

**THE IMPACT OF AN INFORMATION  
LITERACY FRAMEWORK -  
BASED ON SIX INFORMATION SKILLS-  
ON THE LEARNING OF  
SECONDARY SCHOOL GIRLS  
WHO ARE IDENTIFIED AS BEING GIFTED.**

by

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**CERTIFICATE**

I certify that this thesis has not been submitted for any degree and nor has it been submitted as part of candidature for any other degree or award.

I also certify that the thesis has been written by me, and that any help I have received in preparing this thesis, and all sources used, have been acknowledged in this thesis.

**Signature of Candidate**

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### **DEDICATION**

This work is dedicated to my mother, Eileen and my late father, Pat,  
whose belief in learning gave me opportunities that were not theirs,  
and to my late dear friend, Mark.

## **ACKNOWLEDGEMENTS**

At the stage of submitting this thesis, I reflect on the people who have been instrumental to it ever being completed. I extend my humble and heartfelt thanks to:

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## **ABSTRACT**

Research to date has shown that a particular information literacy framework - consisting of six information skills- has had a favourable impact on the learning of students in mixed ability classes, and on students with learning difficulties. The current research investigates the impact of an information literacy framework on the learning of students at secondary school who were identified as being gifted. Owing to the nature of the school at which the research was conducted, the participants were female. The research context was a curriculum area with aims similar in spirit to the six information skills.

The researcher found in Vygotsky's (1975) Zone of Proximal Development [ZPD] a theoretical framework that would contribute to the credibility of the research. That essentially was looking at a new state that resulted from a mediating factor being applied to the original state. Expressed as an equation this might read ( $C = A + B$ ), where A indicated the girls as users of information at the start of the research, B indicated the intensive exposure of the girls to an information literacy framework, and C indicated the girls as utilisers of information at the end of the research.

The researcher was informed by Moore's (1995) findings that research within the learning framework would increase knowledge of how the information skills are used contextually and in practice and chose to work in the qualitative paradigm.

Consideration of both Yin's (1994) definition of a case study and Miles and Huberman's (1994) recurring features of a case study confirmed the appropriateness of the case study (Type IV embedded, multiple case study).

Data were collected over four years, with the concentration being in a three term period. Instruments were varied and included taped interviews, open-ended questions, comparative exercises, research tasks and journals. The data were analysed qualitatively, and findings were presented in vignettes (Lawrence-Lightfoot and Hoffman Davis, 1997).

The study found that the information literacy framework had a favourable impact on each of the girls, both in their learning and in personal areas such as

self-esteem. These findings were consistent for each of the skills as discrete units and as parts of an information utilisation process.

The findings of the research raise implications for curriculum design, the education of gifted students, education for lifelong learning, employment of teachers, assistance for the development of reluctant teachers of gifted students, and matters of duty of care, equity and litigation. The research also identifies areas in which further research can be conducted.

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# **CHAPTER ONE:**

## **INTRODUCING THE RESEARCH**

### **1.1 INTRODUCTION TO CHAPTER ONE**

Section 1.1 introduces the research reported in this thesis, in terms of where the research was conducted, who the participants were, the learning framework under investigation, and the research context.

The aim of the research reported in this thesis is to examine the impact of an information literacy framework on the learning of gifted senior secondary students. The research was conducted in Marist Sisters' College, Woolwich (MSCW). This secondary school for girls is a Catholic school owned by the Marist Sisters, operating within the system of schools run by the Catholic Education Office (CEO) Sydney. The school is single-sex, so each of the participants in the research was female.

The sample group consisted of seven girls, all identified as being gifted. The researcher chose to use a means of identification that would sit comfortably in the educational environment of MSCW. The means of identification of gifted students is closely linked to the definition of 'gifted'. The debate on the definition of this concept has been happening for close on 80 years. Since the early 1990's it has become livelier with governments in Australia- particularly State governments- focusing on gifted education. The definition of gifted education used in this thesis derives from the means of identification based on a list of characteristics that related to the domains of giftedness categorised by Gagne [1993, pp.69 - 87]. This list of characteristics has been used by the CEO in initiatives for gifted students, and is recognisable to the teachers in CEO schools that participated in these initiatives. The list is similar to those used in other systems of schools in the identification of gifted students.

The research examined a particular learning framework, namely an information literacy framework. Just as there is ongoing debate in terms of the definition of 'gifted', so too is there with the definition of 'information' and 'information literacy'. Attempts to define these terms attract increasing academic interest in the information science and education fields. These

terms are discussed in detail in Chapter Two. Notwithstanding the elements of the debate on the meaning of the term, in this thesis ‘information literacy’ refers to an information user being able not only to access information, but also to utilise that information effectively and efficiently. To do this requires skills. A set of six information skills developed by the New South Wales Department of Education (1988) constitutes the information literacy framework that is used in this research. These six skills were published in *Information Skills in the School* [1988]. This document shows no date of publication. In the document, reference is made in the Foreword to a 1987 document. Personal reflection of the researcher is that the information skills document was published the following year, and in 2001 the NSWDE History Officer-Archives confirmed this, stating that the document was published in 1988. The six information skills involve the information user *defining, locating, selecting, organising, presenting* and *assessing* information that is accessed. In this thesis, *evaluating* replaces *assessing*. The reason for this change has to do with perception: in the experience of the researcher, the word ‘assess’ has a specific marks-oriented connotation in the minds of students. Differences exist between the model of information literacy that has these six skills as its base and the skills that appear in other models, but the similarities are more significant both in number and scope. Both the differences and similarities between a selection of internationally respected models are considered in Chapter Two.

Terminology relating to what is taught in schools in NSW is sometimes used interchangeably, even though the terms are discrete. Three such terms that are used interchangeably are ‘curriculum’, ‘course’ and ‘subject’. For clarity’s sake these alternatives are explained here rather than only being included in the glossary section at the end of the chapter:

- ‘Curriculum’ is the over-arching term that refers to all that is part of the educational experience of the students. This experience might be either implicit or explicit, and it might be intended or unintended.
- ‘Courses’ refers to an area of study within a curriculum area that can be studied in more than one subject; and,
- ‘Subjects’ refer to discrete areas of study within courses and curriculum areas.



Higher School Certificate studies generally involve two years of study. Two dimensions that are related to, but are not part of this research, are the age and the gender of the participants. As stated in the opening paragraphs of this Section, the participants were girls. They participated in the research during their penultimate year of secondary education. In NSW, secondary education occurs from Year 7 to Year 12, and the accreditation Years are Year 10 (School Certificate) and Year 12 (Higher School Certificate (HSC)). Year 11 is the Preliminary Year for the HSC. HSC studies generally involve two years of study. In some subjects the content of the penultimate year – called the Preliminary Year- is examined in the HSC examinations. An example of such a subject is *Society and Culture* (SAC). In other subjects the content of Preliminary Year's work is considered to be required prior knowledge. The research possibilities stemming from these two dimensions are developed in Chapter Six.

The current research extends the knowledge gathered from previous research into the impact of an information literacy framework on learning, even though that research is limited [Todd, 1999]. This research has involved lower ability groups [Todd, McNicholas and Sivanesarajah, 1992] and mixed ability groups [Todd, Lamb and McNicholas, 1993]. To date the research has not considered whether or not the information literacy framework suits the needs of gifted students. The context for the current research is a school subject that has aims that complement the aims of the skills that underpin the framework.

## **1.2 RATIONALE FOR THE RESEARCH**

### **1.2.1 Information/Communication Age and information processing skills**

History records our penchant for naming stages in the human story according to dominant characteristics of the particular era, or of the particular society. Just as there is debate on the definition of 'information literacy'- and, indeed on what 'information' is- so too there is on the naming of the contemporary historical period. Attempts to name this age vary in detail. There is, however, one point of commonality: the widespread use of electronics to establish communication links and to disseminate information.

One source [Internet Resources, 1999] uses 'Communication Technologies era' to identify the last two centuries, and the 'Internet era' for the last 50 years. The 'Communication Technologies era' underpins a misunderstanding of the monumental changes that have occurred in society, particularly since Berners-Lee set the pace with the worldwide web [Internet resources 1999]. It is undisputed that advances in technology that have the potential to inform the world have happened at an almost unbelievable rate. These advances also are seductive. They attract interest from the calculating world of budgetary finance, and from the eager world of those who thirst for knowledge. However, what of the 'communication' part of the identifier? Having access to the technologies does not automatically result in an increase in knowledge. The key to whether or not this occurs is the efficiency and effectiveness of the utilisation of the information that the technologies make available. Efficiency and effectiveness of Internet use involves more than having access to a computer [Oberg and Gibson, 1998].

The word 'Technologies' does not enrich understanding as an identifier for our historical moment, because it is such an all-embracing term used to explain our means of connecting with other people. From the earliest dotting and carefully executed strokes of aboriginal paintings in the sands and on the rocks to sense-activated global networks, we have made attempts to communicate. What is different today is not only the amount of information that exists, but also the means that we have to communicate that ever-growing amount of information.

One identifier that captures the spirit of these two characteristics of our times is Information/Communication Age. Throughout this thesis this term-Information/Communication Age- is used. The 'information' identifier certainly captures the notion of what marks this age from earlier ones, namely that the amount of information that is available to us grows exponentially, and with great speed. With the 'communication' identifier the effect that information can have if utilised well is clearly acknowledged.

In an agriculturally based world, young people were skilled in some aspect of the farming economy, so they could both survive in and contribute to that world:

*This agricultural age was based on plows and the animals that pulled them; the industrial age on the engines and the fuel that fed them. This information age we are creating will be based on computers and networks...* [Dertouzos, 1991, p.62].

Similarly, underpinning the notion of the Information/ Communication Age is the key assumption that young people need to develop skills that will afford them similar chances of survival and opportunities to contribute. They need to have the skills to enable them to be effective and efficient users of the commodity of the time, namely, information. Such users may be termed information literate. In other words they have developed the cognitive, behavioural and emotional scaffolds that enable them:

- to connect with the information;
- to engage with the information; and
- to utilise the information purposefully and effectively [Todd, 1999].

In this Information/Communication Age information is becoming available at a rate not before imagined. Todd indicated that over the last 30 years Australia had become a markedly more informed nation [Todd, 1999]. In the previous year it had been noted that access to nationally available magazines has grown from around 50 in 1968 to a predicted 4,500 in 1998. Commercial radio in 1968 tended to be devoted to sports and music programs presented in English. Thirty years later ethnic groups can enjoy a wide range of broadcast experiences, and talkback radio is a ready source of opinion and information. [Alexander, 1998].

The fastest growing source of information is that available from Internet use, particularly from the use of the World Wide Web. In 1994 14% of Australians had accessed the Internet. By 1999 this had increased to 47 %. In the same time span the percentage of Australians who used the Internet at least once a month increased from 9% to 35%. In 1999 the place from where Australians accessed the Internet suggests that its use is part of everyday life, as reported in Table 1.1 overleaf.

**TABLE 1.1**  
**LOCATIONS OF INTERNET USE IN AUSTRALIA**

At home 42%	At work 25%	Ed institution 14%
Library 8%	Friend's place 11%	Internet Cafe 2%

[Lee, 2000, p.15].

Being able to access a pantry does not necessarily mean that one can produce a cake. Being able to access a workshop does not mean necessarily that the tools and materials in it will become a cabinet. Being able to access information quite readily, maybe even quite easily, does not necessarily mean that the information will contribute to or become knowledge. For it to become knowledge, it needs to be utilised effectively. Merely collecting information is only part of the task, even though distinctions between collecting information and utilising information sometimes become a little clouded. As Burbules states:

*Turning information into knowledge... is the more time-consuming, intellectually challenging and potentially controversial process* [Burbules, 1997, p.20].

The researcher agrees with the proposition that given the information now available for people to be successful in this Information/Communication Age, they need to have both the skills appropriate to the acquisition of information and those skills involved in the effective use of that information. [Lee, 1999].

The *Starr Report* [1998] that chronicled the events of a relationship between the then President of the United States and a White House intern serves to illustrate the accessibility of information. This report was published not only in book form, but also in *The Washington Post*. Three hours after the *Starr Report* was issued, it was reported that 400,000 hits a minute were estimated to have been made at *The Washington Post's* site on the World Wide Web. There are many more important issues involved in this *Starr Report* than a presidential romp. The significance of the *Starr Report* is that it presents issues of responsibility in leadership, integrity of office and exploitation in high places. It is even more imperative that people who access this information are skilled in careful analysis of the subject matter. The question then becomes, how well equipped are the consumers of this extra-ordinary amount of information to deal with it and use it effectively? There is no doubt

that thousands of people acquired details from reading the report, but could they navigate their way through it in an effective way?

The content of this particular *Starr Report* was sensational and time-specific, but the questions arising from it in terms of information utilisation are the same as those investigated in the research that is reported in this thesis. Collecting information, having access to the latest news, being able to navigate an immeasurable source of information by using one's fingertips on a keyboard is one part of the information use process: s collecting achieves little in increasing knowledge unless that information is processed.

Of course, there is nothing new about this phenomenon. When information sources were primarily print-based, the potential knowledge contained in them sat in piles of books and journals on desks and on shelves, and the knowledge was realised only when someone utilised the information. What is common to both eras is that a magical intervention does not make the stored information dynamic. For this to happen, human intervention is necessary.

### **1.2.2 Emergence of conceptual models of information users**

An area of academic and professional expertise that is both a product of and integral to this Information/Communication Age is the field of information science. This field relates to all that is involved in information and communication, from the technological to the meta-cognitive. Along with the field of education, information science centres on an understanding of the human engagement with information and the construction of knowledge, and works at developing an understanding of the special nature of this Age.

In the 1980s theories relating to how people used information resulted in the development of a number of conceptual models in what became known as information literacy. Details of the most important of these major models are presented in Chapter Two. The stages that constitute these models have different names, and they occur in different orders. However, they have two things in common. First, each model implies a dynamic relationship between the stored information and the person whose knowledge has the potential to be increased by the utilisation of that information. Secondly, the potential increase in knowledge being realised involves the user developing skills that

enable efficient and effective cognitive connection with the information. This connection happens not as result of random application of certain skills, but of use of the skills as part of a process. In its simplest sense and for the purposes of this introduction, an information literate person as explored in this thesis can utilise information by being adept in six information skills. The issue of the definitions of information literacy is analysed in detail under Section 2.2.4.1.

A person who can utilise information in this way - using the information skills to process information competently- can be said to be information literate. The most current definition of information literacy appears in Section 2.2.4.1 of this thesis. Discussion of earlier definitions of the term continues to be of contemporary interest, and the major elements of that discussion are presented in detail in Chapter Two and throughout this thesis. In the current chapter, the term *information literacy* is used in a broad way, and it refers to the ability of an information user to access and use information effectively, by becoming adept in the use of a set of information skills. At a very specific level, being adept in this way means that the user of information has the intellectual scaffolds necessary for them to construct their own meaning and understanding from the often conflicting information available.

Of course, information literacy and conceptual models of information presuppose an understanding of what ‘information’ itself is, and its meaning has been of interest in the field of information science. In a discussion of the word, Buckland [1991] conceptualises information in three ways:

- information-as-thing
- information-as-process
- information-as-knowledge.

The first of Buckland’s concepts refers to the tangible, physical objects that house information. Since Gutenberg’s invention of the printing press in 1455 [<http://www.ssc.cc.il.us/acad/careers>] these objects have mostly been in the form of printed matter that has been accessible to the general populace. In recent times people have been able to access information that is stored digitally. Stored information in itself is Buckland’s ‘thing’. It has the potential to illuminate, but the realisation of that potential can only occur if it is utilised,

if an engagement between the stored information and the user occurs-Buckland's 'process'. This engagement is not random or automatic but rather is deliberate and cognitive. It is when this engagement happens that the dormant store is constructed as knowledge, Buckland's third concept. Buckland [1991] concludes that while each of his three concepts serves to clarify an understanding of information, it is 'information-as-thing' that provides an added benefit, namely a sense of order.

This thesis borrows from Buckland [1991] and uses 'information' to mean the tangible and physical objects that house information, the situational realities from which a user can access information. This use of the word 'information' implies each of the other two proposals of Buckland: information-as process and information-as-knowledge. If effective accessing of the information available occurs, and the person has the skills to work systematically and fruitfully through a process of information utilisation, then through this cognitive connection between the information and the user, knowledge is increased.

### **1.2.3 Existing research into information literacy and the learning of students in mixed ability and lower ability groupings**

In the prominent conceptual models that have been developed in information science [Kirk, 1986] there is an implication that by working through a process and by employing certain skills, a user would benefit. The significance of this implication for educators is obvious. If a particular framework of learning that focussed on the use of the commodity of the age - viz., information - were to be seen as beneficial, then it would be an important development in education. The framework would have the potential to be the basis of instructional design. The specific nature of such a framework potentially could facilitate learning in the Information/ Communication Age that presents factors so profoundly different from those in earlier times. These factors, namely the growth in quantity and speed of access to information, are considered in detail in Chapter Two.

Investigations into information literacy are of great potential importance, particularly in education but to date little research in this area had been conducted. The year 1992 saw the establishment of research [Todd, Lamb and

McNicholas, 1992] aimed at investigating how an information skills based environment affected both teaching and learning. The research was conducted at MSCW, where the principal has a widely respected view of education. [CEO, 1990]. She not only allowed the research to be conducted in the school, but also facilitated its operation.

The first stage of this research [Todd, McNicholas and Sivaneearajah, 1992] was conducted as a quantitative study. It used an experimental design and involved students from mixed ability junior classes, i.e., classes in the first four years of secondary school in NSW. The results of this research were significant. They showed that the use of an information skills-based framework of learning produced higher scores in examinations conducted across several classes, compared with those that did not use the information literacy framework. Students, who at the beginning of the research project were what could be described as reluctant learners, were proud of their achievements. They were also keen to continue with their studies using the same learning framework. A study that later built on Todd, McNicholas and Sivanesarajah was conducted in New Zealand [Grant, 1998]. This research found that information skills development contributed to students' growth in competence as information utilisers.

The second stage [Todd, Lamb and McNicholas, 1993] was a qualitative study that showed that both teachers and students derived benefit from the systematic and explicit investigation of information skills in teaching and learning activities in the classroom.

This two-part research study showed that this particular framework of study had a favourable impact on the learning of two groups of students: those streamed into a lower ability class [Todd, McNicholas and Sivaneearajah, 1992] and those in mixed ability classes [Todd, Lamb and McNicholas, 1993].

This research into an explicit information literacy framework of learning used in the learning in mixed ability and lower ability classes was significant for educators. It complemented contemporary educational thought that the accepted ideal in classrooms was learning being a process involving both the teacher and the student became the accepted ideal. Terms such as



independent learning, co-operative learning and collaborative learning appeared in the lexicon of educational development [Kagan, 1990]. The research showed that in mixed ability and lower ability groupings, students learned effectively and efficiently using an information literacy framework. They became responsible for their learning, and by processing the information they were able to increase their knowledge, and use that knowledge productively. In terms of the non-selective nature of the system of schools of which MSCW is part, this research was significant because it produced conclusions about the learning of two of the most common groupings of students, slow learners and mixed ability.

One group not accommodated in the research was gifted students. What the research did not do was investigate whether, as a group, gifted students benefited from learning within the framework. Gifted students were not identified as a discrete group in the research, and whether or not this particular framework facilitated *their* learning and accommodated *their* needs was an area open to further research.

The research that is reported in this thesis addresses this issue. Again with both the permission and the support of the principal of MSCW [Appendix 1.2], the research reported in this thesis investigated the impact of an information literacy framework on the learning of gifted students- and the nature of the school meant that the research was involved with students studying at the secondary level of education. The interest that the school had in the education of its gifted students was apparent also in the wider system of schools of which MSCW is part. This research has the potential to become significant to both those in information science and to those in secondary education as a whole.

#### **1.2.4 Systemic recognition of the needs of gifted students**

Although MSCW is owned by the Congregation of Mary- known as the Marist Sisters- the school is part of the system of schools that operates under the Catholic Education Office (CEO), in the Inner West Region of the Archdiocese of Sydney.

MSCW continues to be conducted within the spirit of the Marist education philosophy [MSCW College Diary 2001], and aims to develop the whole person, with a respect for all of her talents. Bound by this Marist philosophy, at MSCW catering for the needs of most of the groups of girls with special needs was done in conjunction with outside agencies. Catering for the needs of gifted students, however, was left as the responsibility of staff members involved in each curriculum area. In reality, this meant that there was an uneven catering for these girls across the college. This was apparent in curriculum area documentation. For example, one MSCW program stated with reference to its gifted policy that extra work was to be set for any girl to pursue in various topics, should she desire to do so. This open-ended provision was not tailored for the gifted student. Another source of information on the unevenness of attending to the needs of the gifted came from comments of parents. Generally these parents were realistic about their daughters' abilities; they noted that girls who were gifted in one curriculum area were assisted in their learning, and that this attention was not common to all curriculum areas.

