondly, it was utilised to select the stratified sample of participants which was used for phase

two of the study. A copy of the biographic cover sheet and the questionnaire may be found in Appendix B.

(ii) Qualitative

Interview

A semi-structured interview schedule was used to obtain information on any perceived change in the participant's attitude towards the gifted and their education (see Appendix D). These interviews were undertaken with the stratified sample of teaching staff from the Experimental School, after their involvement in the professional development program and just prior to the post-test being carried out. The following interview etiquette (Leedy, 1993) was followed. Firstly, the interview was set up well in advance. Permission was sought to tape the interview and an agenda of questions was sent to the interviewee with written confirmation of the date proposed. Secondly, the interviewer was prompt and followed the agenda of questions as proposed. Finally, following the interview, a transcript of the interview was sent to the interviewee to check its accuracy and to invite further comment.

Observation

Since people's attitudes are not always consistent with their behaviour (Worchel, Cooper & Goethal, 1988), non-participant observation was undertaken to witness the connection between teachers' attitudes towards the gifted and their education, and their classroom practice. An observational instrument was constructed to ensure systematic observation of participants. Braggett's (1994) list of appropriate educational provisions for the gifted became the basis of the instrument (see Appendix E).

Document analysis

Similarly, document analysis was used to gauge the consistency between attitude and behaviour. Participants were asked to submit lesson plans for any

two units and these were examined against a checklist (see Appendix F) of appropriate educational provisions for the gifted (Braggett, 1994).

4.4 Sampling procedures

The concept of sampling involves “taking a portion of the population, making observations on this smaller group and then generalising the findings to the large population (Burns, 1994:62). This research project recognised the need to use sample sizes that accurately represented the population under study (Cohen & Manion, 1994), and so in this instance the sample consisted of the following combinations:

Phase 1 of the study asked the entire teaching staff at both the Experimental School (n=50) and the Control School (n=28) to complete “Opinions about the gifted and their education” (Gagné & Nadeau, 1991) as a pre- and post-test at the start of the school year and at the conclusion of that same year. As change is assumed to be a normal process in most group settings (Le Compte & Goetz, 1982), this project was purposefully linked to the school calendar year to reduce the impact of growth or attrition within the sample.

Phase 2 of the study involved the semi-structured interview, the non-participant observation and the document analysis of lesson plans and involved the use of a stratified sample (Cohen & Manion, 1994) from the Experimental School only. The overall population was considered to be quite diverse, consisting of several subpopulations. Stratified sampling was used to guard against wild samples, to ensure that no subpopulation was omitted from the sample and to avoid overloading in certain populations (Wiersma, 1995:290). A proportional allocation was used in that the sampling fraction was the same for all strata. The sampling fraction is the ratio of sample size to population size, expressed as n/N (Wiersma, 1995:290) and as such was $10/50$ or $1/5$, which equals .20.

The researcher identified ten participants from the questionnaire responses. All respondents were asked to indicate if they would be willing to be involved in this in-depth level of the study. It was intended that the sample be small in order to be manageable for one researcher. Selection was based on data gathered from the biographic cover sheet attached to the questionnaire. A copy of this cover sheet can be seen in Appendix B.

In an attempt to ensure a cross section of participants teachers were selected on the basis of the following criteria: gender, age range, years of experience, qualifications. Table 7 represents the proportional allocation of the stratified sample; while Table 8 demonstrates how the selected participants reflect the proportional allocation of the stratified sample.

Table 7: The proportional allocation of the stratified sample

Strata	Strata sizes		Sample size by strata
Gender			
Female	48		9
Male	2		1
	50 = N		10 = n
Age Range			
20-29	8	A 1/5 random sample is selected from each stratum.	2
30-39	15		3
40-49	15		3
50+	12		2
	50 = N		10 = n
Years of Experience			
0-4	3		1
5-9	11		2
10-20	23		4
21+	13		3
	50 = N		10 = n
Qualifications			
Up to 4 years trained	21		4
Post Graduate studies	20		4
Masters or Doctorate	9		2
	50 = N		10 = n