Informal discussions that the researcher had with teachers suggested there were four main reasons for their not addressing the matter of gifted education as a teacher:

- lack of confidence in having girls identified as gifted in their classes;
- a feeling they lacked the expertise to deal with girls identified as gifted;
- a reaction based on an elitist view of giftedness; and,
- concerns that there was not time to plan and conduct activities for gifted girls in the regular classes

In 1994 the college decided to formalise the provision it made for the education of gifted students. In doing so it also responded to CEO's call that all schools have a policy on the education of the gifted students. Teachers were invited to be members of a committee that was set up to develop a college-wide policy. The members of this Gifted and Talented Policy Development Committee had a wide range of curriculum and managerial experience and expertise. The researcher was the chair for the opening term of the committee that met regularly for 12 months. A policy was developed, and

a teacher was appointed as co-ordinator of the program. On the basis of general teacher nomination girls were withdrawn from some regular classes and became involved in enrichment and extension activities. The nomination process was not structured in any way. Teachers were asked to make subjective judgements. This system did not prove to be successful and most of the girls stopped attending. The reasons for this non-attendance were not investigated fully. Anecdotal evidence suggested that the perceived worth of participating in the activities did not equal the effort required in catching up on lessons missed. In 2001 the nature of the program changed, with the teaching staff being directed not to begin new topics or hold assessment tasks in the scheduled meeting time of the group. The researcher now meets with girls for extension activities that are held both on a withdrawal basis during class time, and out-of-hours.

Just as MSCW at this time was exploring ways of attending more effectively to the needs of its gifted students, so too was the CEO in terms of the gifted students in its system of schools. In 1994 there were 115 primary schools, 46 secondary schools, and 13 combined primary-secondary schools.

In its policy statement in 1989 – *Challenge for the future* [SACS Board, 1989] - CEO renewed its commitment to developing the academic potential of all students. It resulted in encouragement for schools to address English as a Second Language (ESL) and Special Education matters. Although officially they included gifted students, the 'Special Education' initiatives focused on intellectual, mobility and sensory impairment.

In the mid 1990s there was renewed recognition by the CEO of the needs of gifted students. The CEO began to formalise its response to the needs of this group, and as mentioned above one of its strategies was to call on all schools to develop policies for gifted students.

In 1995 the CEO launched its strategic management plan *Towards 2000*, and one of its priorities was stated as

*"enhance the skills of classroom teachers in identifying the diverse needs of students, and responding with effective teaching strategies."* [p. 10].

In *Towards 2000* 'diverse needs' included the gifted, and the CEO (Inner West Region) made increased structural recognition of the educational needs of these students. The researcher sought from the CEO information on the rationale and the planning for these initiatives. Printed information was unavailable; information gathered from both a 1997 discussion with the Regional Director and from researcher reflection is presented in the following paragraphs.

One of the initiatives the CEO implemented in 1994 involved gifted Year 10 students. The CEO invited schools to send gifted students to attend days organised especially for them. At these days the students participated in activities, discussions and workshops specifically designed for them. The purpose of these days was to provide an opportunity for the students from schools across the region to meet as a discrete group, to establish contacts, and to participate in workshops devised with their particular learning preferences in mind. Variations in resource allocation did not see these days continue beyond one year.

To assist schools in choosing participants and to establish a common basis for selection, to define giftedness the CEO used a set of characteristics derived from the domains of giftedness developed by Gagné [1993]. This means of identification is also used in the document for the acceleration of students in NSW [Board of Studies, NSW, 1991].

Another CEO initiative was the Selective Students Program directed towards students presenting for the Higher School Certificate (HSC) Examination, the final school accreditation in NSW. The Selective Students Program consisted of a series of six tutorials conducted over six weeks. These tutorials either addressed syllabus areas that students nominated, or the teacher developed specialised enrichment and extension activities.

The Selective Students Program was part of the CEO's 1993 plan for gifted students, but the selection process was far broader than that used to select students for the Year 10 days mentioned above. For the Selective Students program schools were asked to choose students they predicted would score in the top 10 per cent of the course in the final HSC examination.

This selection process was too loose to ensure that the selected participants were in fact gifted, and the program was dropped after three years. Given the success of the Year 10 program mentioned above, had the CEO asked the schools to use the set of characteristics used in the Year 10 program as the basis of selection, the looseness probably would not have occurred.

The CEO parameter implied a correlation between being gifted and being predicted as being in the top 10% of the HSC cohort. Gifted students very well may be in the top 10%, but this occurrence has not been shown in research. However there was no research evidence to support either of these implications. What has been shown is that gifted students who are bored and unchallenged do not perform, as a system would expect [Betts and Neihart, 1995].

Anecdotal evidence suggests that in at least one school, the offer to participate in the Selective Students program was seen as an opportunity for 'extra revision'. At that school the invitation to participate was extended to entire mixed ability classes in at least two curriculum areas. Informal discussion with teachers from that school suggests that this bending of the boundaries was a reaction against the gifted 'elite' receiving anything extra from the system. In Australia there is a phenomenon called 'the tall poppy syndrome'. Sometimes this tendency to chop down high achievers is explained in terms of the somewhat romantic egalitarian nature of Australian society. Such an explanation does not distinguish 'equality for all' from 'equality in all'. Recognition of the need for Australia to grow beyond this syndrome was implied in editorial comment in a Brisbane daily newspaper, the 'Brisbane Courier Mail:

*Pursuit of excellence is a concept gaining momentum in Australia as our society shakes off some of its cultural cringes and recognises the need to grow tall poppies rather than cut them down. In any country- and particularly in one with a relatively small population- it is important that those capable of high achievement in all areas of endeavour are given the opportunity to achieve their potential. [April 10, 1996]*

However, even with the limitations, the point is that within the Inner West region of the CEO the profile of the education of gifted students was being raised. The advantage of this initiative was that the CEO was attempting to address the issue not only of gifted students, but also of a particular group of gifted students, namely those at secondary school. The research as reported

in the literature, particularly in journals devoted to gifted education, generally was concerned with younger students. A major identifiable gap in the literature was the learning of gifted students while they were at secondary school (McCormick and Wolf 1993).

The effort of the CEO to recognise the gifted secondary students within the system as a distinct group in its schools was a start. It signalled to all of the systemic schools in the region that this particular group of students' needs were to be addressed.

For the researcher two things relevant to the current research were significant. First, teachers gave four reasons mentioned previously in Section 1.2.4 for not attending to the needs of gifted students, namely:

- lack of confidence in having girls identified as gifted in their classes;
- a feeling they lacked the expertise to deal with girls identified as gifted;
- a reaction based on an elitist view of giftedness; and,
- concerns that there was not time to plan and conduct activities for gifted girls in the regular classes.

These reasons were very real barriers to the effective provision of learning opportunities. Either they needed to be overcome, or they needed to be replaced by a more enlightened approach. Perhaps part of the re-education of these teachers might be achieved were there a learning framework that had been shown to be of benefit to gifted as well as slow learners, in a mixed ability classroom.

Secondly, there was the gap in the research into the impact of an information literacy framework on learning, namely into the learning of gifted students. It is frequently the case that students who are slow to learn spend a considerable amount of their time in mixed ability classes, even if they are withdrawn on a regular basis. Teachers are used to gifted students tending to stay in the mixed ability classes, and their needs might not be met by some of the teaching and learning strategies operating in the classroom. When the students are withdrawn, the same understanding that teachers extend to slow learners might not always be forthcoming.

The researcher was convinced that to investigate whether or not gifted students, as a group benefited from learning within an information literacy framework would make a major contribution to the existing body of knowledge.

### **1.3 CONTEXT FOR THE RESEARCH**

#### **1.3.1 Learning environments for gifted students**

Gifted students have needs, and one of these is the preference for learning environments that often do not match what happens in traditional classrooms [Van Tassel-Baska, 1992, Chapter 12]. An emphasis on reiterating content does not challenge them, and being passive participants in the classroom is not conducive to their development. At best lower-order questioning does not satisfy them, and at worst, bores them. They might find themselves bored to the point that they rebel against the education system or drop out of it altogether. This lack of match between gifted students' needs and their experience contributes to them not fitting in to society [Betts and Neihart, 1995]. Both pastoral concern and the loss to society of their expertise and contribution should be of great concern. This led researchers to conclude that the best alternative for gifted students is differentiated provisions including curriculum modification and intensive withdrawal from mixed ability classes [Gross, 1999].

Part of the reason for setting up curriculum modification and intensive withdrawal programs is that mixed ability classrooms do not facilitate learning needs of the gifted students. The research reported in this thesis investigates more than an alternative to such provisions. It presents a framework of learning and teaching that the results of the research suggest make the need for such provisions redundant.

In consultation with the principal of the college, the researcher sought a research environment that would serve two purposes:

- it would not disadvantage the girls in their studies
- it would accommodate the preference that the girls had expressed, that the research context be part of their study program.

The girls who were to be involved in the research were beginning the first year of their two-year Higher School Certificate (HSC) studies. In consultation with the principal of the College, the researcher sought a research environment

that would serve two purposes: first, it would not disadvantage the girls in their studies; secondly, it would accommodate a preference the girls had expressed that the research context be part of their study program. *Society and Culture* was chosen as the research context. *Society and Culture's* curriculum requires students to become involved in research, and that research requires information utilisation.

### **1.3.2 Suitability of *Society and Culture* as the research context**

One curriculum area available to students in NSW related in a direct way to the matters presented above. *Society and Culture* (SAC) is an HSC subject that, in its aim to develop social literacy, requires the students to effectively use information in a process which accommodates higher order thinking. At the time the research began SAC was not offered at MSCW as an option for elective study. Details of the subject are considered in Chapter Two.

For the current discussion Bloom's taxonomy [1956] is informative because it presents a gradation of levels of thought. It provides a useful guide for the higher level thought dimensions of the three components of this research: the higher order needs of gifted students, SAC and information skills. The suitability of SAC as the research context is evident in Table 1.2 that appears on page 21. The first section of the table lists the aims of the SAC course. The second section illustrates with which of these aims the various information skills are complementary. The third section of the table extends this notion of complementarity to the six levels of questioning and thinking presented in Bloom's Taxonomy. In the majority of instances the aims of SAC are complemented both by the nature of the information skills and the higher order levels of the taxonomy.

In summary, SAC was chosen as the research context because of:

- the correlation between its aims and the aims of the information skills being researched;
- the correlation between its aims and the levels of higher thought- as indicated by Bloom [1956] - that are essential for gifted students' study;
- its existence as an HSC subject additional to the girls' Preliminary Year programs if they were to take it up as part of their HSC program.



Although four years separates them, the choice of SAC is supported by a paper developed by the American Association for Higher Learning, American College Personnel Association and the National Association of Student Personnel Administrators 1999] referred to by Todd [2001]. This paper presents ten principles for learning where there is collaboration between students, teachers and the broader community. Each of the principles relates to the spirit of SAC. The ten principles are:

1. Learning is an active search for meaning by the learner
2. Learning is about making and maintaining connections
3. Learning is developmental
4. Learning is both individual and social
5. Learning is strongly affected by educational climate in which it takes place
6. Learning requires feedback, practice and use
7. Much learning takes place informally and incidentally
8. Learning is grounded in particular contexts and individual experiences
9. Learning involves ability of individuals to monitor learning
10. Learning is enhanced by taking place in the context of compelling situations [Powerful Partnerships, 1999].

In this thesis, information literacy is a conceptual notion that focuses on the utilisation of information to increase knowledge. In order to develop people as information literate, the concept is made concrete by providing opportunities for competence to be achieved in the use of the information skills of defining, locating, selecting, organising, presenting and evaluating. Table 1.2 introduces to the thesis the place of these information skills, and in particular in terms of their relationship to the aims of the curriculum area that is the educational context of the research. The dimensions of Bloom's Taxonomy is included in the table overleaf to show that just as the information skills correlate quite well with the aims of *Society and Culture*, [Board of Studies, 1995] so too do the dimensions of higher thought activities.

**TABLE 1.2**  
**COMPLEMENTARITY OF AIMS OF SAC [1995], INFORMATION SKILLS [1988]**  
**AND BLOOM'S TAXONOMY [1956].**

INFORMATION SKILLS (*)						AIMS OF HSC SUBJECT, <i>Society and Culture</i>	BLOOM'S TAXONOMY (**)					
D	L	S	O	P	E		1	2	3	4	5	6
•	•	•			•	Social Literacy			•	•	•	•
•	•	•	•		•	Identity and Self Concept	•	•		•	•	•
•	•	•	•	•		Communicative Competence	•	•		•		
•	•	•	•	•	•	Skill in Investigation	•	•		•	•	•
					•	Social Sensitivity	•	•	•	•		•
•	•	•			•	Intercultural Understanding, Attitudes and Skills	•	•	•	•		•
•	•	•			•	Evaluation and Synthesis	•	•			•	•
•	•	•	•	•	•	Decision making and Social Action	•	•		•	•	•
•	•	•	•	•	•	Environmental and Global Awareness	•	•			•	•
			•	•	•	Awareness of Change and Future Possibilities	•	•	•	•	•	•
•	•	•	•	•	•	Task Requirements	•	•	•	•	•	•

Explanation of coding:  
 \* Information Skills: D= Define, L= Locate, S= Select, O= Organise, P= Present, E= Evaluate  
 \*\*Bloom's taxonomy: 1=Knowledge, 2=Comprehension, 3=Application, 4=Analysis, 5=Synthesis, 6=Evaluation

## **1.4 THE RESEARCH QUESTION**

### **1.4.1 Introduction**

Two areas of study shaped the research question that is reported in this thesis:

- information literacy; and,
- the education of gifted students.

These two areas of learning run parallel in contemporary educational discourse. Research into the education of gifted secondary students, to the knowledge of the researcher at the time of submitting this thesis, has not considered the suitability or otherwise of an information literacy framework on learning for those students.

This framework of learning is vital to any group of students, given the distinguishing feature of this Information/Communication Age. Information utilisation is a key component of knowledge formation. Quite obviously, being competent utilisers of information - or being information literate - is of great interest to educators who, in Australia are being called on to provide an education that requires students to process information, not simply to represent it. . This mandate is presented in State education documents; in NSW the mandate is expressed in outcomes that require higher order skills. [BOSNSW, 1999]. This being so, then also of equal interest should be a learning framework that successfully achieves that literacy.

The information literacy framework relevant to this thesis involves a set of six information skills, namely Define, Locate, Select, Organise, Present, and Evaluate. This particular framework has been shown to impact favourably on the learning of lower ability students [Todd, McNicholas, and Sivanesarajah, 1992] and on students taken as a group in mixed ability classes [Todd, Lamb and McNicholas, 1993]. Research using a similar framework that required students to think and to reflect on their thinking was reported by Barber [1996]. The results indicated a favourable impact on the learning experience of mixed ability secondary students. Gifted students frequently are members of those mixed ability classes [Moore, 1995].

The teaching and learning methods set up in those classes are not necessarily the preferred learning options for gifted students. For example, when small

group work happens in mixed ability classes a teacher may opt for heterogenous groupings. Often the reason for such groupings is that the gifted students can act as tutors for the group. While this may be of benefit to the slower members of the group, the benefits of this to gifted students are not as clear. They are not extended in these groupings, and they are forced to assume responsibilities that have nothing to do with the learning task at hand. Whatever the reason for a teacher choosing heterogeneous groupings in a mixed-ability class, research has shown gifted students prefer being grouped with other gifted students [Langrehr, 1994].

This research investigates whether or not the information literacy framework involving developing competence in six particular information skills has a favourable impact on the education of gifted students as it has been shown to have on groups of other students.

#### **1.4.2 Awareness arising from the availability of information**

Information currently is available in quantities unimaginable 20 years ago. The researcher acknowledges that this growth of information is not a happening external to education, but rather is a powerful force that impacts on our lives. The ability to access information from other than printed sources was considered to be an equity issue in the 1980s. With the increase in the number of people who now can access information digitally, that concern has begun to diminish. The increased access to digital technology has led to a new concern: an awareness that not all information that is accessed ever becomes knowledge because it is not utilised effectively and efficiently. An increased interest in the learning of gifted students runs coincidentally parallel to the acknowledgement of the difference between accessing and utilising information.

This interest in the learning of gifted secondary students has enjoyed a raised profile in the last 15 years [Van Tassel-Baska, 1992]. In the local educational environment of the researcher, increased recognition of gifted secondary students as a discrete group resulted in special programs being conducted by the CEO. Schools were called upon to address the needs of gifted students through their policies. This expectation has been formalised in the requirements of the cyclic curriculum audit conducted by the CEO [Catholic Education Office, 1991].

### **1.4.3 Gap in the research to date**

As already noted, studies have been made into the impact of an information literacy framework on the learning of students in lower ability groupings [Todd, McNicholas and Sivanesarajah, 1992] and in mixed ability groupings [Todd, Lamb, McNicholas, 1993]. The benefit of this framework to the students is that it is a transferable and potentially long lasting approach to increasing knowledge through the efficient and effective utilising of information.

The researcher believes that at the time of submitting this thesis in December, 2001, no research has been done in the specific area that is reported in this thesis, namely whether an information literacy framework will facilitate the learning of gifted secondary students

### **1.4.4 Factors underpinning the current research**

The issue that is examined in this thesis is 'Does an information literacy framework facilitate the learning of secondary students who have been identified as 'gifted'? In investigating this issue the researcher seeks to:

- identify the students according to instruments used by the CEO;
- seek data from a range of instruments;
- seek to answer the question with reference to early instruments that reveal the participants' expertise in using information at the start of the research;
- focus on information literacy framework of learning in meetings; and,
- be sensitive to and protective of the participants.

## **1.5 SIGNIFICANCE AND BENEFITS OF THE RESEARCH**

The information science and education fields are probing the realities of learning in this Information/Communication Age. Educational research continues to explore the needs of the gifted students in schools. The research reported in this thesis brings these two realities together. If- in exploring the impact of a particular learning framework on the education of gifted students- the research shows that this information literacy framework does facilitate the learning of gifted students, as it has been shown to do with mixed ability and lower ability groups, then issues vital to information science and education will be raised.

The overriding issue is, what is it that constitutes quality education in an Information/Communication Age, and this question itself could be the focus of further research. In simple terms, quality education in any period might be seen to provide the students with the knowledge and skills that open up the potential for them to be contributors and leaders in their communities. The relevance of the research to this explanation is expressed in Figure 1.1, shown on page 25, and the figure implies two elements that are significant in the rationale for the current research:

- education has a key role in historical ages; and,
- communities in historical ages benefit from relevance of the education.

In this Information/Communication Age, skills to enable efficient information utilisation are of obvious importance. This research seeks to investigate in an authentic education context, the impact of a particular learning framework on a group of gifted students at secondary school.

## **1.6 ORGANISATION OF THESIS**

This thesis is a conventionally structured document of six chapters. The chapters are not all of the same length, with Chapter Five being the longest.

In Chapter Two the literature of the academic fields involved in the study is reviewed critically. Analyses of this literature serve to provide a framework within which the validity of the nature of the research question, the methodology used in examining the question, and the findings, which grow from the research, can be assessed.

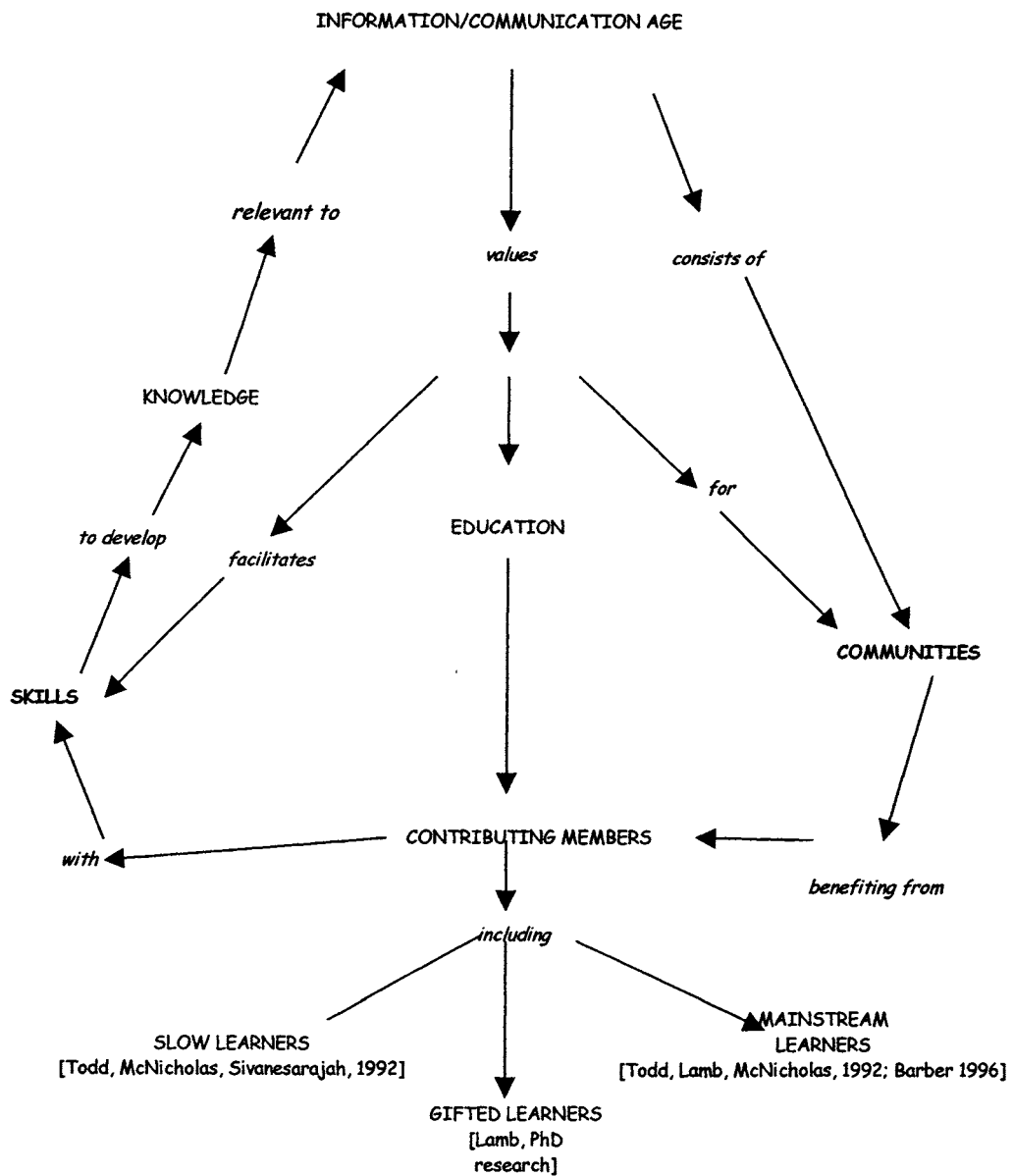
Chapter Three is devoted to the methodology used in the research. The study is a qualitative study conducted within a subject for which the girls in the research group could obtain accreditation in their HSC. The chapter traces the steps the researcher took in choosing the methodology, the instruments, and the procedures in this study.