Table 8: Participants involved in Phase 2 of the study

PARTICIPANT CODE	GENDER	AGE RANGE	YEARS OF EXPERIENCE	QUALIFICATIONS
A	Male	30-39 years	10-20 years	4 years
B	Female	40-49 years	5-9 years	4 years
C	Female	50+ years	21+ years	Post Graduate
D	Female	50+ years	21+ years	Post graduate
E	Female	20-29 years	5-9 years	4 years
F	Female	30-39 years	10-20 years	Masters
G	Female	40-49 years	10-20 years	Post Graduate
H	Female	40-49 years	21+ years	Post Graduate
I	Female	20-29 years	0-4 years	4 years
J	Female	30-39 years	10-20 years	Masters

As the researcher is a member of the teaching staff at the Experimental School it was recognised that the relationship between the researcher and the subjects would have a major impact on the willingness of teachers to participate in this phase of the study.

4.5 Data analysis procedures

The data from each source were organised into discrete groups and analysed separately, using techniques appropriate to the source.

(i) Quantitative

Questionnaire

“Opinions about the gifted and their education” (Gagné & Nadeau, 1991) asks subjects to indicate their agreement or disagreement with each item on a 5-point Likert scale (1 = totally disagree; 2 = partially disagree; 3 = undecided; 4 = partially agree; 5 = totally agree). To avoid scoring errors and to ensure consistency the questionnaire was scored by the researcher using the procedure outlined in Appendix B Part 3. In scoring the scale care was taken to invert the scores for the items which are worded to express a negative concern. Thus the lowest possible score for any item becomes 1, while the highest possible is 5. This research project used the latest version of the scale, for which norms were not available. However, the following general guidelines are suggested by the authors. Means below 2.00 usually indicate a very negative attitude, while means above 4.00 indicate a very positive attitude. Means between 2.75 and 3.25 could be interpreted as reflecting an ambivalent attitude (Gagné, 1991). The content validity for this instrument was ascertained by preparing an item pool through a systematic review of existing attitude scales, a careful analysis of newspaper articles, and interviews with parents and teachers. From the item pool, the items were chosen by a group of ten specialists in gifted education. A homogeneity coefficient of .91 was obtained for the scale; hence, its reliability is considered to be high (Bégin & Gagné, 1994).

Use of the Likert scale gives rise to a quantitative estimate of the attitude under study. Therefore, results were calculated, tabulated and graphed for easy interpretation.

Various constraints impacted upon the design of the research methodology at this point. Ideally, there would have been advantages to having a larger subject sample. 170 subjects (total number of items on questionnaire multiplied by 5) would have enabled the researcher to undertake some form of multi-variate factor analysis. However, to enhance the size of the subject sample would be to change the nature of the study considerably. This study

was taken from a practical point of view and consequently each group was intact and naturally assembled.

Not only were constraints imposed on the research methodology by the size of the subject sample, but also by the issue of confidentiality. The researcher gave an undertaking of confidentiality to all participants that was fundamental to securing their informed consent. Consequently, the researcher employed a strict interpretation of this confidentiality, to the extent that score sheets were not coded to identify individuals, even though this would have enabled the researcher to use a more powerful analytical tool.

Other limitations lay in the nature of the Likert Scale data itself. How could the data be used to assess any shifts in teachers' attitudes toward the gifted student and/or toward the educational provision for these students? The researcher could not generate and use means and standard deviations, even though, according to Ary (in Buchanan & Feldhusen, 1991:76), the mean provides us with the "best indicator of a combined performance of an entire group of individuals" and the standard deviation takes into consideration the size and location of each score within the distribution of scores and uses the mean of the group of scores as a point of reference (Ary et al 1985 in Buchanan & Feldhusen, 1991:78). The problem, however, is that the data obtained with the questionnaire's 5-point Likert scale are only ordinal. Therefore, the researcher chose to use Rasch analysis to convert these ordinal ratings into interval measures allowing them to take on the properties of a true measure (Merbitz, Morris & Grip 1989 in Chern, Kielhofner, de las Heras & Magalhaes 1996:518).