In Chapter Four the data collected from the students through a variety of data instruments is analysed in terms of the information skills as a set. The six skills constituting this set are:

- *defining*

- *locating*
- *selecting*
- *organising*
- *presenting*
- *evaluating*

FIGURE 1.1  
INTERRELATIONSHIP OF THE RESEARCH AND EDUCATION IN AN  
INFORMATION/COMMUNICATION AGE



Chapter Five presents the findings derived from the meticulous analysis of the data in terms of each of the six information skills discretely. This chapter is

long because it seeks to present an analysis reflective of the wide range of data instruments administered.

The final chapter presents recommendations that other researchers or educational administrators can challenge, be challenged by, or read with interest.

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## **CHAPTER TWO:**

### **REVIEW OF THE LITERATURE**

#### **2.1 INTRODUCTION TO THE CHAPTER**

Chapter Two locates the research in the current body of knowledge in the fields of education and information science. It presents current and recent academic discussion in both information science and the education of the gifted as it relates to this research. It justifies the choice of the research context namely the 2 unit *Society and Culture*, a New South Wales Board of Studies course for the Higher School Certificate (HSC).

This introduction presents the first of the three contextual components of the research reported in this thesis, namely the Information/Communication Age. There is a summary of the response to the demands of the Information/Communication Age on the part of the Australian education authorities that impact on Marist Sisters' College, Woolwich (MSCW) where the research was conducted. This is followed by a detailed investigation of the attempts to define information literacy. The complexity of definition determination leads the chapter into an overview of major models of information literacy that are respected in the field of information science. The section concludes with the presentation of evidence that supports the notion that the Information/Communication Age demands information literacy. What the research in this thesis proceeds to explore is whether a particular information literacy framework impacts favourably on the target sample group of gifted secondary students.

The chapter has six sections. The three following this introduction review the literature for the three component areas of the research – namely, the information age, the education of the gifted and talented, and a particular curriculum area, *Society and Culture* [SAC]. The fifth section presents the gap in academic knowledge that is addressed by the current research, and the chapter concludes with a summary.

An essential part of the research reported in this thesis is the notion of skills. In their learning, and indeed in their lives, people need to have skills that are associated with

- procedural knowledge, i.e., knowing 'how'; and,
- declarative knowledge, i.e., knowing 'what' [Buckland, 1991]

Historically these skills have related to the needs of the group of whom the people needing these skills are part. The groups might be small, perhaps as small as a croquet club in a small country town whose entire population approximates the membership of a social club in a major city. Players in the croquet club need to use skills pertaining to wooden balls, mallets and small hoops in a process that enables them to improve their effectiveness as club members.

In terms of size and significance, there is a considerable difference between the small croquet club and the global world that is in what this thesis refers to as the Information/Communication Age. However, there also is a similarity in that the competent use of skills is a process that enhances one's position, and increases one's knowledge.

An ever-deepening well of information characterises the Information/Communication Age. A key factor underpinning this research is the ever-increasing amount of information people have to deal with. Some will utilise the information; they will engage actively with it in a cognitive experience. This experience will result in them being informed in, and more readily prepared for, whatever task they are performing. Their knowledge will have increased, that is to say they will do things with it. Other people will use the information. Their passive meandering will not be as productive as it could have been, and it is unlikely to have enhanced their position or increased their knowledge.

The above comments might be a little simplistic, but they do serve to introduce the concept of information utilisation. Closely related to this concept is the belief that effective information utilisation is achieved when people use particular information skills.

In the secondary school situation, research in Australia [Todd, McNicholas & Sivanesarajah, 1992; Todd, Lamb & McNicholas 1993], New Zealand [Moore, 1995] and England [Adey and Shayer, 1989, 1990] has shown that a framework of learning using information-specific skills does impact favourably on the learning of two groups of students, namely mainstream groups- of whom gifted students are part, but are not identified as a separate group- and lower ability groups.

Gifted students comprise another identifiable group in schools whose learning has attracted more serious and systemic attention in recent years. These students have certain learning needs that are not quite the same as, say, lower ability students. For example, the researcher has observed that when group work is used as a structure in mixed ability classroom, the teacher might be tempted to form the groups as microcosms of the class. Bright students- including gifted ones if there are any in the class- are spread around the groups. This heterogeneous mix often results in the less able students thriving from working so closely with the gifted student because of that student's ability to be called on as the source of wisdom in the group. As far as the learning of the gifted students is concerned, such an arrangement denies them optimum learning opportunities [Rogers, 1998].

The research so far has not investigated whether or not the gifted students in the mixed ability classes experience the same benefits from the information literacy framework, as have lower ability students, and mainstream classes as a whole. To the researcher's knowledge at the time of submitting this thesis in December 2001, whether or not a framework of learning that incorporates information skills assists these gifted students' needs has not yet been explored in research.

The research considers a learning framework that is significant in this particular Information/Communication Age, and considers how that learning framework impacts on a group of students identified as gifted. The impact of this framework on a small sample of this group of students is the focus of the research reported in this thesis.

## **2.2 INFORMATION/COMMUNICATION AGE**

### **2.2.1 Identifying and labelling historical periods**

As indicated in Chapter One in Section 1.2.1, history gives names to periods of time, such as the Dark Ages, the Middle Ages, the Communications Technology Era and the Internet Era. The labelling of periods prior to the last couple of centuries has been done with the benefit of hindsight and has been determined by significant changes in the ways we handle world experiences [Halsall, 1999].

It has become fashionable to label generations as well, starting with the Baby Boomers, followed by Generation X and Generation Y, the identifying feature of the last two being that they are computer literate, and are less inclined to work with information in print form. The Age associated with these two generations (in 1998 aged between 14 and 33, and 13 and under respectively) has been dubbed the Infotechnic Age (Cray 1997). This Infotechnic Age is said to have started in 1965, the year that *MIT developed online systems to access serials* [Szolovits, 2001] and is predicted to extend to 2040.

However, in whatever way it is expressed, the label Information/ Communication Age does distinguish this era from earlier ones, and it does provide the basis for making the distinction. This researcher uses 'Information/ Communication Age' in this thesis because first, the term distinguishes this age from the earlier ones, and the terminology itself suggests the basis on which this distinction is made; and secondly, the notion of 'information' implies 'communication' and the interrelationship of these two ideas is used in this thesis.

#### **2.2.1.1 Introduction**

Throughout history people have come to terms with the demands of their particular societies. When agriculture was the pivotal part of the society, the people learned to interpret the seasons, understand growth patterns of plants and animals, learn the significance of climatic changes, and as new technology arrived, learned how to use it, how to incorporate it into their daily life. In essence, they developed the skills needed to operate effectively in an agricultural age.

A mark of progress of a society is that it provides an education for its young. In traditional societies the women might conduct this education when the child was young, and then the male elders took over the responsibility as the child matured. The origin of this type of education rests in thousands of years of tribal lore, but underpinning it is a constant: it both positions the young in the society's history and it informs the young of their relationship to the world in which the society exists. The skills that people living in Australia needed to operate effectively in an industrial age were quite different from those needed in an agriculturally- based society. People in the industrial age learned to operate the machinery, to locate resources, to improve the output from industrial plants, to analyse progress, to plan for expansion of industry. In contemporary western society, education in countries such as Australia, is formalised into systems, is mere centuries old, and its fortunes are intertwined with the political requirements of the parliamentary parties. However it is reasonable to expect that these education systems - as happens with education experienced in more traditional situations- will equip the young to be involved in their society, in their historical moment.

#### **2.2.1.2 Rate of information production**

To appreciate the significance of the essential difference that the Information/Communication Age presents when compared to historical periods that precede it, it is useful to consider four distinguishing features:

- rate at which information is produced
- new sources of information
- new demands on users of information
- benefits of information utilisation.

It has been predicted that by 2010 the rate of available information will double every 11 days [Quarterman, 1995]. Even were one to consider this projection to be a fanciful attempt to quantify the unquantifiable, one would acknowledge through experience that because the well of information grows ever deeper, the growth of information has implications for our society. Literacy became entwined with power in society probably as far back as the Middle Ages when the monasteries in Europe became the centres of learning in [Huddleston, 1999]. Literacy certainly became an issue after the invention of movable type [PPT, 1998] because one of the effects of that invention was the

broadening of the groups in society who had access to potential knowledge in the form of the printed word. From the salons and the gentlemen's clubs in cities, and from the meeting places in villages and towns, people beyond the upper echelons of society discussed, ruminated and made decisions. People began to be active and effective members of their society because they had the means to be informed.

It is a fundamental assumption that for graduates of our secondary schools to operate effectively in this Information/Communication Age they need to be literate not only in the conventional sense of being able to read, but also they need to be competent users of information. In the colloquial sense, one can say that these graduates need to be 'information literate'. In the colloquial sense, this expression can be defined as having the ability to use information. In the world of information science the term 'information literacy' is subject to lively and current debate, and the essence of this debate is discussed in Section 2.2.4 of this thesis.

As the amount of information available continues to grow social reality will change, and so too will the demands and expectations society has of its members. Writing in 1990 Vogler said:

*By the year 2000 today's children will be part of a very different workforce. ...[that will] ... require them to analyse and interpret information, to present it to others in various forms, and to form opinions and make judgements and decisions from a wide range of sources. They will need to be prepared to work co-operatively in flexible ways and be ready to accommodate change in all aspects of life. A new set of basic learning skills will be needed to equip them to live in this changing world. Creativity and innovation must be fostered and allowed to flourish.*  
(1990:101)

Now in the 21<sup>st</sup> century, the researcher believes strongly that Vogler's prediction clearly was accurate. For example, the contemporary generation of students will be likely to have three career changes in their working lives, whereas probably their parents, and most certainly their grandparents will have had none. These career changes- not job changes- will demand not that they carry information from one career to another, but rather that they have the means of efficiently utilising the information entailed in the new career.

### 2.2.1.3 New sources of information

Not only has the rate and amount of information changed, but also there have been huge developments in the places that information is stored. Very much part of the technology of our world is information technology. In recent times the availability of information technology to students has increased markedly. An extraordinary element in information technology has been the Internet. This global network system has been referred to as

*a world-wide system of computer networks- a network of networks- in which users of any one computer can, if they have permission, get information from any other computer (and sometimes talk directly to users of other computers [whatis.com1999].*

By using the Internet or any of the plethora of multi-media packages that are available, these students potentially can access information with relative ease in a quantity hitherto unknown to us.

This 'potential' relates to the enormous volume of information that is available to students, in print form, in audio-visual format and in digital form. The Internet is a global information and communications network that is linked by address spaces, not by anything tangible. As a result of this peculiarity of the network it is difficult to attempt an accurate measurement of it. The Matrix Information and Directory Services (MIDS) of Purdue University estimate that the number of Internet users has grown from 15,000 in January 1985 and would reach 500 million in January 2000. From January 1994 to January 1998, the growth rate each year was 100% [Quarterman, 1995]. This information is shown in Table 2.1.

TABLE 2.1  
THE INCREASE IN NUMBER OF PEOPLE USING THE INTERNET, 1994 - 2000 [Quarterman, 1998].

In January of	Million users
1994	7
1995	16
1996	31
1997	63
1998	125
1999	250
2000	500

In the Australian context, the growth has resulted in Australia being third behind USA and Sweden in Internet use at home in 2001. The growth of computer and Internet use in Australia has occurred at an exponential rate [Tsang, Henri and Tse, nd].

**TABLE 2.2**  
**THE GROWTH OF COMPUTER AND INTERNET USE AT HOME IN AUSTRALIA OVER TWO YEARS**  
*(Lee, 2001)*

	1999	2000
Homes with Internet access	454,000 (42%)	793,000 (52%)
Home computer access	284,000 (9%)	439,000(13%)

How the growth of available information can affect the learning of an individual is evident in the following example. In July 2001 the researcher visited a school library to seek resources on the greenhouse effect and found seven texts. Using Google she searched the Internet and in 0.51 seconds she had access to 278,000 sites for perusal. Five months later the same search resulted in 309,000 sites for perusal, and this search took 0.14 seconds. The researcher believes that while some of these sites may be trivial, the fact remains that students will take their places in a society where much of the information will be accessible by computer, and that they can reasonably expect that their school education will equip them to deal with that reality.

Of course, no individual person would access all of these websites in a lifetime, but the choice of information sources is there. In the Australian context, Internet traffic - which represented one percent of international voice traffic in 1994 - now exceeds it on some routes. Information is available at an increasing rate from the print media as well, notably in magazines. As noted in Section 1.2.1, 30 years ago in Australia it is estimated that around 50 magazines were available nationally. In 1998, that number had increased to an estimated 4,500 [Alexander, 1998].

It is not a new phenomenon that students in this particular historical moment have access to information quite independent of their teachers. What is new is that students can access this information far more quickly than before, and with greater ease. Whereas extra information in the past might have been the product of students taking a trip to a library, information from sources of infinite variety can now be acquired from within the comfort of their own



homes. Along with ease of access that the students experience the researcher is aware of three other features of the information:

- it can be acquired much more quickly, indeed almost instantaneously;
- the choices the students have from which to select the information they will use is greater in volume and variety than most libraries could house; and,
- students can access updated information at a rate not possible when the word on paper was the main source.

While these four features- ease of access, speed of access, extent of choices and capacity for speedy updating- have potential for increasing the body of knowledge, this will not happen unless the information connection, interaction and utilisation occurs, as indicated in Figure 2.1. Richer implies that the four feature of information of the Information/Communication Age call for the information seekers to be skilled in dealing with it:

*The problem now focuses at an earlier time on the information skills process, and highlights the task of finding the facts which best fit the context of the research [2000, p. 29].*

#### **2.2.1.4 New demands on potential utilisers of information**

The changing rate at which information is available, and the changing nature of the way it can be accessed, makes new demands of its users. They need to have the skills to use that information competently. There is the need to guard against assuming that, because information grows in volume and is available now from sources quite different from earlier times, that there is an accompanying growth in the competence with which that information is used. In most schools, providing the information technology involves a financial challenge to those responsible for setting the budget. It might even be the case that when the workstations are up and running, and classes are scheduled to use them, that the school feels quite satisfied that it has provided its students with the means to be information literate.

To a certain extent this feeling of self-satisfaction is justified in that to be able to use information technology is an element in being educated in this Information/Communication Age. The society in which today's students will pursue their careers exists in an age where information currently grows

exponentially. Critical to maximising learning opportunities derived from the technology of the Information/Communication Age is being able to use it effectively [Schulz, 2000]:

*The key to effective use of information and communication technologies lies in the ability of students to employ skills of digital literacy to analyse problems using higher order thinking skills to define/ locate/ select/ organise/ assess, and to integrate the information in multiple formats.*  
[p.31]

Being able to manage the information that they glean is a capability that today's students must acquire so that their knowledge increases. Bates calls the information explosion the *most dramatic and immediately obvious social change of the last decade* [Bates, 1997, p.41]. He attributes this change to the convergence of information technology and communication technology, and he implies that without the skills to enable appropriate processing of information, *teachers and learners can easily drown* [Bates, 1997, p.41].

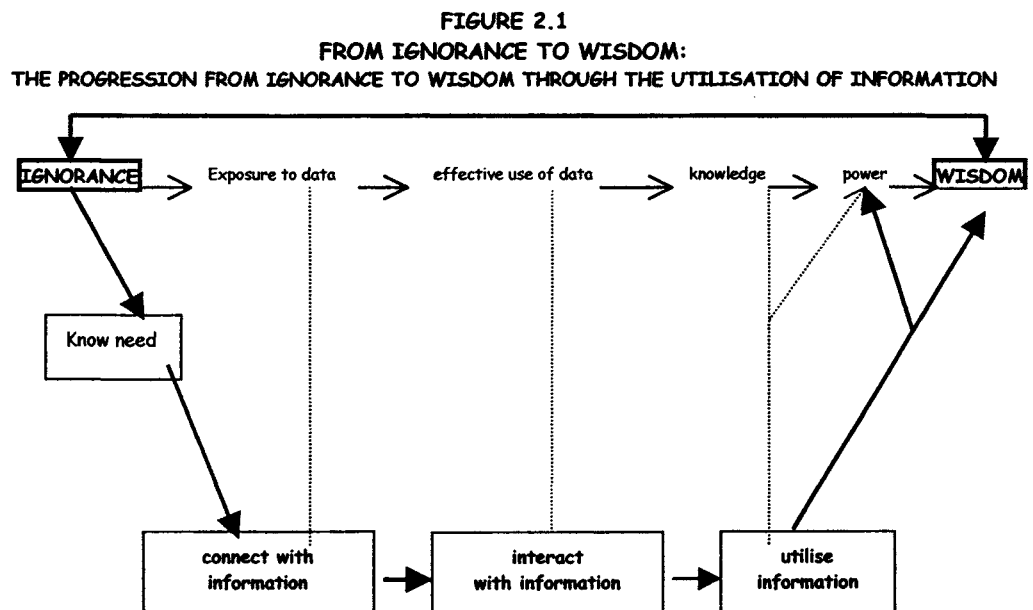
Kuhlthau suggests that a significant characteristic of studying in the Information/Communication Age is that the learning environment has an abundance of resources because of the information technology. When students and teachers relied on textbooks as major sources of information, the information they used was:

*selected, predigested and in a logical sequence. To prepare for the world outside of the school, students need to develop from information as they will encounter it in real life situations, information that is not pre-digested, carefully selected or logically organised* [Kuhlthau, 2001 (b)].

Research, entertainment and e-commerce could be seen as three common sets of information-related activities within a regular Australian home. These activities are product oriented, in that they facilitate the everyday functioning of the family. However, the extent of the benefits of being an effective user of information can impact on the life of a person far beyond the domestic scene. A recent example of this is the impact of senior citizens in Australia moving from domestic flirting with the information technology to organising themselves into Internet user groups, and emerging as a political force [Grey Power, 2000].

Another way of viewing the benefits of being an effective user of information is shown in Figure 2.1. The figure shows the progression from not having the information required to solve a problem (i.e., ignorance] to the production of

insightful solutions because of utilisation of information [i.e., knowledge]. This progression involves a three-part process. After ignorance is recognised, then a person connects with information. The more efficient this connection is, the greater is the interaction between the person and the data. When the data are processed in a way that facilitates the solution to the original problem, or opens up new possibilities for the interpretation of the problem, then the information is utilised, as defined [Todd, 1999]. The hierarchical progression implies that information *per se* is an entity. 'Effective use' of the information causes it to be internalised by the user as knowledge. The internalising is facilitated by the skills a person has to deal effectively and efficiently with the information. The benefit of being adept in the use of the skills is that the skilled person has the intellectual scaffolds necessary for them to have their own understanding and meaning derived from the plethora of information they access [Todd, 2001]. Another implication here is that no use, or ineffective use of information does not move anyone towards higher realities.



### 2.2.1.5 Benefits of information utilisation

Given this age's growth of volume and availability of information, there is an increasing need for users of information to have ability to use that information effectively. Boston [1997] makes the observation that discussions on the future seem inextricably related to comments on various aspects of the information age. Effective use of information always has entailed the ability to discern the relative value of that information. Boston says that students leaving school in

this information age should have the skills to know what is valuable and worthwhile information and what is not: *knowing truth from the illusion of truth* (Boston, 1997, p14).

Wheeldon [1997] supports Boston's call. As far as Wheeldon is concerned there is the continued need for students to be able to change data into information, information into knowledge, and knowledge into wisdom. Competent handling of information will enrich judgement and wisdom, and the students will maintain a sense of direction and purpose, from which society will benefit. For such discerning use of information to occur, our society must foster in young people the ability to think critically and logically. Part of the importance of this ability being developed rests in a particular characteristic of information technology. In past learning situations the technology was linear. Now, with hypertext, all of that has changed. When using non-linear text, and with the World Wide Web the reader makes choices at every moment (Wheeldon, 1997). Basic decisions have to be made about choice of search engines; understanding of the possible effects of making strings of links can impact on the value of the information found. Indeed, Burbules [1998] presents the notion that information found on the worldwide web might not be information at all. Burbules distinguishes authentic information from other apparent presentations of information, namely mal-information, mis-information, messed-up-information and useless information. A utiliser of information needs the skills to be able to identify this pseudo-information, and to be confident about what is taken to be information. When information was disseminated by mouth or by drawings or by print, undoubtedly there was mal-information, mis-information, messed-up-information, and useless information, but what makes the need for skills to deal with that even more apparent in this Information/Communication Age is the sheer volume of information now available. From this ever-increasing pool, the ability to process and to select data presupposes quite specific skills.