(ii) Qualitative

Interview

Once the data from the interview were collected, the next stage involved coding. Coding involves a translation of verbatim accounts of what people say

to specific categories for the purposes of analysis (Cohen & Manion, 1994). The validity of inferences drawn from these data will depend upon the reliability and consistency of the classification system. Therefore, this study recorded the interviews and used a precoded interview schedule (see Appendix D) based on the Rankin, Hole, Langdale and O'Donohue's (1990) support strategies for classroom teachers at various stages of development. Multiple researchers who discuss the meaning of what has been observed until agreement is reached could increase the internal reliability (Le Compte & Goetz, 1982). However, constraints of time and funding limited the size of the research team for this study to one.

Observation

Analysing data gathered from the classroom observation involved assigning "monitored classroom events to previously defined categories" (Galton, 1994: 501). The goal of the observations was to make valid inferences about the connection between teachers' attitudes towards the gifted and their education, and their classroom practice. The process of non-participant observation generally involves three stages. Firstly, the non-participant observer records events in a systematic manner as they happen. Next the events are coded into prespecified categories and finally the events are analysed. In this instance the observer simultaneously recorded and coded events while present in the classroom.

Several measures have been taken to increase the reliability and consistency of the classification process. Firstly, in an attempt to make the technique more objective the criteria used to describe classroom events are clearly defined within the observation instrument (see Appendix E). Next, the researcher used the observation instrument in an initial trial to assess its workability. The observer also regularly visited the classes under consideration to reduce the impact of the observer's presence on the nature of the data to be collected. It was also hoped that there was stability (Weber, 1990) in the process of data collection as there was only one coder, thus the problem of inter-coder

reliability did not arise. However, it was also recognised that human coders are subject to fatigue, likely to make mistakes and as the text is coded their understanding of the coding rules may change. Therefore, the researcher structured short observation sessions and early coding work was rechecked to minimise these difficulties.

Document Analysis

The content analysis of the randomly selected lesson plans was an attempt to make valid inferences from the text (Weber, 1990) about the connection between teachers' attitudes towards the gifted, their education, and their classroom practice. Therefore, there was a direct link between the categories for coding the classroom observation and the predetermined categories for coding the document analysis (see Appendix F for details). The following steps were applied to create and test the coding scheme (Weber, 1990) to check its appropriateness for classifying this data:

- (a) define the recording units
- (b) define the categories
- (c) test the coding on a sample of the text
- (d) assess the accuracy and reliability of the process thus far
- (e) revise the coding rules if appropriate
- (f) retest the coding on a sample of text
- (g) code all of the text
- (h) assess the achieved reliability or accuracy of the process.

4.6 Ethical considerations

This study occurred in a natural setting and was undertaken to record processes of change experienced by its human participants. Therefore, the

need to address ethical issues was recognised and considered from the early stages of planning this research project.

Taking into account the research methodology planned for this study, in particular the use of interviews, ethics clearance was sought from The Advisory Committee on Ethics in Human Experimentation at the University of New England. This committee provided a set of guidelines for dealing with research involving human experimentation. The committee's definition of experiments included "those undertaken on healthy subjects for the purpose of contributing to knowledge, and include investigations on human behaviour". Basically these guidelines referenced three main considerations.

(i) Securing Informed Consent

Firstly, the project needed to obtain the consent of the participants. This consent was to be made up of two parts: the 'free consent' of individual subjects involved in the 'in-depth' stage of the project and the consent of the institutions involved in the general survey component of the project. 'Free consent' was based on a subject's clear understanding about the purpose, methods, demands, risks, inconveniences and discomforts of the project. A copy of the consent form and covering letter is included in Appendix A. Institutional approval was obtained in addition to, and not as a substitute for, individual consent from the research subjects. Institutional approval was sought, through the respective school principals, because the two schools in question are Order owned and operated independent schools.

(ii) Right to refuse to participate

Secondly, the project needed to recognise the individual research subject's right to refuse to participate, or to subsequently withdraw from the project at any time without penalty. This right was made clear to the subjects through the covering letter and again in the consent form. Growth and attrition are assumed to be a normal process in most group settings (Le Compte & Goetz,

1982). Two participants chose to withdraw from the 'in-depth' stage of the study. Due to unforeseen circumstances both participants left the teaching staff of the Experimental School, and so they were replaced by drawing on those teachers who had nominated a willingness to take part in this component of the project. These replacements were carefully selected to ensure that there was no impact upon the stratified sample.