The shortsightedness of any 'pigeon-holing' of research skills might with hindsight be apparent. In this Information/Communication Age equipping students with skills that enable them to use information effectively *per se* is of importance because patterns of work in our society are changing. The notion of being involved in one employment path in your working life has gone

(Graduate Management Admission Council, 2000). Changes of employment will require students to develop knowledge in new content areas. However, the way they process the job-specific information entails skills that have particular characteristics. These skills need to be both much broader than the requirements of any one particular job, and transferable. The issue of the transferability of skills is raised by Kilvert who sees that students will need to have transferable learning skills that they can apply to a range of new contexts in which they will live and work. Kilvert is quite specific in naming what he sees these skills to be. They will also need to be skilled in discerning fact from opinion, in evaluating information they receive, in recognising the bias that is inherent in the selection and omission of information [Kilvert, 1997]. In the current research, the way that the learning framework under investigation is used by the participants is considered in detail in Chapter 3.

### **2.2.2 Teaching styles**

The rate of growth and availability of information, and the need for users to be effective users of that information, calls for a balance to be maintained - established, even- when educational matters are considered. As teachers come to terms with the reality that students using the information technology is part of their development as information literate people, there is a tendency for the hardware and the software itself to dominate their thinking. Indeed, that teachers become competent users of the technology is imperative, as indicated by Oberg and Gibson [1998]:

*We can have all the technology in the world, but unless we know how to use it and feel comfortable, it is not going to get used [p.52].*

In the 1998 inservice program conducted by one of the regions of the Catholic Education Office, there were 18 inservice opportunities for school staffs to work with information technology, and one opportunity devoted specifically to educational issues in the use of the information technology.

On the other hand, elsewhere such issues were being deliberated and responded to. In Finland in 1995 the Ministry of Education established a national strategy. The goals of this strategy were to provide every student with the realistic basic skills in acquiring, managing and communicating information which are necessary in the information society, Goals are also set

for teachers to acquire new knowledge, skills and competencies in order to be able to use information technology as a tool in their teaching [Tirri, 1997].

For school administrators much energy in the early 1990s was expended on the question whether or not to network the technology in their schools. In the closing years of the century the focus of their attention was on which pattern of networking to adopt. Some of this energy should have been directed to the learning for which the technology was installed. Implicit in issues of networking and software are the issues concerned with teaching methodology that will be used in the learning situations [Russell and Russell, 1997]. The need for students to have these skills is supported strongly by Schulz [1999]:

*Specific information literacy skills instruction, and the integration of this instruction into authentic learning experiences, are essential for successful and satisfying use of digital information sources [p.31].*

In addition to those features discussed in Sections 2.2.1.2, 2.2.1.3, 2.2.1.4 and 2.2.1.5, an extract from Papert [1994] provides a thoughtful introduction to a fifth distinguishing feature of the 21<sup>st</sup> century. Papert raises an issue relevant to education, namely, the way teachers teach. Teaching is a dynamic enterprise, but the quality of the teaching really is measured authentically only in terms of the quality of the resultant learning. In the ideal world at least, teachers bring to teaching a belief in the integrity of what they plan to teach, and students bring to learning a desire to grow. Both parties come from the realities of their world. In traditional societies this world was essentially the natural world. In this Information/Communication Age, the world has very different characteristics, not the least of which is the accessibility of information, the fifth distinguishing feature of the Information/Communication Age.

*Imagine a party of time travellers from an earlier century, among them one group of surgeons and another of schoolteachers, each group eager to see how much things have changed in their profession a hundred or more years into the future. Imagine the bewilderment of the surgeons finding themselves in the operating room of a modern hospital. Although they would know that an operation of some sort was being performed, and might even be able to guess at the target organ, they would in almost all cases be unable to figure out what the surgeon was trying to accomplish or what was the purpose of the many strange devices he and the surgical staff were employing. The rituals of antiseptics and anesthesia, the beeping electronics, and even the*

*bright light, all so familiar to television audiences, would be utterly unfamiliar to them.*

*The time-travelling teachers would respond very differently to a modern elementary school classroom. They might be puzzled by a few strange objects. They might notice that some standard techniques have changed- and would likely disagree among themselves about whether the changes they saw were for the better or for the worse- but they would fully see the point of most of what was being attempted and could quite easily take over the class. ... Why through a period when so much human activity has been revolutionized, have we not seen comparable change in the way we help our children learn [Papert, 1994. pp2-3].*

While one might not agree with Papert's somewhat fanciful thoughts, there is in the quotation a significant premise: teachers need to provide students with learning programs that will enable the young people to improve their knowledge and skills in using information. Some teaching in our society still depends on the 'chalk and talk' method. Teachers who provide this type of learning framework for their students operate in classrooms similar to those that Papert's time travellers visited.

However, take those students out of the classrooms where they are expected to sit and absorb, and chances are they will operate quite differently in their learning. The researcher analysed the sources used by students doing assignments in her three classes. This analysis involved 81 students. She found that in 74 assignments, students had used a diverse range of media for information. Discussion with colleagues suggested that with the girls in two of the classes, this practice was common. The range of sources included both paper and technological sources. Teachers of the researcher's third class were not consulted, because the girls in that class do not meet in that group anywhere else on the timetable. Implicit in this finding – *albeit* anecdotal- is that without the skills - skills such as the ones to which Kilvert [1993] pointed - to manage that information, any particular student's knowledge base is unlikely to increase.

Four distinguishing features of the Information/Communication Age are considered in Sections 2.2.1.1 to 2.2.1.4, namely the rate of information production, new sources of information, new demands on potential users of information and benefits of information utilisation. Each of these features has

implications for educators. Given the rate at which information is being produced, and the variety of sources from which it can be gathered, students need the skills to connect with it in a way that will lead them from ignorance to wisdom. The sheer volume of information at students' disposal demands that they interact with it in a meaningful way so that it might be utilised to assist in ultimate increase of wisdom. Successful interaction that contributes to the student being able to utilise the information is not an inherited characteristic, but rather it is learned. Education must provide the opportunities for such learning. The young people, whose careers will be lived out in a world reflective of what might even be called the information/communication revolution, need to be educated for the changing face of information. For these changing needs to be addressed the teaching styles and learning frameworks that operate in classroom ought to be process-based rather than content-based. The content is there in abundance; the students need to be able to access the information, to connect with it, to interact with it and to utilise it in their quest for greater wisdom. The task of educators no longer is to provide the information; it is to educate the students in the ability to make the most of the information they find.

This thesis involves one particular learning framework that educates students into being effective and efficient in their use of information. The framework is a critical variable in the research, and the way it is applied by the researcher and the girls is discussed in Section 2.4. The thesis then refines the issue by investigating whether the learning framework benefits secondary students who are identified as gifted.

### **2.2.3 Australia's response in education to the Information/ Communication age**

Given that one of the key characteristics of the Information/Communication Age is the presence of information technology, it is apparent that it is incumbent on schools to provide opportunities for students to use it. However, knowing how to gather information by using information technology in this age really is not so different from knowing how to use the libraries' books, journals and card catalogues, that were the technologies in the predominantly print era. It does not follow that being able to avail oneself of an ever-increasing quantity of knowledge - whether it be from books or from digital sources - automatically means that one's body of knowledge has



increased. Even were one skilled in utilising information in the print era, the change from linear representation to hypertext presents its own peculiar challenges.

To be a competent gatherer of information requires skills quite different from skills involved in being a competent user of information. A competent gatherer of information - a gopher- has, as the end result of his or her endeavours, an amount of material, which could even be described as data, given that 'information' implies a degree of cognitive connection between it and the person. When such a cognitive connection exists, the information is a source of potential empowerment to the user. However, as Barber [1996] says, no amount of information *per se* empowers anybody

*Information on its own is nothing. Information only provides power when it is linked to reason and thought. For information to be useful, people must be able to make selections from it, to connect diverse strands of it together, to ask intelligent questions of it and to reject parts of it which, though they are there on the screen, in the book or on the paper, appear to be inaccurate... It would be an irony if, at the very moment when information has become universally accessible, we lost the capacity to think about it logically.* [p.181].

The New South Wales Department of Education acknowledges this difference in a library document issued to schools as far back as 1987. The introduction to this document included the following:

*The twentieth century has seen an explosion of knowledge and enormous advances in technology. It is essential for students to develop skills in using information as part of the knowledge, skills and attitudes necessary for lifelong learning. People who are aware of information sources and services, who have confidence to approach them, and the flexibility of thinking to use them, have the basis for a better quality of life than those who are unable to pursue their information needs* (p.3).

The Department's interests were part of a growing awareness in Australia that attention needed to be paid to having people being able to live productively in the information society. This ability would include being able to identify an information need, seek the information that would accommodate that need, interact in a personal and cognitive way with that information to complete the task that prompted the initial information seeking. What was happening in NSW was part of an Australian response to the needs of the

Information/Communication Age, a response that impacted on more than schools. Basic to this response was the idea of 'competencies', an idea that emerged as part of a response to increased unemployment. With the apparent belief that this problem would be alleviated were people more skilled, the Quality Education Review Committee (QERC) that was chaired by Peter Karmel [1985] included a utilitarian dimension in defining competence. Particular knowledge and skills would contribute to reforms in industry training and post-compulsory schooling nationwide. What was happening in schools was to more closely meet the needs of the workplace. Primarily, schools were called on not to increase content in courses, but to increase in students the skills they need to be effective workplace members. The Introduction to the Key Competencies module states:

*We all know that schools have the responsibility to prepare young people for life. But today this means ensuring that they have mastered more than a body of subject knowledge. It means that when they leave school they must be able to work with people, they must know how to acquire and analyse information, they must be able to communicate their ideas. They must have the capacities described as key competencies...[by a committee chaired by Mayer]... [Mayer, 1992, p.3].*

The fact that there was a need for new or revised skills suggests that there was a change in the workplace. Part of this change resulted from technologies not only related to the particular industry, but also to the use of information, which crossed specific workplace boundaries. Six major reports reflected and impacted on Australia's response to the call that the country attend to what were called the 'new technologies': Karmel [1991], Finn (1991), Carmichael (1992) and Mayer (1992), and two reported from the Long term Strategies Committee of the Federal Government (Jones, 1991(a); Jones 1991 (b)).

In May 1991 the Federal House of Representatives' Standing Committee for Long Term Strategies presented the first part of its report into Australia as an information society. The Honourable Mr. Barry Jones, who held the seat of Lalor in the Federal parliament from 1977 to 1995, chaired that committee. This report placed information use firmly into the discussion of the needs of the Information/Communication Age. The report implied that were Australia not to behave in a more pro-active way in terms of information use, it did so at its peril in terms of the global environment. The report recommended:

- that business, politics and bureaucracy in Australia should move to have information- as far as the word related to the Information/ Communication Age- in their agenda;
- that Australia was not behaving productively in terms of being an information society, and that it needed *to make an urgent transition* [from being a passive *information* society] *to an active one* (Jones, 1991 p3); and,
- that if Australia did not move from passivity it would *become marginalised internationally* (Jones, 1991 (a) p3)

These recommendations paralleled the discussions that were happening in the world of information science. Much of this discussion focussed on information literacy, and is reported in detail in Section 2.2.4.1. The second and third recommendations of the Jones [1991(a)] report touched on a key concept underpinning information literacy, namely cognitive engagement of information utilisation. These features highlight the connectedness, interaction and utilisation that are the marks of an efficient and effective user of information.

In its deliberations the Committee recognised that Australia's becoming proactive in the information area could not be a top-down enterprise. This idea was captured in the Committee's September 1991 Report that brought the discussion from the broader area of policy-making right to the education sectors of Australia. The report recommended that the Department of Education, Employment and Training fund a research project. This research was not to investigate whether information literacy could be integrated into curricula at all levels of education, including teacher education, but how information literacy could be integrated into these levels of education. The thrust of this recommendation was unequivocal in its assumption that information literacy was to be a real part of the education sectors in Australia.

In the same year that Jones presented the government's aim that information literacy would become part of education in Australian schools, the Finn Report [1991] was presented. It resulted from the 1989 initiative of the Australia Education Council to establish a working party on links between secondary schools and institutions of Technical and Further Education. This report into young people's participation in post-compulsory education and training

focussed on employment-related competencies that all students should gain in post-compulsory education. The report proposed ten key areas of competence, one of which was information-related.

In 1991 the Honourable Mr. Simon Crean, the then Minister for Primary Industries and Energy in the Federal Labor Government stated:

*I would argue that the greatest task facing Australia is recognising that the most important commodity in the 21<sup>st</sup> century will be knowledge, and the most important capability will be that of accessing, creating and using knowledge. Having and using knowledge will determine how well nations adapt, survive and prosper in a global environment characterised by accelerating change and increasing uncertainty- economically, environmentally, socially.*  
(Crean, 1991, p.2).

The researcher would have used 'information' rather than 'knowledge' in the fourth line, because it better implies the cognitive connection with information that has been discussed earlier. Nevertheless, Crean's message is clear: the 'change' and the 'uncertainty' are the macro-cosmic representations of the changes in the nature of employment mentioned earlier in Section 2.2.1 and they heralded the need for schools to play their part in accommodating the needs of the 'global environment'.

The 1992 Carmichael Report furthered the idea of competence. It proposed changes in industry certification as a way of using key competencies as a link between general education and vocational education. The pattern was now set for pre- and post- compulsory education, vocational education and the employment sector to be less mutually exclusive than they had been.

In 1992 the Mayer committee presented its report on the employment-related key competencies for post-compulsory education. The report presented seven key competencies for all young people in their post-compulsory education so they would be able to participate effectively in the work environment. From being one of ten competencies presented in the Finn report, information-related competencies became integral to six of the seven Key Competencies proposed:

- . collecting, analysing and organising information
- . communicating ideas and information
- . planning and organising activities

- . working with others and in teams
- . using mathematical ideas and techniques
- . solving problems
- . using technology

Each of these six reports emphasised the importance of using information. This emphasis made it incumbent on schools to set as a priority that students become competent users of information. At the Australian policy making level utilising information and the resultant increase in knowledge was set as a top priority.

Effective and efficient use of information presupposes an ability to do more than simply know it is there. An increase in knowledge does not happen by exposure or absorption. For a person to move from exposure to data to increasing knowledge, there must be connection, interaction with and utilisation of that information. What policy makers were clearly setting as an aim was that Australians become information literate.

#### **2.2.4 Information literacy**

##### **2.2.4.1 Definitions**

The concept 'information literacy' currently is subject to vigorous debate in the field of information science, and complete agreement on what the term means is not yet forthcoming. Indeed, given the diversity of perspective from which literacy of any form can be viewed, the researcher wonders whether or not complete agreement is viable, or, in fact, desirable. This diversity allows valid explication of any of the meanings, provided that this explication is informed, and cognizant of the competing proposals. Bruce's work [1997] successfully does this, in presenting seven ways in which information literacy can be presented, each with its own credibility.

According to the seminal definition of information literacy that comes from the American Library Association (ALA) competence in utilising information is achieved not from a mechanical working-through of a checklist of skill-related tasks, but rather it stems from a higher order *in situ* intellectual process including metacognitive ability. The definition reads:

*To be information literate, a person must be able to recognise when information is needed and have the ability to locate, evaluate, and use*

*effectively the needed information. Ultimately information literate people are those who have learned how to learn* (ALA, 1991, p.3)

The definition presented in the Ocotillo Group's 1994 report includes the key elements of the ALA definition. It also extends the 'use effectively' of the ALA definition by setting down two end products it expects of an information literate person:

*the ability to identify what information is needed and the ability to locate, evaluate, and use information in solving problems and composing discourse* [Ocotillo, 1994, p.1].

The 1996 report of the group takes the definition further, to include quite specifically the recognition of the changing face of information resources available to students. The report includes the notion of 'process' in the definition of the term:

*information literacy is the ability to effectively access and evaluate information for a given need. It includes an integrating set of skills and knowledge of tools and resources that expand learning beyond the classroom and the textbook. The process would teach students to think critically about paths to information and about the appropriateness of possible bias of materials.* [Ocotillo, 1994, p.1].

In its document pertaining to information skills in schools, the NSWDE presents a *de facto* definition of information literacy, expressing it in terms of *people who use information successfully display the following characteristics* [NSWDE, 1988, p.3]. The document then lists four characteristics. These characteristics indicate that successful users can and do add to their core knowledge, and are confident in their ability to process information gleaned from a variety of sources using the necessary technology. People who display these characteristics are said to be information literate.

The above definitions of information literacy focus on the skills that are needed for a person to connect with, interact with and utilise information after a need for information has been internalised

Irving [1995], and Bruce [1994] identified the person displaying information literacy, or the information literate person, in these terms as well - as one who displayed a degree of competence in various information management skills. Irving and Bruce here focussed on the skills that an information literate person would have. A person competent in the use of these skills would be

able to use information to increase knowledge, and could be called information literate.

Bruce's later work in 1997 positions information skills - she calls them information process skills- in a broader 'portrait of an information literate person'. This portrait presents three dimensions and qualities of sets of the information literate person:

- *the information literate person thinks critically about information and has information process skills*
- *has developed an information style, has information technology skills, has knowledge of the world of information and has values which promote information use*
- *has developed important skills for life long learning* (1997, p.10).

In these three dimensions Bruce moves away from focussing only on skills when defining information literacy, to focussing more broadly on people's conception of information and of information literacy. Using the face metaphor she presents seven of these conceptions. The faces are distinguished from each other by experience, and appear in three categories: the faces that present an objective view of information, faces that have a subjective structure of awareness, and the last face which is transformational.

In the first category, the information skills perspective is one of four ways in which people understand information. In this category, information literacy is seen as

- using information technology for information retrieval and communication (The Information Technology conception)
- finding information (the Information Sources conception)
- executing a process (the Information Process conception)
- controlling information (the Information Control conception)

In the second category, information literacy is seen as

- building up one's personal knowledge base in a new area of interest (the Knowledge Construction conception)
- gaining novel insights (the Knowledge Extension conception)

And in the final category- itself an example of the Knowledge Extension conception- information literacy is seen as using information wisely for the benefit of others.

Bruce's formulation of this final category has contributed to her work being recognised as a landmark publication. It both acknowledges and removes itself beyond the literature by allowing information to have a more significant place in the altruistic dimension. The information becomes the enabling factor in the making of a better world.

Complete agreement on the definition of information literacy might not be forthcoming from information science at the moment, but two assumptions underpinning the various definitions are apparent. The first is that society has become information-based, that the information available grows by the minute, and that it is available by varied means. The second is the notion of 'managing' information, of the user being in control of the information, rather than being a slave to it. Being in control of the information suggests the connectedness, interaction and utilisation that are presented in Figure 2.1.

In terms of Bruce's work [1997], it is the third face of information literacy – the Information Process as conception- that is particularly relevant to this thesis. The research reported in the thesis explores the impact of an information literacy framework on the learning of a discrete group of students. The framework consists of six information skills: defining, locating, selecting, organising, presenting, evaluating. These skills provide the structure of a process that students were taught. Then the students developed their ability in using these skills in the study of *Society and Culture*. In terms of educational theory this approach is constructivist in that they both value the student as a thinker. The information utilisation process has the information utiliser actively engage the information, form the hypothesis, and test these by interacting with others [Ricketts and Sheerin, 1999].

The Information Process experience acknowledges that the person who deals with a novel experience involving information works through a process. Such a process involves the use and the development of information skills. The information user – the potential information utiliser- views information



objectively, and experiences the usefulness of the information by how it is shaped by the information problem that contextualises it (Bruce 1997, p.128).

The academic debate on the definition of information literacy continues in information science and education. However, the responsibility for educating for information literacy rests with educators at all levels of the profession: in schools young people should be taught to manage the information in such a way that a task is completed or a problem is solved, and the knowledge base is extended.

In this thesis, the definition of 'information literacy' that is used is that of the September 1991 report of the Federal Government (Australia) Standing Committee for Long Term Strategies: *the ability to find, evaluate and use information for decision making* [Jones, p.3]. This definition is used in conjunction with three other illuminations.

The first is from Moore [1995 [a]], who says that the information utilisation process begins when people find themselves without sufficient knowledge to proceed in some situation. In calling on Irving [1985], and rejecting the terminology 'library skills' and 'study skills' for 'information skills', Moore [1995, p3] argues that *the activity at the heart of information skills is that of independent learning, of concept formation in the context of integrating information from a variety of sources*. The definition that this thesis uses relates to a person's ability to make decisions and to engage in independent learning by employing six information skills.

Secondly, Bruce [1997, p.3] has said that *information literacy is best described in terms of attributes of people* and these attributes are:

- the capacity to think critically and to process information;
- a conceptual understanding of the world of information; and,
- our appreciation of the potential for and value in transferability of skills.

These three attributes relate closely to the expectation that education not be teacher-centred but rather, because of the nature of the

Information/Communication Age, empower students to increase their knowledge through information utilisation.

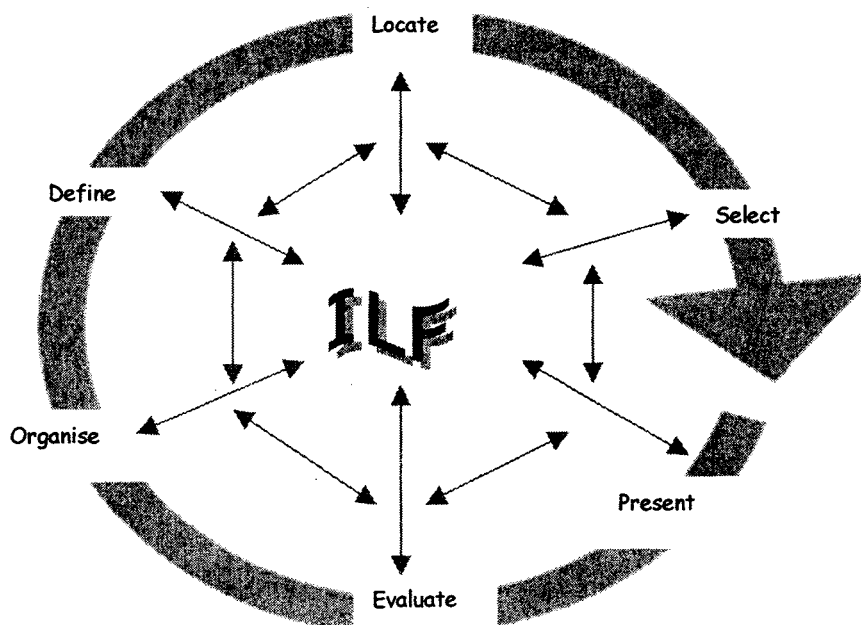
Finally, the term information skills as a component of information literacy refer to the six skills set down in the NSWDE model of information literacy that is considered in Section 2.2.4.2. The six skills in this model are:

The NSWDE [1989, pp. 6-8] model is based on the developing of six information skills:

- *Defining*, which exhorts the user of information to ask the question *What do I really want to find out?*
- *Locating*, and it focuses on the question *Where can I find the information I need?*
- *Selecting* which focuses on the question *What information do I really need to use?*
- *Organising* with the key question being *How can I best use this information?*
- *Presenting*
- *Evaluating* which requires that the information user to make a judgement on the outcome of the information use, and of the process involved.

Figure 2.2 shows the six skills, and the possibility of non-linear use of them.

FIGURE 2.2  
SIX INFORMATION SKILLS CONSTITUTING AN INFORMATION LITERACY FRAMEWORK



### 2.2.4.2 Models of information literacy

From the intensive debate on what information literacy is, different conceptual models of information use have emerged from the information science field. There are some differences between the models, mainly in terminology, but the similarities are more evident (Eisenberg and Spitzer, 1991).

Process is but one of Bruce's [1997] seven faces of information literacy. Brown [1997] states that the group of information literacy definitions and models in which one finds Bruce, looks for characteristics that define the information literate person, rather than skills that person might develop.

Brown brings the features presented in both the skills-based and the characteristics-based models together, and categorises them in terms of time sequences:

*There are those things which most often take place before the information problem-solving search begins, those that take place during the search, and those that cluster after the search has been successful* (Brown 1997, p5).

He names the activities that occur in each of the time phases. Brown explains each of these activities as 'Attributes', and the language of these attributes describes information skills. The correlation between Brown's phases, the attributes from other respected models and the set of information skills that are used in this research is presented in Table 2.3.

**TABLE 2.3**  
**THE CORRELATION BETWEEN BROWN'S INFORMATION LITERACY PHASES AND**  
**ACTIVITIES, ATTRIBUTES FROM OTHER MODELS (Brown 1997), AND THE**  
**INFORMATION SKILLS OF THE NSWDE MODEL (1989)**

PHASES	ACTIVITY	A SELECTION OF ATTRIBUTES FROM OTHER MODELS	NSWDE
Before	Plan process	define task	DEFINE
	develop ideas pertinent to problem	relate to and regroup prior knowledge	
	develop problem-solving goals	set goal to create knowledge	LOCATE
	utilise pertinent affective traits		
	utilise pertinent knowledge bases	display knowledge of information processes and resources	
During - 1	find sources	seek; locate; find	SELECT
	appraise sources	Recognise strength, weakness, impact of information sources	
During - 2	comprehend content of sources	extract, record, store	ORGANISE
During - 3	apply content to problem		
After - 1	present answer	shape, create	PRESENT
After - 2	evaluate answer and process	assess, think back	EVALUATE

Stages (or phases, activities or attributes) in the models shown in Table 2.3 do have different names, and they are presented in different orders of listing, but common to each of them is the notion that information does not become knowledge by what might be called info-osmosis. Information utilisation- the practical basis of information literacy- requires cognitive activity that enables competence in the component dimensions of information utilisation. These dimensions incorporate information skills. The six models presented in the table view information utilisation and information literacy in terms of a process through which people work, a process that incorporates sets of skills. In the models, competence in using information skills is basic to information literacy (ASLA, 1996).

Table 2.4 presents the key models in the field of information science. The chronological order in which the models appear recognises the place each has in the history of information science. Essentially the models address the same range of skills as does the '*define- locate- select- organise- present- evaluate*' NSWDE model. However they differ in developmental progression. For example, Eisenberg/Berkowitz's *Big Six*<sup>TM</sup> model [1990] combines *organise* and *present* as one step in the process. Personal experience and the current research suggest that secondary school students need to distinguish these two stages when they are using information. Most tend to leap from Selecting (for some, from Locating) to Presenting, with little thought having been given to organising the information in a way that best suits the completion of the task.

Kuhlthau's key *Information Skills for an Information Society: A Review of the Research* (1990) was a significant contribution to the growing understanding of information literacy that began in the early 1980s. At that time the notion of skills focussed on library skills, and success was measured in terms of one's being able do things such as recite Dewey numbers and associated categories, and locate a series of reference books in the fastest possible time. Of course, the two tasks cited are extreme- maybe simplistic- examples of library skills but they do serve to illustrate that the person of the researcher was lost to the efficiency of the system. The interest was on how researchers behaved when engaged in tasks involving information sources, and little on how, or indeed whether they experienced worthwhile learning at all.

TABLE 2.4  
SOME KEY MODELS OF INFORMATION LITERACY

CONSTRUCTIVIST KUHLTHAU [1983]	EISENBERG/ BERKOWITZ [1988]	PITTS/STRIPLING [1988]	IRVING [1981]	Californian Technology Assistance Project - CTAP [1994]
1. Initiation  2. Selection  4. Formulation of focus  3. Exploration  5. Collection	1. Task definition    2. Information seeking strategies: determine range of sources prioritise sources 3. Location and access   4. Information use: engage extract information  5. Synthesis: organise present  6. Evaluation. Judge: the product  the process	1. Choose a broad topic  2. Get an overview of the topic 3. Narrow the topic 4. develop thesis / purpose statement 5. Formulate questions to guide research 6. Plan for research and production 7. Find, analyse, evaluate sources   8. Evaluate evidence, take notes, compile bibliography  9. Establish conclusion Organise information into outline 10. Create and present final product (reflection point: is the paper/project Satisfactory)	1. Formulation/analysis of information need  2. Identification/ appraisal of likely sources   3. Tracing/locating individual resources 4. Examining, selecting and rejecting individual resources 5. Interrogating/ using individual resources 6. Recording, storing information 7. Interpretation, analysis synthesis, evaluation 8. Shape, presentation and communication of information 9. Evaluation /product	1. Identifies a need or problem      2. Seeks appropriate sources, gathers information  3. Analyses information  4. Interprets and synthesises information 5. Communicates  6. Evaluates process and product

The Kuhlthau model [1988] has seven stages, deriving from a qualitative study of senior high school students:

- Initiation
- Selection
- Formulation of focus
- Exploration
- Collection
- Presentation
- Assessment of both outcome and product.

That the academic discussion moved from what physically happened in the library to the cognitive and affective psychological domains of information use was largely due to Kuhlthau [Brown, 1997]. Kuhlthau's model derived from a series of qualitative and quantitative research studies into the way researchers operated. The research explored the actions and reactions of student researchers as they passed through the information search process. The constructivist base of the process assisted the students in their progress, particularly when they experienced feelings of fear or frustration. As they were working through a process they reflected on their feelings and on the way they were proceeding. They were not only learning how to use the sourcing facilities, but they were also increasing their knowledge of their product and of the process, and in so doing they were developing metacognitive abilities [Kuhlthau, 1991].

As stated in Section 1.4.1 of this thesis, a particular set of information skills- define, locate, select, organise, present, evaluate- constitute the framework of the information literacy model as presented by the NSWDE in its *Information Skills in the Schools* [1989].

Kuhlthau's *initiation* embraces the first two NSWDET stages, and it has *select* as the second stage. Experience points to the value in having the user attend to the matters involved in the NSWDET's model's *define* (What do I really want to find out?) and *locate* (Where can I find the information I need?) before moving into the actual sources. When this does not happen random selection occurs, and frequently leads to the frantic collecting of information that might or might not relate to the task [Lamb and Todd, 1993].

This research uses an information literacy framework based on these six skills. Four factors influenced this decision. The framework:

- relates well to the Mayer Report [1992]
- is constructivist
- was devised for schools in NSW where the research was conducted
- was used in earlier research involving lower ability and mixed ability class groupings.

The Mayer report [1992], and the preceding Carmichael report [1992] that addressed vocational educational and training matters see information literacy as a lifelong reality. In the USA the Association of Supervision and Curriculum Development (ASCD) also acknowledged that

*Information Literacy ... equips individuals to take advantage of the opportunities inherent in the global information society* (ASCD, 1991, p.2).

The challenge in this statement is that providing opportunities for people to become information literate becomes an equity issue. Individuals who are well placed in the global information society are skilled in locating, interpreting, analysing, synthesising, evaluating and communicating information. They have been provided with opportunities to develop competence in these skills.

There are some differences between the skills listed in the Mayer [1992] Report and those that constitute the NSWDE model. The skills of *defining* and *evaluating* are not mentioned specifically in Mayer. In the NSWDE document the skills grouped by Mayer under collecting, analysing and organising information are divided into the three separate skills of *locating*, *selecting* and *organising*. But these differences aside, the spirit of the NSWDE model coincides with the recommendations of the Mayer Report [1992].

The information literate person in terms of the Mayer Report [1982] is one who can:

- collect, analyse and organise information, i.e., has the capacity to locate the information itself and the sources and methods used to obtain it; sift and sort information in order to select what is

required and present it in a useful way; and evaluate both of these processes

- communicate ideas and present information, i.e., has the capacity to communicate effectively with others using the range of spoken, written, graphic and other non-verbal means of expression.
- plan and organise activities, i.e., has the capacity to plan and organise own work activities, including making good use of time and resources, sorting out priorities and monitoring own performance.
- solve problems, i.e., has the capacity to apply problem-solving strategies in purposeful ways, both in situations where the problems and the desired solution are clearly evident and in situations requiring critical thinking and a creative approach to achieve an outcome.

The NSWDE model addresses two characteristics of information. First, information has to be located. Secondly, information needs to be understood and used effectively to respond to a given task, and to increase knowledge. In facilitating students' capacity to manage information the NSWDE model recognises that learning is lifelong, and that the need to be information literate becomes increasingly important as social institutions change and information technology continues to develop.

Implicit in the information literacy framework proposed in this thesis is the valuing of

- competency in information skills as an instrument in learning
- creative and critical thinking in the information process
- truth and the discipline of scholarship
- independent learning.

In summary, information science has produced several models of information literacy that vary in detail but not in essence. It seems reasonable to take any of these models to establish learning environments



that aim to produce information literate people. In this thesis the model taken is that of the NSWDE. This model is known to schools in NSW, and is used in mixed ability classes across the state. What this research sought to do was to investigate the impact its use had on a particular group of gifted secondary students, a group often not identified in mixed ability classes. Identified or not these students do exist, and it is important to know whether a particular framework that is likely to be used in NSW schools:

- is of benefit to their learning
- is detrimental to their learning
- has no impact either beneficially or detrimentally on their learning.

### **2.2.5 Evidence that an information literacy framework is effective for learning**

Formalised schooling is associated with curricula, and curricula bring to mind 'content'. From one perspective this is so self-evident that it hardly needs to be stated. However, 'content' became the driving force in the classroom. Even as recently as 40 years ago, when access to information was limited, school lessons might have commonly involved the teacher practising blackboard skills and writing the information for the students to copy and then learn by rote. Probably this teaching style was not desirable then, but in the researcher's opinion certainly in this Information/Communication Age, five factors render this type of classroom activity inappropriate, because it

- at best implies that one person can know all that there is to know about a topic, and at worst allows for an imbalance of power in terms of knowledge formation
- ignores the higher order cognitive activities involved in problem-solving
- ignores the vast amount of information that is available
- ignores the need for students to develop the skills to utilise information. This is supported by Moore (1995).
- considers the knowledge resource rather than the user of the information. This is supported by Kuhlthau [1986].

Barber states the message strongly:

*The tendency in schools is to teach whatever has to be taught and to assume that pupils will learn to think as a matter of course. Yet thinking, like other processes, is something we can learn to do and get better at. This is one of the few things that has been proved conclusively by educational research (1996, p.180).*

Part of that educational research has investigated the effectiveness of learning frameworks that move beyond the acquisition of facts. Barber [1996] reports on a study that was conducted using students aged from eleven to 14 years in a controlled experiment. Two groups were involved in the experiment. In their Science classes one group was taught not only Science, but also how to think. The students were also taught to reflect on themselves as thinkers as well as students of Science. The metacognitive element in this research study was not a discrete activity, but was incorporated into the curriculum area. Results from that study showed that the students in the 'thinking' group achieved results markedly better than the control group –and not only in Science, but in English and Mathematics as well.

A study into the learning of mainstream and lower ability students at MSCW [Todd, McNicholas & Sivanesarajah, 1992] showed similar academic results to the study reported by Barber. This learning framework was similar to that used in the Barber study as it was concerned less with the information that the students encountered, and more with the way the students utilised the information. The study investigated an information literacy framework of learning that was based on six information skills.

This qualitative study was conducted at MSCW [Todd, Lamb & McNicholas, 1993] and involved 110 students. An aim of the research project was to assess the impact of information skills on learning. The students had experienced information skills being integrated into their classes for four months. The results of this preliminary study showed that the information literacy framework had positive results on students as learners, as people, and as users of information. The results showed that the information literacy framework impacted favourably on the students in five ways:

- self-perception as both a learner and as a person. The framework

resulted in the students being more skilful in questioning, more reflective of the learning process, able to exercise greater self-control, more confident as self-reliant learners, and more readily able to accept responsibility for their learning.

- the learning process. Students were found to have developed the ability to chart their learning progress, and to see learning as a structured process. They became more accepting of looking upon learning as a challenge, not as a threat, and they were able to identify their weaknesses. They were no longer daunted by the amount of information that was available to them, and they found that they were able to complete tasks and learn more quickly.
- learning outcomes. Trends that were identified were that learning was seen as being meaningful, and could be transferred to other curriculum areas. Students experienced increased confidence in working without supervision, and in contributing to the exchange of ideas in class discussions. Their development of reflective thought patterns was coupled with an ability to maintain focus on a task. Memory capacity improved, as did test scores.
- view of information. Working within the framework enabled the students to see the skills not as library skills but as information skills, and they began to seek information from a wide range of sources.
- the learning environment. Students were able to identify that each person in the room had a role to play in learning. They flagged the importance of teachers understanding information skills, both in term of the students' level of competence, and in terms of their teaching. The framework was perceived to have made learning more interesting. Older students emphasised the importance and benefit of the framework being introduced to younger students, and having it reinforced throughout their years at school.

In terms of the teachers these five results revealed that:

- the framework enabled more effective use of time, and sped up the process of learning and teaching
- even the larger groups were more effectively managed because there was consistency of language, and more opportunities to respond to individual students' needs
- content was more readily sequenced, and more clearly planned
- assessment criteria were more easily managed, and more effectively part of the learning in the group
- even with the difficulty of dealing with sceptical colleagues, and coping with a change of teaching style, their teaching became more confident, and their enjoyment level rose (Todd, Lamb and Mc Nicholas 1993).

As an earlier part of the same study, a Year 9 Science class that was characterised by its low level of achievement and its reluctance to participate fully in the Science course took part in an integrated information skills approach program. In two sets of examinations, which involved the entire Year 9 cohort, the class displayed improved mastery of content, with 95% of the class scoring more than 50% in the examination. The history of the class would have seen it performing at the lowest levels of the Year, but after having experienced the integrated approach this marked improvement occurred [Todd, 1995].

Further research into the impact of an information skills framework of learning was conducted with all of the Year 7 Science classes. Results from this research consolidated the findings, from the other groups. The integrated information skills instruction was shown to have a positive impact on academic achievement [Todd, 1993].

As mentioned previously in Section 2.1, research in major western countries- in UK (Irving, 1985; Barber, 1996), USA [Eisenberg, 1991], NZ (Moore, 1995), USA (Kuhlthau 1994) and NSW [Todd, Mc Nicholas and Sivanesarajah, 1992; Todd, Lamb & McNicholas,

1993] - has shown that a particular framework of learning has a favourable impact on the learning of mainstream and lower ability students at secondary school level. This framework is based on the notion of information literacy, and in all but Barber, involves a process in which the management of information is done by the utilising of information skills. While the Barber study does not involve the notion of information skills that the other studies do, it does investigate the impact of having students consciously make decisions about their learning. This finding underpins the spirit of the use of information skills, and makes the Barber study relevant to the current discussion.

A perusal of Table 2.5 on the next page that shows characteristics of key research into information literacy frameworks reveals an uncharted area for research. To the researcher's best knowledge at the writing of this thesis, the work that has been done to date leaves gaps that are filled by the current research. The past research:

- did not investigate if gifted students as a group benefited from the framework of learning.
- did not conduct with the same group a longitudinal study of the impact of the framework
- was not set in a complete curriculum area for the duration of that curriculum area.

The research that is reported in this thesis fills these gaps:

- the participants were identified as being gifted, during the research (stage 1) period between August and October, 1995
- data were collected intensively during the research (stage 2) period between November 1995 and August 1996, and three times over the subsequent two years
- the research environment was an authentic subject in the school curriculum

TABLE 2.5  
**GAP IN THE RESEARCH:**  
**CHARACTERISTICS OF KEY RESEARCH IN THE AREA OF INFORMATION LITERACY FRAMEWORKS OF LEARNING,**  
**REVEALING AN UNCHARTERED AREA FOR RESEARCH**

SAMPLE	LEVEL OF SCHOOLING	KEY ISSUE	BROAD METHODOLOGY	FINDINGS
KUHLTHAU 1987, 1991	Secondary	Use of information skills	Qualitative/quantitative	Identifying stages of ISP
MSCW (1) 1992	Secondary	Impact on learning of ILF based on six information skills	Qualitative, experimental, mixed ability	Positive impact on teaching and learning
MSCW (2) 1993	Secondary	Impact on learning of ILF based on six information skills	Qualitative, experimental, slow learners course restrictive	Positive impact on teaching and learning
MOORE 1995	Primary	Cognitive difficulties encountered in information utilisation	'Thinks aloud and interviews, class group	Important learning evidenced in more than the final product
BARBER 1996	Secondary	Process of thinking vs. mastery of content	Qualitative and quantitative	Positive impact on learning
<b>GAP</b>		Impact on learning of an ILF based on six information skills on students identified as being gifted	<b>GAP</b>	

## **2.3 EDUCATION AND LEARNING OF GIFTED STUDENTS**

### **2.3.1 Introduction**

The literature on the education of gifted students has often been grouped under the heading 'Special Education', along with literature on students with learning impairments and learning difficulties. This is an interesting phenomenon in New South Wales at least, where it raises certain questions such as:

- A widely-held expectation of the broader community is that students with learning impairments and difficulties be accommodated, both educationally and physically. Does education of gifted education raise the same concern in the community?
- If funding allocation is available for Special Education, what share of it is earmarked for the education of the gifted?
- The trend in 2001 is for slow learners and students with learning impairments and difficulties to be integrated in mainstream classes where practicable, with specialist help, rather than be withdrawn. Is there a possibility for gifted students to be integrated with similar specialist help in the classroom?
- What if there were a learning/teaching framework that accommodated the slow learners and the gifted learners in the same classroom?

### **2.3.2 Definitions**

The heading for the first section of Braggett's [1994] chapter on the identification of gifted students highlights the difficulties inherent in the task. Braggett entitles the section *A Vexing Question* (1994). Three of the reasons for the task being difficult are:

- the range of ideas on what giftedness might be
- the discussion on what difference there might be between gift and talent
- the complexity resulting from personal values entering the discussion on giftedness.

### **2.3.2.1 Range of ideas on giftedness**

The extent of the range of ideas on what giftedness might be is apparent when one considers Terman [Plucker, 1998] on one hand and Gardner [1983] on the other. For Terman giftedness can be explained in terms as narrow as attaining scores in the top 1% of an IQ test. On the other hand, Gardner [1993] allows for giftedness to present itself in any of seven intelligences that match areas of aptitude.