(iii) Safeguard privacy

Finally, the project needed to safeguard the privacy of all participants, ensuring that neither individuals nor institutions could be identified by the data disclosed by this study.

All participants understood that the information supplied in relation to the project would be kept confidential except for the purposes of this study and the following steps were undertaken to achieve this:

- (a) All names of people have been disguised through the use of a code to safeguard the privacy of the participants.
- (b) Likewise the schools involved in this study have not been named and are referred to as either the Experimental School or the Control School. They are also only described in general terms that have some bearing on the findings.
- (c) Care was also taken to ensure that the appendices did not contain information that contravened the above.
- (d) The confidentiality of all records generated as part of this study was also protected. The researcher stored all audiotapes, transcripts, questionnaires and biographic cover sheets in a locked file. All information is to remain the property of the researcher and personal information will not be disclosed.

5.4 Validity and Reliability

Buchanan and Feldhusen (1991:56) believe that “the strength of a research design is calibrated by its internal and external validity.”

(i) **Internal Validity**

Internal validity refers to how confident we can be that control of extraneous variables was accomplished, so that alternative interpretations of the results of a study (other than a treatment effect) can be ruled out (Buchanan & Feldhusen, 1991: 56). Therefore, this study aimed to control variables whose effects were not of interest to the study so that the effect of the independent variable on the dependent variable could be maximised and determined.

A major issue was the possibility of pre-existing differences between the control group and the experimental group. This study attempted to demonstrate equivalence between the two groups by matching subjects in the experimental and control groups on as many extraneous variables as possible. In selecting the Control School the following variables were taken into account:

- (a) Both are secondary, girls schools in metropolitan Brisbane.
- (b) Both are independent schools with church affiliations where the respective orders take an active involvement in daily activities.
- (c) Both schools are directed by the same syllabus requirements.
- (d) Both share a similar school ethos and share a long and valued tradition.
- (e) Both schools are bound by similar routine daily requirements.
- (f) Both schools are similar in the ethnic composition of their student population.
 - Over 8% of students at both schools speak English as their second language.

- Over 0.3% of students at both schools are Aboriginal or Torres Strait Islanders.

(g) Both schools are structured along similar departmental divisions.

(h) Both have a similar staff profile when considering issues such as:

- **GENDER**

Over 75% of the teaching staff at both schools are female.

- **AGE RANGE**

Over 57% of the teaching staff at both schools are between 30 and 49 years of age. In addition over 24% of the staff at both schools are over 50 years of age.

- **YEARS OF EXPERIENCE**

Over 40% of the teaching staff at both schools have been teaching for between 10 and 20 years and over 26% of the teaching staff have been teaching for over 21 years.

- **QUALIFICATIONS**

Over 40% of teaching staff at both schools hold post graduate qualifications and over 16% hold degrees at Masters or Doctorate level.

However, this study was undertaken from a practical point of view and consequently each group was intact and naturally assembled.

(ii) External Validity

External validity refers to the characteristics of a research study that allow generalisations to similar populations, settings and treatments (Asher, 1976 in Buchanan & Feldhusen, 1991:176). Although by its very design this study was quasi-experimental, and so not as internally valid as a true experiment, it is more externally valid because it is representative of the real environments within which teaching and learning takes place.

Methodological triangulation was used to enhance the internal and external validity of this study. The researcher believed that methodological triangulation facilitated a comparison of information from multiple data sources, allowing the study to determine whether or not there was convergence of information.

(iii) Reliability

The reliability of a research study is based upon two assumptions. Firstly, that the study can be repeated, and secondly, that two or more researchers can have similar interpretations by using the categories and procedures used by the researcher in the original study (Burns: 1994).

The following considerations were implemented in an attempt to address the reliability issues associated with this study.

- (i) Included are copies of instruments used for both quantitative and qualitative data collection (see Chapter 4.3 and Appendix B, D and E).
- (ii) Included are detailed procedures for analysis of both quantitative and qualitative data (see Chapter 4.5 and Appendix B and D).

Included are coded transcripts of interviews and copies of coded recording sheets for document analysis and classroom observation (see Appendix G and H).