Equating giftedness with the ability to perform well in an academic test is restrictive in its concentrating on academic thinking. In an attempt to identify a group in the general population, the Terman-type definitions created unacceptable restrictions. This type of definition discriminated against subjects who were not used to the formal schooling that emanated from Western Europe. It devalued the worth of non-mathematical and non-linguistic intelligence. It was open to abuse in that tests could be prepared by rote, and the curriculum of some schools – scholarship schools- was restricted to allow for time for such test preparation. Academic debate on the merits or otherwise of intelligence testing became intense following the development and use of the Stanford-Binet test, which followed Terman's work in the area in the 1920s. A person placed in the top two per cent in

this test was considered to be gifted. Decades later, the discussion had moved from this position of Terman to when Howard Gardner [1993], informed by developments in psychology, put the Theory Of Multiple Intelligences into the debate. This theory acknowledges that there are at least seven different types of intelligence, each one as authentic as the other. These intelligences that match particular aptitude areas- are discussed further in Section 2.3.4.

From the early 1930s the use of intelligence tests as markers was common in Australia [Braggett, 1994]. As the sole indicator of a person's suitability for acceptance into programs or positions, this testing was flawed. Test items generally were mathematical or linguistic, ignoring developmental and cultural factors, and giving no credit for development in other areas. The results of the tests had the capacity for being used negligently, particularly



by being used as an inflexible cut-off mark. A formula was applied to the results of the test and a phenomenon known as IQ (Intelligence Quotient) was born. Intelligence was defined in terms of a number, and people could be identified for life as having that numerical level.

Such an approach assumes intelligence is a finite and constant reality, and it denies, for example, the human factor that the person simply may not have performed well on the day of the test; or the biological factor that the specialised areas of functions of the brain operate interactively (Clark, 1984).

These tests that were used extensively in Australia for four decades from the early 1930s [Braggett, 1994] became known as general abilities' tests. The title is somewhat of a misnomer, because 'general' does not suggest the narrow parameters of the test items. A move away from the identifying of giftedness that was based on the Binet scale was the identification of the divergent thinker – one who displayed the characteristics of fluency, flexibility, originality and elaboration (Guilford 1975). These characteristics were used in the Torrance Tests of Creative Thinking that became widely used in 1960s and 1970s. The Torrance tests also assess levels of interest, aesthetic appreciation and the level at which ambiguity is tolerated (Eriksson, 1989).

Coleman (1993) suggested that at best IQ contributes about 20% of the factors that determine life success. What the test scores did not involve were skills other than those that were involved in the objective-style tests. The research concluded that there was something in our emotional dimension, a meta-ability of emotional aptitude that determines how well we can use whatever other skills we have.

Between the narrow definition developed by Terman and the broader one of Gardner there is a range of definitions. These consider the diversity of human abilities, and acknowledged the worth of different types of abilities.

Perhaps part of the difficulty in defining giftedness rests with the vagueness of the notion itself, and with the concept being so value-laden. The definitions basic to the identification of 'gifted' range from relating giftedness with intelligence as measured on a set of tests, to a much broader notion

that what the word relates to covers a range of intellectual activities, and is developmental. The latter notion gives rise to its own set of definitional difficulties- it is hard to produce a definition that recognises a range of activities that are not static. This was commented on in 1995 by the Victorian Department of School Education that stated:

*It is difficult to isolate a single definition of giftedness that encompasses the broad spectrum of human abilities and accounts for culture, class, gender and domain* (p.3).

In the research reported in this thesis identification of the students rested on the spirit of the Gagne view of giftedness, a view that is rooted in his theory of domains of human endeavour. He defined giftedness as:

*the ability of a person to perform in any domain of human endeavour at a level significantly at a higher level from what would be expected of the age-group* (Gagne, 1993, p.2).

For Gagne, each of the domains is of equal standing; there is no hierarchical arrangement of these domains of human endeavour.

#### **2.3.2.2 'Gift' and 'Talent.'**

Experts have treated the terms 'gift' and 'talent' in diverse ways, and sometimes the terms are used synonymously. Gagne wrote:

*Most of these definitions focus on giftedness, without specifying how it differs, if it does, from talent* [1993, p. 74]

Even when the authoritative voices in the field of gifted education speak on the matter, they differ quite markedly.

Braggett [1984] says that giftedness implies innate capacities that become manifest in individuals in an observable way when those natural abilities have been developed. Braggett's use of the terms is similar to Gagne (1985) who states:

*Giftedness corresponds to competence (aptitude, potential) which is distinctly above average in one or more domains of ability; talent refers to performance which is distinctly above average in one or more fields of human performance* [1985, p108].

Gagne's five domains of ability are: intellectual, creative, socioeffective, sensorimotor and others [1993, p.78].

This thesis uses 'giftedness' in a way that is based on Gagne, and is present in the spirit of the Department of Education Victoria (DEV) policy on gifted education (1996), namely that giftedness is excellence in any of the forms of academic, intellectual and creative endeavour. Talents are seen as observable realities that result from environmental and cognitive factors being coupled with practice.

To identify giftedness using Gagne is confidently achieved by formulating lists of characteristics that pertain to the aptitude domains. This method of identification is used by the Inner West Region of the Catholic Education Office to identify students for special programs for the gifted.

### **2.3.2.3 Personal attitudes enhancing or clouding the definition of giftedness**

One of the first definitions to embrace the potential for giftedness to be found in other than the academic considered both the high performance ability of the person and the worth of the field of endeavour to the society:

*We consider any child gifted whose performance, in a potentially valuable line of human activity, is consistently remarkable*  
[Witty, 1958, p.43]

That 'line of human activity' extends the matter of giftedness far beyond the mathematical-linguistic parameters. Braggett would hold that giftedness is dynamic rather than static, the extent and range of influence of the remarkable performance is developed by a range of things including family, resources and the relevance of training and exercise. The relevance issue is the key to the development of potential, whether it be the relevance of matter, of experience, or of learning style- that is a key focus of the research reported in this thesis (Braggett, 1997).

### **2.3.3 'Creativity' in definitions of giftedness**

A significant element in the discussions surrounding just what is meant by giftedness, was what has become known as the 1972 report that Sidney Marland, the US Commissioner for Education, presented to Congress. In this report he presented the following definition:

*Gifted and talented children are ... capable of high performance. ...They require differentiated educational programs and/or services beyond those normally provided by the normal school program in order to realise their contribution to self and to society* [section 806].

The Marland definition was significant in four ways:

- it coupled 'talent' and 'gift';
- it recognised that gifted and talented children have special needs; and,
- it alludes to the importance of the person's self-esteem in particular and to society in general of giftedness being dealt with sensitively.

Of even greater significance than these three elements was that the Marland report alluded to something that had been missing in contemporary definitions- creativity. The place of creativity in the conversation on giftedness occurs after the United States of America grappled with the shock of the Russian success in launching Sputnik in 1957. Marland's report defines giftedness in terms not only of general intellectual ability, but also in five other areas:

*Children capable of high performance include those with demonstrated achievement and/or potential ability in any of the following areas, singly or in combination:*

1. *general intellectual ability* [usually defined in high IQ test scores]
2. *specific academic aptitude*
3. *creative or productive thinking*
4. *leadership ability*
5. *visual or performing arts*
6. *psychomotor ability.*

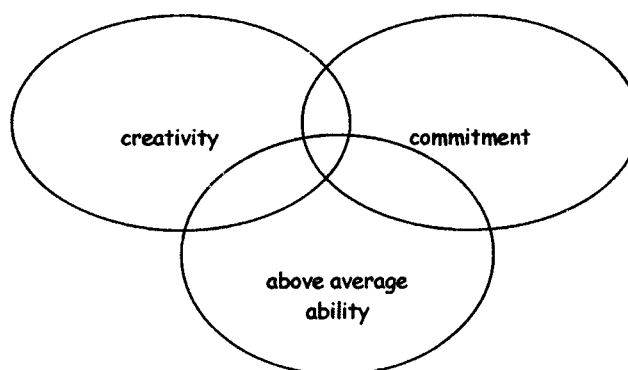
Items 3-6 in this definition refer to human capacities beyond mathematical and verbal skills. The first two items could easily have been assessed in a Terman test, but not so with the last four. Not only in the third item that mentions it specifically, but also in all of these four items there is recognition of individual aptitude, creativity. Inherent in the notion of creativity are two factors not present in the Terman definition of giftedness. The first is the person. To acknowledge a person's creativity as being a mark of giftedness is to acknowledge a uniqueness that by its nature cannot be prescribed. The second is that part of the worth of the uniqueness of creativity is that it contributes to the general good, by bringing divergent thoughts to particular problem-solving. This outcome is much different from success only in mathematical and linguistic based intelligence tests.

The spirit of the USA response to the Sputnik phenomenon underpins Parker (1997) who acknowledges that the 21<sup>st</sup> century will demand two things about gifted education: that the gifted be identified and that their education be enriched.

Gowan's definition takes the creativity notion further than the Marland report did, having the capacity for creative thought not as a feature of, but rather a possibility that creativity holds (1981). The implication of this definition highlights the fact that giftedness left untapped and devoid of nurturing, results in potential having no chance of realisation.

For Renzulli [1978] giftedness involves high achievement as well, but this high achievement occurs in conjunction with two other elements. The first of these is commitment to task and the second is evidence not only of creativity as such, but creativity at a high level of performance. The commonly-recognised model of the three interlocking circles is presented in Figure 2.3 to show the significance of Renzulli including creativity in his definition, with it being of equal significance as ability and commitment:

FIGURE 2.3  
'CREATIVITY' IN RENZULLI'S MODEL



For Renzulli giftedness is based on the co-incidence of these three elements: above-average general abilities, high level of task commitment and high levels of creativity. The weakness of the Renzulli model is that it disallows the person whose commitment to task is non-existent – the gifted non-achiever. The model does carry through the creative element introduced by Marland.

Views of giftedness have extended the parameters to include characteristics that are broader than performance in an intelligence test. As found in recent research *the cream does not automatically rise to the top* [Gross, Sleaf & Pretorius, 1999, p.13]. Giftedness cannot be explained in terms of intelligence as measured on a test. Intelligence also involves a broad range of other factors [Gardner, 1983].

This selection of definitions is not exhaustive, but it is representative. It traces the path of definition right from its beginnings where the earliest definition of giftedness was a narrow one, linking giftedness with intelligence based on performance in an academic test. The selection embraces issues such as those that have been considered by experts in their attempts to define the rather elusive notion. The selection also brings the discussion to those definitions that apply at the time of this research.

The remainder of this section of Chapter Two explores a little more deeply the movement away from the idea that giftedness ought to be defined in terms of test performance, to a broader understanding of the term.

Creativity connotes something less objective than could be measured in a traditional intelligence test. Creativity suggests a subjectivity that rests in a person's freedom to choose options for problem-solving from more than the objectively- measurable alternatives. This pivotal change in thinking was reflected in the inclusion of 'creativity' in the definitions of giftedness. As is the case with 'giftedness', 'creativity' is also difficult to define. There are, however, threads of similarity in various definitions of creativity: creativity can be learned, and the product of creativity is novel.

Kornienko [1997] expresses the notion that creativity is concerned with combining ability with skills to produce a new product. This new product might be a tangible entity, or it might be a thought. She says that in the creative process there are two different and interrelated dimensions- the medium and the process. For Kornienko the creative product – tangible or intangible- is not only novel but also appropriate. There is a conceptual 'content' to a problem, and the creative person works independently with that content in changing, expressing or depicting it to solve a problem.

*Creativity is the capacity to solve a problem without instruction*  
[www.glasnet.ru]

In Fertig's [1997] definition the product of creativity essentially rests not in the content but in the realm of thought. What makes a creative person different from others is the ability to think beyond what other people see. Were this to become manifest in a tangible way then this would be an extension of rather than an essential element of creativity.

On the other hand the use of 'act' in Davies' definition suggests that the end result of creative thought most decidedly is something tangible.

*Creative thinking is the act of being able to produce something new and original.* [www.nexus.edu.au].

For Nickerson, Perkins and Smith [1985] a different dimension is added to those of the other definitions considered here in that they attach the notion of competence, of excellence to creativity. For them the products show not only creativity but also the insight of the person responsible for the product.

What the introduction of 'creativity' into the discussion of giftedness did do was to raise the suggestion that –definitions aside- creativity could not be measured in traditional intelligence tests. Testing of intelligence- those aptitudes referred to when talking of 'giftedness'- has been of interest in the psycho-education world for a long time, and a person's performance in such tests became part of the definition itself.

For Plato [trans. 1901] in *The Republic* the rulers of the ideal state were to be the most brilliant in the community. In the fifteenth and sixteenth centuries for admission to the Court of the Eight Colleges in Constantinople a young lad had to be – as well as strong and goodlooking- highly intelligent. And in USA Jefferson said that the brightest young people would attend William and Mary College, all expenses paid by the state, to be trained in the arts and sciences, and to become key leaders (Berger, 1980).

Berger does not give details of the type of testing that these historical and philosophical scenarios entailed, but implicit in them all is the idea that a certain performance result was an indicator of intelligence. Intelligence was

seen to be related to an inherent ability [a gift], or intelligence, that allowed a person to perform at a high level of competence in a given field.

Difficulties with definitions aside, the creativity dimension that Marland introduced to the debate paved the way for broader definitions of gifted to develop, definitions much more expansive than those derived from the tests such as the Stanford Binet test. The inclusion of creativity as a dimension of giftedness leads to the notion that part of what giftedness is relates to problem solving.

Problem solving requires the person to use information in an unlearned way, a novel way, in a way, that relies on more than simply referring to already familiar patterns of thought. Traditional indicators of giftedness do not identify students who ultimately make the greatest contribution to their world. These traditional tests identify the lesson learners and the test takers. The respondents very well may be above average but they excel in only one of the three components of Renzulli's model for giftedness- general ability.

The ability to be successful at problem-solving is the basis of giftedness according to the model proposed by Sternberg and Wagner (1982). According to their theory, being able to process information with insight; distinguish between the relevant and irrelevant information; synthesise information; and, relate the new knowledge to prior knowledge to solve problems, is the mark of the gifted student. The ability of gifted students to produce new relationships among ideas, to generate ideas different from the norm, has been noticed by teachers who enhance and encourage the components of creativity (Morgan, 1999).

Clark's Integrative Education Model (IEM) (Clark 1992) aimed to facilitate the understanding of how to develop human potential by drawing on research into the function of the brain as an organ. The IEM presents four categories of brain function, each one related to certain aptitudes. Linear and spatial aptitudes are associated with the Cognitive (thinking) quadrant. With the Physical (sensing) function, sensing and movement are associated. Emotional and social aptitudes are associated with the Affective/Societal



(feeling) function; and rational, predictive and transformational aptitudes with the Intuitive function.

For Clark [1992], creativity is part of each of the four functions of the brain. Creativity as a thinking brain-function is rational and measurable, and can be developed by deliberate, conscious practice. Creativity as a Sensing brain-function is a state of talent, and it creates new products and requires high levels of physical or mental development, that is, a high level of skill in the area of talent. Creativity as a Feeling brain-function is a state of feeling. It is emotionally impactful, requires self-awareness, and involves the release of emotional energy from the creator. Transferring this energy to the viewer, elicits an emotional response. Finally, creativity as an Intuitive brain-function is a state of higher consciousness. It is not of the rational, conscious mind, and it is enhanced by growth to higher consciousness.

The Renzulli [1978] model is more integrative than the Gardner model [1983], and for Clark [1992] the separating of intelligences in Gardner's theory is a limitation. However, Gardner does propose that working with the stronger intelligences could support the developing of the weaker intelligence [1992].

Another study into creativity and giftedness [Sterling, 1993] showed real benefit of free exploration, but also that, because of the nature of the brain, there was a place for content/context in developing creativity

*the brain can be viewed as a non-linear dynamic system. Strategies that allow for far-from-equilibrium exploration may help to develop creativity. However that perspective also suggests that free exploration needs to be balanced with knowledge and skills* (Sterling, 1993, p. 65).

Pring [1997] also noted that there was a place for content development in developing children as creative. Cultural and creative thought development requires that the learner be taught a subject's content in a way that inspires care for the subject.

The acquisition of this knowledge and skills, however, should occur developmentally, not as a result of a repetitive absorption process. Geffen [1993] reports on a study conducted by Munson with a group of school

students. In this study copying was investigated. The finding was that copying significantly lowers creativity scores for originality and elaboration. Students in the copying program:

- struggled with assigned tasks which called for originality
- developed lower self-esteem
- became bored and restless
- resented loss of control
- displayed less creative behaviour.

Put simply, the copying activities did not allow them to make critical and creative decisions.

A small-scale study showed that the reason creativity is not fostered in curriculum areas has less to do with reluctance and more to do with a need for training. To speak of creativity and content-based interests as part of the same reality may at first seem contradictory. But any contradiction rests not in the nature of creativity and content, but rather in the way those seemingly disparate elements are presented to the students (Morgan and Foster, 1999).

As is the case with 'information literacy' and 'giftedness', attempts to define 'creativity' give rise to debate. Gowan's [1981] suggestion of creative thought, and Renzulli's [1985] 'high level of creativity', for example, imply the readers understand the word 'creativity', but neither articulates what the word means. Wallace [1986, p.68] stated that *no universal argument on what creativity really is exists*. Without denying the worth of good debate, the researcher is somewhat encouraged by Clark's [1992] claim that the word probably cannot be defined in any rational way:

*probably the most unexplainable part of creativity lies in the fact that, even though few agree on a definition, when we say the word, everyone senses a similar feeling. We may not be able to explain what it is rationally, but we know it just the same [p. 47].*

To ask what this intuitive appreciation of creativity entails follows easily from Clark's observations. What is not so easy is to identify what it is about creativity that people 'know'.

### 2.3.4 'Giftedness' and intelligence and intelligences

With the Marland 1972 report including an element as immeasurable as creativity in defining giftedness, the discussion on the definition of giftedness went along an entirely new path, as discussed in Section 2.3.2.1. One of the results of this new direction was the issue of the relationship between giftedness and intelligence, and the relationship between intelligence and intelligences.

Giftedness and intelligence are not synonymous terms, although they are inextricably linked. For Clark [1992] intelligence is what results from the whole brain functioning, and giftedness is what results from appropriate stimulation and enrichment. The importance of stimulation and enrichment that Clark, [1992, p25] *proposes* is based in the structural reality of the brain:

*through changes in teaching and learning procedures, the growth of dendrite branching, the complexity of the network of connections among neurons, and the quantity of glial cells can be increased. These are the measurable differences in brains that show advanced and accelerated development. By the environment we provide we change not just the behaviour of children, we change them at the cellular level. In this way gifted children become biologically different from average learners, not at birth, but as a result of using and developing the wondrous, complex structure they were born with. At birth nearly everyone is programmed to be phenomenal [p.35-36].*

Gardner's theory of Multiple Intelligences (1983) also sees giftedness in terms of a broader range of abilities than those that were tested in IQ tests referred to in Section 2.3.2.1. Gardner's theory is based not only on observations of behaviour, but also on neurological and biological data. His theory allows for creativity to be included in an explanation of giftedness. Gardner's theory says that were a person to display *the capacity to solve problems or to fashion products that are valued in one or more cultural settings* (Gardner p. 62) then that person is displaying giftedness

For Gardner the chief intelligences are:

- linguistic
- logical-mathematical
- spatial
- bodily-kinaesthetic

- musical
- interpersonal
- intrapersonal

He believes the key to maximising these abilities is to have them nurtured thoughtfully and carefully. Kronborg [1995] notes that there are five issues arising from the importance Gardner places on having abilities nurtured, and these are as relevant to the gifted students as they are to the rest of the class.

First, there is the range of abilities addressed in schools. Comprehensive schools dominate the educational landscape and as a result within their communities are students whose abilities - intelligences- are more diverse than those which are accommodated by mathematical/ logical/ linguistic emphases. Recognition is one thing, but for the other intelligences to have a chance to be developed to a point of accomplishment in the gifted students, understanding of their worth is also needed. With the curriculum changes for NSW in the 2001 HSC, other areas of the curriculum - linguistic, bodily-kinaesthetic, spatial, and musical - gained equal credibility with English, Science and Mathematics. Particularly with the creative arts, school authorities have made public recognition of the successes in these subjects, by holding exhibitions and special performance opportunities.

Secondly, the traditional classroom of straight rows, five across and six back will not accommodate the learning styles and the teaching styles that have developed. The collaborative classrooms serve as a model of these new styles. Arranging students into small groups is part of- but not exclusive to- this style of teaching. Whatever the purpose of the groupings, one aspect that generally applies is that students have a chance to speak among themselves as they proceed with whatever the task is. In these smaller groupings students are less able to sit back and not contribute their ideas. They have their ideas challenged in a non-threatening way by their peers. Where they are grouped with their intelligence peers, there is interaction vital to them moving towards achieving their potential.

Thirdly, traditional assessment measures are inadequate for classes that are respectful of a range of intelligences. Braggett (1994) suggests that the ease of

testing might have been a contributory factor for the popularity of intelligence tests. Kaufman and Harrison (Chan, 2000] make a darker suggestion: that teachers who were biased against culturally diverse students advocated testing as the antidote in the selection procedure. A classroom approach that is sensitive to the varying intelligences of the students in the class will accommodate not only the learning styles of the students, but also the way those students are assessed. This notion of varied assessment- particularly for the same task- is a just response to students who have high ability in whatever area of intelligence.

Fourthly, the traditional arrangement, which has the teacher as the fount of all knowledge and the student as the recipient of the sharing of that knowledge, is inappropriate. Indeed, it is more than inappropriate- it is arrogant. In any historical period, to have the students hear only what the teacher has chosen to present about a topic could be seen as a form of censorship, and it is at the heart of propaganda. In this Information/Communication Age, to conduct a classroom wherein the teacher was assumed to have all of the knowledge displays a perhaps non-intended arrogance, but arrogance all the same.

And the fifth issue is that school and life are not separate entities. The intelligences that students display in their classroom lives are inherent, and evident in the outside world as well, so that any nurturing, and developing that happens in the classroom becomes an important part of lifelong learning.

### **2.3.5 Implications of a broader view of 'giftedness'**

The broader view of giftedness presents quite a challenge to educators. If the curriculum is not adjusted either in depth or speed to match the needs of the gifted, then they are likely to lose their passion for learning.

There is no doubt that there are teachers whose cocoons make it imperative that they teach in what they would call their love of 'time-tested ways'. Such a narrow view of teaching may be matched by a narrow view of intelligence. But there also are teachers who see teaching and learning as a dynamic, collaborative and developmental process, specifically in the education of the

gifted. Their understanding of giftedness is much, much more inclusive than the understanding of giftedness as success in mathematical-and-language-based tests.

Guskin, Ping and Majd-Jabbari (1998) conducted a study of 111 undergraduates and 79 teachers. Respondents were asked to group 20 different kinds of abilities that might be displayed by gifted students. Their identification went far beyond the traditional view, and they identified five categories of giftedness

- . analytical and cognitive ability
- . personality and social skills
- . creative arts
- . motor skills
- . verbal ability

This researcher considers that the 'analytical and cognitive' group is considered to be very similar to 'logical-mathematical', and that the rest of the categories embrace all of Gardner's [1993] seven intelligences.

Gardner's Theory of Multiple Intelligences was a consideration in the reforming of Finland's educational system (Tirri 1997). In the 1980s educational reform moved the Finnish education system from a centralised to a decentralised model, and municipally governed education replaced the national curriculum. This new arrangement has four benefits for gifted students:

- it allows flexibility in decisions concerning acceleration;
- it allows flexibility in decisions concerning the composition of class groupings;
- it gives parents the choice of the starting age at school of their children; and
- ungraded schools are possible.

The early findings of Bloom [1956] coincide with Kronberg's ideas on the importance of nurturing the gifts, as indicated earlier on in this thesis. Bloom presented a challenge for the educators of the gifted:

*strong evidence that no matter what the initial characteristics (or gifts) of the individuals, unless there is a long and intensive*

*process of encouragement, nurturance, education and training, the individuals will not attain extreme capability in these particular fields. (p.3)*

For gifted students to have their strengths challenged, and to allow them the opportunity to manipulate their potential, requires a curriculum that is more than content-based. Better for them is a curriculum which is expressed in terms of

- interpreting, evaluating, and drawing inferences
- using deductive reasoning
- developing analogical reasoning skills based on reading

Such a curriculum has expectations of teachers, which include having students

- evaluate
- answer analytic questions
- generalise from concrete to abstract at high levels/
- support generalisations
- interpret (Van Tassel-Baska, 1992, Chapter 1)

The researcher notes that these expectations of students correlate with the information skills of *defining, locating, selecting, organising, presenting and evaluating*, that form the basis of the information literacy framework that is the focus of the current research. Having these expectations of students presents them with learning experiences suited to their needs. Such a learning environment provides students with:

- *a climate where they can take risks and make mistakes*
- *opportunities to work through their strengths*
- *an element of choice*
- *challenging activities*
- *opportunities for creativity*
- *opportunities for student-centred learning*
- *encouragement to achieve excellence*

[Gross, Slep and Pretorius, 1999, p.36].

One could confidently expect that a student in a classroom that was defined by these results would be far from bored. Boredom can occur if gifted

students' needs are ignored. However, Betts [1995, p.249] offers a timely reminder that the goal of education of the gifted is not only to avoid boredom, or to develop gifts, or to stop students from dropping out of the formal education system – and therefore to deny the society of the benefit of the gifts of those students- but also has a special aim. That aim is to develop independent, self-directed learning in gifted students. For Betts autonomous learners possess positive self-esteem, use appropriate social skills, are creative both in learning and in living, learn passionately, and seek to improve the human condition. Betts advocates enrichment activities for all students, with the teacher making careful and informed observations of the progress of the students. This observation of performance should reveal the gifted.

The benefit to society of the gifted student being educated in an appropriate way is that resources are not wasted. If, for example, acceleration were considered to be appropriate, then the gifted students would be able to leave compulsory education earlier than otherwise would have been the case. This has the potential to facilitate the student's making the most of their potential at the optimum period of their life (Proctor *et al* 1988). A likely product of this potential is leadership, which Passow [1993] discussed in terms of other social characteristics – care and empathy, sensitive social conscience, moral and ethical awareness.

### **2.3.6 Significance of teaching styles**

#### **2.3.6.1 Inadequacy of one-directional theories of teaching**

The researcher's experience as a secondary school teacher for over 36 years and as an educational administrator for half of that time, suggests that what students experience in a classroom can be different from what the teacher intends. Class members also might do different things to those expected by the teacher. When this mismatch happens, learning is not facilitated. This point can be seen clearly by considering briefly three compilations from personal experience.

At times a teacher will be heard to say that even though he or she has taught a topic well, the students have not learned anything, as indicated in assessment results. If the teacher's assessment of the state of the students'



learning is accurate then that teacher has not taught. He or she may have prepared well and gone through the motions in the classroom, but if intended learning by the students has not happened, then neither has intended teaching. The claim by the teacher that the students have not learned from the lesson raises at least two thoughts:

- there is every chance that students might have learned something that was presented in the lessons, but was not assessed
- it is incumbent on the teacher to address the problem honestly, without apportioning or internalising blame, but accepting responsibility.

At times a student says that she is learning nothing in a particular class, and her teacher attributes this outcome to the student's unwillingness to learn. The teacher comes to this conclusion because the rest of the class appears to be learning. In this case there are three likely possibilities. Maybe the student's evaluation is not correct. Maybe the student simply was not actively engaged in learning. However, if the student was in the classroom with the intention of learning, and with a preparedness to learn, then whatever the teacher was doing did not facilitate that learning, even though the teacher thought that teaching was indeed happening.

At times a teacher puts into the file for next year the lesson notes that worked well this year, and also have worked splendidly for the last five years. Of course, it is unrealistic to suggest that teaching resources will not be filed for further use. However, it is reasonable to expect that if these resources are used again, consideration be given to their suitability for the next group of students, and that they will not be used simply because of their successful past use.

What is common to these examples is a degree of illogicality. There is an implied acceptance that in a classroom two separate things are supposed to be happening: the teacher is there to teach, and the student is there to learn. What is illogical in this reasoning is that it ignores the fact that both learning and teaching in a classroom situation are parts of an integrated,

reciprocal process – it is not a one-way experience wherein the teacher has the information and the students' minds are receptacles waiting to be filled.

A theory that espouses such a one-way reality is the *tabula rasa* theory of the mind. [www.english.upenn.edu]. People who subscribe to the *tabula rasa* theory of the mind argue that in learning, information is the input and our sensory system is the entrance medium for that information. This information is processed through the senses and becomes knowledge. If knowledge does not happen then the error in learning is the result of faulty processing because the information is pure, is an objective reality. Proponents of the mono-directional model of learning might look to the *tabula rasa* theory of the mind as a justification of their position.

Three arguments weaken the position posited by the *tabula rasa* theory. First, there is the nature of information. Popper [1972], a philosopher exploring what we can or do learn and what is worth knowing anyway is informative on this. Popper challenges the *tabula rasa* theory's claim of purity of information. He argues that particularly when connected to concepts and abstractions, information is subjective, and is not value-less.

The second argument involves the processing of that information. The *tabula rasa* theory of the mind places responsibility for learning on the learner. The theory denies that part of the learning is the acquisition of skills that will enable the processing of information. The researcher holds that processing involves evaluative and analytical cognitive skills. These skills are higher order skills and they are acquired in a process that involves an external facilitator. The skills acquisition is a two-way process in which both the learner's needs and the learner's level of competence in processing the information are known to the facilitator. Current literature in the information science field does not support the notion that acquisition of skills needed to process information is achieved automatically. Rather, the literature suggests that acquisition of information processing skills is the result of deliberate teaching of those skills, as stated strongly by Branch [2001]:

*There is a need for teachers to teach students, explicitly and systematically, the skills of the information process, to help them learn to access information efficiently and effectively [p. 27].*

And finally, the notion that the teacher is the fount of all knowledge, as the transmitter of information needed for the students to learn, is no longer widely accepted. Common sense suggests that it never was the case that one person in a group held all the information that was the source of potential knowledge of the group. Today the notion is totally untenable.

This is not to say that students, gifted or otherwise, can be left totally to their own devices when attempting to utilise information. Bishop [2000] conducted a United States study into the authentic learning experiences of a group of junior high school students- 6 girls and 4 boys- who were identified as gifted. A key finding of the study was that teacher intervention facilitated the students' development as authentic learners. This intervention has a positive impact in terms of having the students maintain focus, and in effectively organising themselves as learners.

Now as never before the burgeoning of information is a prime reason for the teaching and learning in a classroom to be seen as more than a one-way process. Maybe it is a multiple-way, with students drawing from the teacher, other students, and other sources and inspiration. At the least it is a two-way process. Effective teachers assist the students in developing the ability to use information in the most effective way for the task at hand. Implicit in developing such ability is the acquisition of enabling skills. Studies into these skills have been conducted with reference to the learning of mainstream and lower ability students, as presented in Section 1.2.3.

In order to acquire skills for processing information the process operating in the classroom must provide scope for higher order thought. Such thought is unlikely to occur if the task of the teacher is seen to be to provide the information, and the task of the students is to somehow convert that information into knowledge.

In any classroom there is a range of types and levels of intelligences. It is incumbent on every teacher to nurture each of these types and levels. If this

does not happen there is a possibility that students will cease to be interested in their learning, or that boredom will set in, or that antagonism to formal learning will occur.

### **2.3.6.2 Inadequacy of one-directional theories of teaching for gifted students**

Gifted students have been shown to learn more effectively when challenged into higher order thought. Clark states that:

*Gifted individuals are those who perform, or who show promise of performing at high levels ... and who, because of such advanced and accelerated development, require services or activities not ordinarily provided by schools.* [Clark, 1992, p.7].

Such thinking suggests it is incumbent on teachers of gifted students to ask open-ended questions, plan investigational types of activities, and promote discussions that stimulate critical analysis.

If learning needs are not met gifted students risk achieving nowhere near their potential. The effect of this outcome is felt not only in the students themselves (Betts, 1995 p.248) but also in the wider community in terms of loss of communal expertise. The researcher's experience leads her to believe that some gifted students adapt very well to independent learning. Part of being an independent learner today is having the ability to process effectively the information that is available at a growing rate from an increasingly expanding pool of sources. If their needs are met then the gifted students have a unique way of relating theory to knowledge, of being flexible, and an ability to revise what they now know in the face of fresh evidence (Freeman, 1998).

Effective classrooms are those in which both teacher and learners operate in a two-way process to enable learning to occur. Gifted students benefit from a teaching paradigm that accommodates higher order thinking. The Information/Communication age demands that while discussions on hardware, software and networks are part of the scene, the vital call to all educators concerns using a teaching methodology that will recognise students' changing needs, and to having a commitment to addressing these needs in their teaching styles (Kilvert, 1997).

### **2.3.7 Summary**

In summary, gifted students are by their nature a discrete group in schools, and they have certain learning needs. There are two implications for educators stemming from this fact. First, if these needs are not met, then there is a distinct possibility that the students will become one of Betts' underachievers [1995]. Secondly, care must be taken that particularly in mainstream classes, their learning is not impeded by their experiencing learning frameworks that simply do not suit them- even if, indeed they suit the rest of the class. Gifted students benefit from higher order activities, from a structure that guides them but also from assessments that recognise infinite possibilities for approaching a problem.

#### Competent teachers of gifted children

*are those individuals who can tap the resources of their students and channel the ensuing tremendous flow of energy in the most pupil-creative and pupil-satisfying ways. That takes humble teachers who know that they are likely to learn more each day than they are ever likely to teach... of extraordinary patience and openness ... spend the extra time that it takes to 'be' for the sake of very demanding and sometimes petulant young people... will go home exhausted but satisfied... relish 'snaring' students into enjoying and relating to their workload and their world in ever new and stimulating ways* (Menke, 1993, p. 83).

The researcher notes three aspects of this teacher profile in particular:

- recognising the potential of the students;
- being learning-teachers; and,
- having offered the students means of achieving their potential.

As has been stated earlier in Section 2.1 previous research has shown that for slow learners and for mixed ability groupings in secondary school as a whole, the information literacy framework that is the focus of this thesis provides benefits to both students and teachers

## **2.4 THE RESEARCH CONTEXT: *Society and Culture***

It was the researcher's intention to conduct the research in such a way that the participants would reap something in addition to the intrinsic benefit of participation, and that their participation would not be an undue burden on

their time. Therefore the researcher sought a curriculum area that met the following criteria:

- all of the students were enrolled in it;
- it lent itself to the higher order, critical and creative nature of learning of gifted students; and,
- it was skills-based, with considerable freedom in terms of specific content.

No course at the school met all of these criteria, the major stumbling block being the first criterion. This turned out to be an opening for the researcher to consider setting the research in a subject that was not currently offered at the school. The logistics of teaching the subject are developed in Chapter Three of this thesis.

The chosen subject was *Society and Culture (SAC)*. As can be seen the following outline of major components of *SAC* is given so that its unique nature, and its suitability as the vehicle for learning in the research project, can be understood. Essentially the researcher sought a learning context that would enable the development of information skills to be used not in isolation but thoughtfully and deliberately so as to get positive results (Lafferty, 1999).

*Society and Culture* is a course of study that students sitting for the HSC in NSW have been able to choose as an elective since 1985, the first HSC examination being 1986. The conceptually based course is quite different from others available for HSC candidates. The syllabus sets down areas of study that require students to develop concepts and to investigate issues rather than study them within content-based frameworks. The course is concerned with the processes, which students use to think and learn about the topics of the course, and integral to these two elements is the students' development as researchers.

There are two compulsory sections – A Personal Interest Project (PIP) that will be considered later and a topic, which requires students to think *about social change and the future* (Syllabus, 1995, p58). In addition there are five depth studies of which students are required to study two. The titles of these

depth studies indicate that the scope of choice is accommodating of a wide range of interests:

- Intercultural Communication
- Religion and Belief
- Social Inequality, Prejudice and Discrimination
- Work, Leisure and Sport
- Popular Culture

There are four syllabus components for each depth study. The theme of the study is stated; some significant concepts and key questions are presented; areas of subject matter to be addressed are listed; methodologies and learning experiences relevant to the study are given. Working within these limits it is then the prerogative of the student and the teacher to choose the specific nature of the depth study i.e., to decide on the particular cultures and information to use as a vehicle for study.

It is not common for a course to give this content-based freedom to students and teachers, and perhaps this was one reason that the course was examined under *Securing their Future: Options for Reform of the Higher School Certificate* [Board Of Studies, 1997]. This document underpinned a review conducted by the NSW Department of Education in one of the senior secondary curriculum in 1995, a review that was aimed at ensuring that the curriculum be academically rigorous. SAC survived rigorous challenges and counter-challenges, and remains an HSC subject.

Three factors possibly contributed to continuing inclusion of the subject in the HSC curriculum. First, essentially *Society and Culture* aims to develop socially literate persons. While the definitions of 'Information literacy' and 'giftedness' might be subject to debate, the definition of 'social literacy' with relation to *Society and Culture*' is quite clearly stated in the Syllabus [Board of Studies, 1995]. To be socially literate is

*to acquire a set of concepts, skills, interests, attitudes and values that can be used effectively in observing, understanding, relating to the social world* (p.6).

The above-mentioned choice that teachers and students make in terms of content must enable the study to meet the central concern of the Syllabus, which is the interaction of persons, society, culture, environment and time.

This integrative element of the course's nature requires the students to become aware of the continuity and change within Australian society, and so an awareness of the 'social world' of the definition of social literacy becomes an awareness that is of both the present and of a probable future. The integrative element also requires the students to consider these realities in both the Australian and the global context. These requirements might not be fulfilled within the content set shown by the curriculum, but they do involve the developing of higher order thinking skills of analysis, synthesis and evaluation.

Secondly, the subject matter that the Syllabus states is to be covered might not be fact-specific, but it is challenging for the serious researcher, as an investigation of one of the Depth Studies shows. 'Adolescence' is a study to be made in the Preliminary Course. As well as presenting some significant concepts and some key issues that need to be addressed in the study, the subject matter is also outlined. There are three sections:

- The first focuses on adolescent development and requires students to investigate the concept of adolescence; trends in studies of adolescent development such as Piaget; the issue of self-concept; the interrelationship between adolescence and culture.
  
- The second moves from the more theoretical nature of the first section, to the adolescent in contemporary Australian society. This section has the student deal with adolescent subcultures, social expectations, language and communication, legal issues, the transition from school to life thereafter, and interpersonal relationships during adolescence.
  
- Thirdly, it is expected that students will encounter by doing this, methodologies and experiences such as training in data gathering; fieldwork; practical exercises of analysis and interpretation; and, presentational experiences such as kinship diagrams and family trees.



And finally, a major component of the Syllabus in the Higher School Certificate course is the Personal Interest Project (PIP). It requires students to submit the results of their personal research and investigation into a project that draws together the interests, research, studies and personal experience [Board of Studies, 1995].

These three factors – social literacy, and requiring research that is both challenging and personal- are characteristic of the Information Research Process [Kuhlthau, 1988]. Kuhlthau [2001] argues strongly that the characteristics of the IRP are compatible with the needs presented by the information-rich contemporary world.

The three factors mentioned above not only provide an integrative learning experience, but also it involves metacognition. Students are required to submit:

- a statement on what the PIP entails, and why it was chosen
- a log in which the procedures used in the study are set out
- the research study proper
- a conclusion on what was learned in doing the PIP
- a list of resources that were used or that inspired the study.

In fulfilling these requirements, the students are expected to present material from real life experiences, but as well as this they are to track themselves as learners. This metacognitive development, closely related to problem solving, is important not only within SAC but to learning beyond the classroom [Flavell, 1979]. Experience of the researcher as a teacher and as the teacher in this research, suggests that this is particularly evident in students' logs. Here, in giving accounts of procedures that they used, students are encouraged to comment on the suitability of chosen procedures, reasons for digressing from initial plans, relative worth of different stages of plans of action. Detailed comments on the students' awareness of metacognitive operations are made in Chapter Four. What should be noted at this point is that as their involvement in the research

group grew, so too did the apparent ease with which they made comments on their metacognitive activities.

## **2.5 IN CONTEMPORARY ACADEMIC KNOWLEDGE ADDRESSED BY THE CURRENT RESEARCH**

This research that is reported in this thesis is guided by the literature in three academic areas: information science, gifted education and a particular NSWDE subject. Across these three areas is a commonality of purpose that resulted in the research.

A key focus of information science is information utilisation, and this is particularly significant at this moment in time when the amount of information available grows exponentially. Information utilisation takes the information process to heights unimaginable even fifteen years ago.

A key focus of curriculum in the latest round of curriculum documents in NSW is the education of students in the ability to do more than mere mastery of content. Assessment requirements disallow metacognitive regurgitation of content, and presuppose discerning minds.

Information science has embraced the findings of research into the positive impact of the development of competence using information skills to increase knowledge. At the secondary school level this research has focussed on slow learners and mixed ability groupings, but to the researcher's knowledge, no research has been conducted into the impact of a learning framework based on information skills on the learning of gifted secondary students. It is this gap that is addressed in the current research.

The students involved in the research were identified as being gifted. The literature on the learning of gifted students suggests that working at more than the recall level of cognition is of importance. Given this, the researcher considered that *Society and Culture* was a suitable vehicle for the research group. The aims of this subject are similar to the aims of the group of six information skills that constituted the learning framework under scrutiny in the research.

This thesis reports on an investigation into the impact of an information literacy framework on the learning of gifted secondary students, the context of the study being a NSW Higher School Certificate course, *Society and Culture*.

## **2.6 SUMMARY**

Chapter Two establishes the academic backdrop against which the current research is conducted. The research takes a group of gifted secondary school students through a learning framework that has been shown to have positive impact on the learning of students in groups other than that particular one. The learning framework was couched within the terms of a subject that is listed as part of the HSC accreditation; and from the start the girls understood that they had the opportunity to continue with their studies after the research concluded at the end of the Preliminary HSC year.

The following chapter gives the methodology used in the research. It establishes the research in the contemporary research world, outlines the structure of the research, and gives a detailed account of the component parts of the research design.

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## **CHAPTER THREE:**

### **METHODOLOGY**

#### **3.1 INTRODUCTION**

The research that is reported in this thesis seeks to investigate how an information literacy framework of learning impacts on the learning of students at the secondary level of education who had been identified as being gifted. To reiterate the points presented in Chapter One, the school at which the research was conducted is Marist Sisters' College, Woolwich (MSCW), a single sex (female) school owned by the Congregation of Mary, more commonly known as the Marist Sisters. MSCW is part of the system of schools operated by the NSW Catholic Education Office (CEO). The identification of the girls who participated in the research was made by the school within guidelines set down by the Inner West region of the CEO for the Office's initiatives for gifted students. The girls' participation in the research started when they entered their Preliminary Year studies. In NSW, the last two years of secondary education end with the Higher School Certificate (HSC) examination. The year before the HSC year is called the Preliminary year.

The project is a Type IV case study (Yin 1993 p46), that is, an embedded, multiple case study, incorporating problem-based methodology. In the course of the project, attention is given to Vygotsky's Zone of Proximal Development (1975, p.103) [ZPD]. The term 'attention is given' is used quite deliberately, because the research project does not set out to investigate the application of the ZPD theory directly. Rather, the project uses the theory as a framework of understanding.

Earlier research that is explained in detail in Section 1.2.3 has shown the impact of an information literacy framework on the learning of mixed ability classes and lower ability students at the secondary level of education. This research project investigates how this same framework of learning impacts on the learning of a particular group of secondary students, namely those who have been identified as gifted.

After considering possible paradigms, the researcher believed that given the research setting and the nature of the research question, the research would be most satisfactorily accommodated in a case study. This type of work: *allows an*

*investigation to retain the holistic and meaningful characteristics of real life events* [Yin, 1994, p. 14].

### **3.2 ESTABLISHING THE WORK WITHIN THE CURRENT SCENE**

Two decisions basic to any research study relate to the research paradigm and the research design. The basic choice in the former is whether the research is conducted qualitatively or quantitatively, and there is the third possibility of using both the qualitative and quantitative paradigms. The range of choices for the research design is extensive, one possibility being the case study.

#### **3.2.1 Qualitative or quantitative**

The researcher chose to work within the qualitative paradigm. The use of the prefix in 'post-positivism' produces a fairly blunt distinction between qualitative and quantitative research, but a more subtle sense of the difference can be gleaned from considering other words that have been used for the two paradigms. Borg and Gall (1989) state that quantitative research has been referred to as 'scientific' and 'confirmatory'. These words suggest to the researcher a methodology that is objective, and is conducted within tight parameters.

On the other hand, qualitative research has been called 'artistic' and 'discovery-oriented' (Borg and Gall, 1989 p22). There is a degree of flexibility suggested in these words that allows those involved in the research project – both the researcher and the subjects- to collaborate. This is not to say that the researcher and the subjects in a quantitative research situation are necessarily separated, but there is not scope within that paradigm for the collaboration that not only characterises qualitative research but also is part of its discipline.

Simply adding yet another observation that there is a difference between the two research paradigms serves no real purpose. Taking a philosophical stance in favour of one paradigm and claiming exclusion of the others is of little use. Le Compte and Preissle Goetz (1993, p46) put this idea:

*The practice, appearing so frequently in the methodological literature, of polarising social science research into qualitative and quantitative is a parody unduly dichotomising research designs ...*

'Parody' puts le Compte and Preissle's case strongly, but this researcher focuses on the 'unduly' of the thought. This word highlights a futility involved in what has been described in terms of a war, waged in academia in the 1970s and 1980s (1989, pp4-10). The researcher agrees with the futility of dogged persistence that choice of a research design has to be based on a particular philosophical stance; rather, the researcher believes that the way research is conducted should be decided on the basis that the research design best suits the questions that are to be addressed in the investigation (Gill, 1996, p.43). Qualitative and quantitative research paradigms need not- indeed, cannot- be mutually exclusive. What essentially is quantitative research could include a degree of subjectivity, for example, in the framing of survey items or testing instruments. What essentially is a qualitative study could include a degree of objectivity, for example in the use of the Likert scale. Cook and Reichardt [1979] would say that there is every logical reason to use both qualitative and quantitative forms of inquiry if in so doing one can satisfy the demands of evaluative research in the most efficacious manner possible.

The worth of any research project is the purity with which it is conducted. This purity, or thoroughness, or meticulous attention to detail starts with the suitability of the choice of the research paradigm, continues through the developing of a relevant research design, through the conducting of the research and the thoroughness of the analysis, all the way to the honesty and logic of the findings.

The quantitative, quasi-experimental design was considered (Borg and Gall 1989) because in this study the group of girls involved was not randomly assigned in the strictest sense of the expression. In fact, as is explained in Section 3.3.2.2, the girls were involved in a defined selection process, a process that identified them as being gifted.

Ultimately there were two reasons for the quasi-experimental design not being used. First, the design would have involved data being sometimes collected within the curriculum area but at times outside the curriculum meetings. Secondly, one of the needs identified in the area of information literacy is that more research needs to be done within the learning framework. In so doing, knowledge of how the information skills are used contextually and in practice

will be increased (Moore, 1995). The researcher valued the desirability of collecting data that were generated primarily from within the confines of the curriculum area.

In choosing to conduct the research primarily within the qualitative paradigm, the researcher considered:

- the academic context of the curriculum area – *Society and Culture* (SAC) - in which the data were to be collected. The aims of SAC correspond well with the aims of the learning framework that was the focus of the research;
- the expectation that the data would be collected with as little disruption as possible to the girls in their preparations for the Higher School Certificate in 1997. The research being conducted as part of their Preliminary year studies; and,
- the nature of the research question.

Given these three factors: the academic setting of the project, the desire for as naturalistic an experience for the girls as possible, and the nature of the research question, the qualitative paradigm was chosen for the project for the following reasons.

First, this researcher believes that qualitative research has been an acceptable element in educational research for at least the last 25 years. The curriculum area in which the research project was conducted, and in which the data were collected, was in the social sciences field, a field that increasingly has conducted qualitative research within its boundaries (Borg and Gall, 1989).

Secondly, this particular research project involves real students operating in a real curriculum area. When the students were invited to join the project they knew that they were going to be studying a course which could become part of their HSC studies, and that most of the data collection would be conducted within the confines of the group curriculum meetings- a holistic inquiry carried out in a realistic setting (Borg and Gall, p. 385).

And finally, the research question investigated how a particular framework of learning had an impact on the learning of the students. The complexities of

cognitive behaviour could be expected to lead to hunches that are better accommodated within the flexibility afforded by the qualitative paradigm. The curriculum area sits within the realms of social literacy, and the data that were to be collected from the students were curriculum based, and much were in the form of discussions and written responses. These forms of responses are more in keeping with qualitative exploration.

As will be seen in Section 3.4, the research design allowed for collaboration between all members of the research group, i.e., teacher (researcher) and students. The terminology 'teacher', 'researcher' and 'girls' was discussed at the first meeting. The details of the investigation as they were known at that time were outlined. One of the students made the observation that both the teacher (the researcher) and the students (the girls) were really all researchers, all members of a research group that happened to operate in two different dimensions. The students did research as part of their curriculum work, and the teacher was doing her research. In this thesis the terminology 'researcher' refers to the person who was conducting the research project, and 'girls' is used to refer to the students who participated in the research.

### **3.2.2 Case study chosen**

Chapter One showed that the issue that was to be explored in this research was how a particular framework - one incorporating information skills - would impact on the learning of a particular group of students - secondary girls identified as being gifted. In terms of which research design to use in this research, attention was given to the quasi-experimental design and the case study was chosen.

Figure 3.1 shows the elements of the current research that suggest the desirability of a case study design according to Yin [1989] and Miles and Huberman [1994].

Yin defines case study as:

*an empirical inquiry that*

- *investigates a contemporary phenomenon within its real-life context; when*
- *the boundaries between phenomenon and context*



*are not clearly evident; and in which*

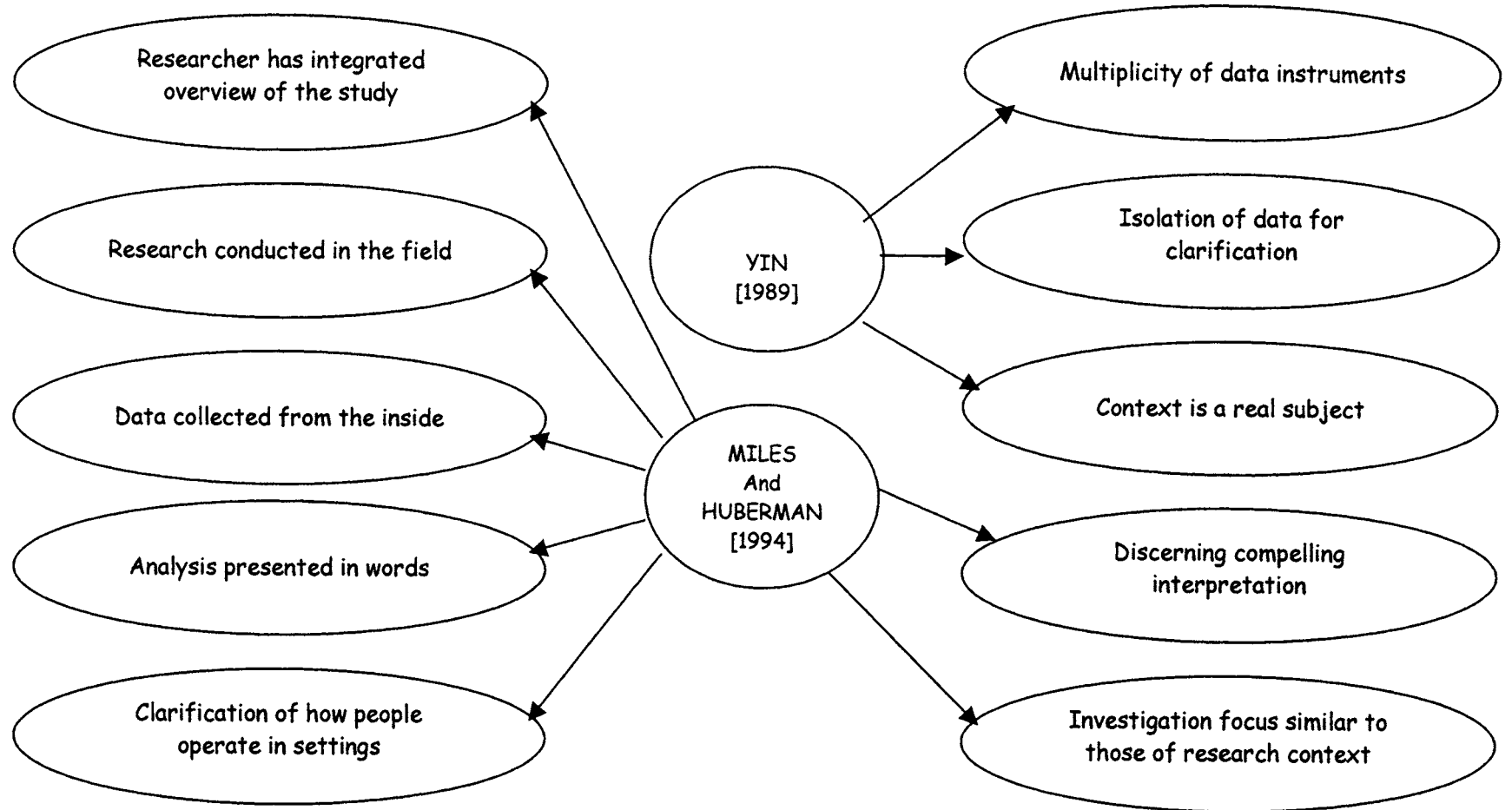
- *multiple sources of evidence are used* [Yin, 1989, p.23].

The research reported in this thesis is true to each of the components of Yin's definition:

- The investigation was an empirical inquiry. At the time of writing, the area under scrutiny in this research project has not been the topic of any similar research project. Studies into the learning of gifted students abound. Studies into the impact of an information literacy framework on the learning of mainstream and lower ability students have been made. A study combining both of these areas, namely the impact of this particular framework on the learning of gifted students at the secondary level has not been made.
- The *phenomenon* under consideration was *contemporary*. Two features of this age make working within an information literacy framework different from working with information in ages past. First, the pool of resources from which students can access information is growing at a rate and at a speed not before known. Secondly, being competent users of information is becoming part of employment far beyond employment in libraries and places of formal learning.
- The *real life* nature of the project already has been mentioned above. The project was conducted in a naturalistic setting. In fact, the students had the opportunity to include the research's curriculum area in their HSC studies even after the project was completed should they have chosen to do so. As it turned out, no girl chose to do so.
- The boundaries between the phenomenon and context were not clearly evident; in fact, this was a major reason for choosing SAC for the research context, because of the closeness of its aims and the aims of the information literacy framework that was under scrutiny.
- The final section of this chapter outlines the multiple sources from which data were collected during the research.

FIGURE 3.1

HOW ELEMENTS OF THE RESARCH SUIT A CASE STUDY DESIGN ACC. TO YIN. AND MILES AND HUBERMAN



Collectively, what is outlined in the above five points indicated the desirability of the choice of a case study design for the current research. The desirability of this design was confirmed by the eight recurring features of qualitative research asserted by Miles and Huberman [1994]. Figure 3.1 shows the elements of the current research that suggest the desirability of a case study design, according to Yin [1989] and to Miles and Huberman [1994].

Miles and Huberman (1994, pp.6-7) note eight recurring features relevant to the current research:

- First, *the field situation* [p.6]. For reasons cited above this was considered to be desirable. Having minimum disruption to the girls' learning was a determining factor in paradigm and design selection. As well, recognition was given to a particular quality of fieldwork that the participants focus not only on observation but also on exploration. Not only is conducting the project in the field seen as desirable for the girls, but also it is seen as desirable for the project itself:

*studies of human awareness that are based on designated activities or events need to be investigated in close relation to their contextual settings* (Gerber, Bolton-Lewis, Bruce, 1995, p.79).

- Secondly, *the researcher's role is to gain an integrated overview of the context under study* [p.6]. In this research the researcher and the girls were to be working in a naturalistic setting, working within a curriculum area. Each data instrument- either directly related to, or peripheral to course content- was understood by the researcher and the girls in terms of its place in SAC as a whole.
- Thirdly, *the researcher attempts to capture data 'from the inside'* [p.6]. The aim was that the data collection in the research, by nature of the field setting, would occur primarily in the group meetings. These meetings were held consistently over the three school terms of the investigation. The meetings generally were held out of school hours, but at regular times. The two exceptions were the research tasks that the girls worked on out of group meeting time, and the interviews. With the former the girls were required to make comments on their progress in their journals, and with the latter, the transcripts and the videotapes

provided clarification when that was needed. Throughout the course of the research the researcher's observation was ongoing, including keeping a journal. Comments on the researcher's use of the journal are made in Section 3.4.2.3 .The researcher planned to collect data from the girls' written work and reflective comments made in their self-evaluation sheets as they proceeded through the curriculum requirements.

- Fourthly, the researcher *may isolate certain themes and expressions that can be reviewed with informants, but that they should be maintained in their original forms throughout the study* [p.6]. One of the perceived benefits for the girls was that they would experience the realities of open research, and that there would be points in the project when they would read and comment on the report.
- Fifthly a *main task is to explicate the way people in particular settings* [p.7] do things. The setting for this project could not be much more particular, being a specific curriculum area. The information literacy framework of learning that was the focus of the research was applied to the girls' learning in a specific subject, SAC.
- Sixthly, *many interpretations of this material are possible, but some are more compelling* [p.7]. The research considers the impact of a particular learning framework. The theory on which this framework is based, and the constancy with which the girls used the skills that underpin the framework should make the evidence for the findings derived from the data more compelling.
- And to combine the last two features that Miles and Huberman present:
  - *relatively little standardised instrumentation is used at the outset,*
  - *most analysis is done with words* [p.7].

In this investigation the *main measuring device* was the researcher. The researcher analysed the data. The presentation of findings from the data is not made in numerical notation, but in words. In presenting the findings from the data in this way the researcher was mindful not to allow personal, subjective distortion of either the information, or the way it was recorded, to disturb the worth of the research.

The researcher strove to ensure that in the research design there would be checks to eliminate as much as is humanly possible of any distorting of information gathered from the girls or from observation. This plan was achieved by:

- administering a broad range of data instruments
- administering the data instruments over a long period
- having another staff member operate the video equipment for the three interviews. This person was asked to listen to the questioning to check for distortion of questioning, and to read the transcripts while viewing the tapes
- having each girl read the draft of the notes on herself, to indicate factual errors, and to comment on what she perceived as inaccuracies.

### **3.2.3 Relevant elements from Problem-based methodology**

It is no quirk of fate that researchers concern themselves with ethical matters when they are designing a research project. It would be contrary to the spirit of education for any part of the current research to be conducted in a way that was perceived by the girls as being threatening to them. As well as the human cost of threatening experiences, there is also the probability that such experiences would result in a lack of openness, or in a modified openness on the part of the girls. The result of this reaction would compromise the research findings, and place the worth of the entire project at risk.

Educational research is not performance appraisal, and it is not educational auditing. Serious educational research has a definite purpose, and this purpose generally is concerned with one of two things: affectively, to determine the worth of some thought or action, or diagnostically, to determine how a particular reality can be made more effective. The results of either of these two aims of research would be compromised if the key players' predominant feeling during the project were one of vulnerability. At best this feeling could result in less than frank responses, and at worst in the withholding of honest responses, or the fabricating of responses.

One research methodology that almost by definition offers protection to the girls is problem-based methodology (PBM). The identifying characteristic of

this methodology is that the focus of a research project that employs it is not on the key players in the problem but on the theories of action of these same players.

A theory of action, according to Robinson (1993, p.viii) is:

*a theory we attribute to ourselves or others that purports to explain or predict, on the basis of relevant values, beliefs and motives, why people act as they do in a given situation.*

Part of the reason for the feeling of vulnerability mentioned above is that girls feel that they are being placed under scrutiny as people. When a research project focuses on the actions of those players, then the stage of remoteness serves as a buffer to their feelings. It is not that the players are called on to justify the values, beliefs and motives that underpin their actions, but rather to look at those values, beliefs and motives in terms of how they influence their actions. As a result of this reflection – the articulation of what Robinson calls an espoused theory of action, and opposed to a theory-in-use, which is ascertained by others looking on – the players have the opportunity to consider change, and thereby to contribute to the solution of the problem.

PBM has obvious advantages over other methodologies in circumstances where there is an identified problem. While it is fair to say that the key players in a research project, which employs PBM, certainly hold high profile positions in the activities of the project, it also is the case that the focus is the resolution of the particular problem, not on them *per se*.

In terms of the current research project certain characteristics of PBM make it an inappropriate methodology to employ fully. The main one is the methodology's primary focus being the investigation of a problem. The area of interest of this research project is not an actual problem. It is concerned with the impact of a particular framework of learning on a particular group of students who have the shared characteristic of having been identified as gifted. Had the group been learning within that framework, then PBM might have been appropriate. But the co-inciding of the learning framework and the students as learners happened when the research group was established. There is a possibility that the findings derived from the data analysis could result in a perceived problem. For example, were this particular learning framework shown to have an unfavourable or insignificant impact on the

students' learning, then that issue would become a problem for education authorities. In the terms of this research, however, the focus is not the problem.

The above comments notwithstanding, two elements of PBM are incorporated in the research. First, in PBM theories of action undergo appraisal in order to assess their capacity to be open or closed to the possibility of error and revision. Robinson [1993, pp.41 - 44] considers the value of this improvability characteristic of a theory to be an assurance that actions that result from the application of the theory will be accurate and suitable. In coming to this decision Robinson categorises theories as displaying either openness or closedness.

The open theory is one that involves public scrutiny. This scrutiny is applied to the theory's claims, and to the elements such as 'examples, evidence and reasoning processes' which support those claims, As well as these, arguments or evidence which could disprove or challenge the theory are sought and evaluated. The closed theory is marked by what could be called secrecy: claims made by the theory are not made clearly, the process of coming to a decision is not revealed, and disconfirming evidence is neither sought or encouraged.

Secondly, in PBM an underlying principle is that all stages of the process are scrutinised by both the researcher and the participants. This scrutiny is applied to both the process itself and to its outcomes.

These two components of PBM- openness and scrutiny- relate specifically to solving a problem, a feature that was not part of this research project. This aside, the two components have qualities that did relate to the project. They relate to the project's design that as will be seen below, included provision for girls to become scrutineers.

PBM-oriented safeguards were included in each of the three stages of the research. The flexibility of the research design allows the continuing stages of the research to accommodate scrutiny of the previous stages. In the current research this was done by the subjective reflection of the researcher after each of the group meetings, and after scanning the data collected at the meetings. The girls' scrutiny of the process was not done in any formal way until one of

the girls expressed in November 1995 her concern in that she felt that the group had not really started their SAC work in earnest. After the researcher repeated more clearly how and where the component activities of the group meetings fitted in to both the SAC and her research, the group put aside their concerns. After that the researcher in a formal way regularly indicated how the activities the group and she were doing fitted into the general scheme of things. Twice after the research group stopped the girls were given a copy of the parts of Chapters Four and Five that related to the research group meetings and to them individually. They were asked to read the notes and to make annotations concerning accuracy. Annotations that uncovered factual errors were changed after the researcher checked them. An example of this type of error was skill in the wrong musical instrument being attributed to a girl. The girls were also asked to make annotations concerning the researcher's interpretations. These interpretations were checked but not changed.

The components of openness and scrutiny related to the spirit of the research in that both they and the project presupposed openness. The research was anticipated to be of interest to educational authorities, but was not examining or exploring material the sensitivity of which demands that secrecy be maintained. The curriculum area in which the girls were working required them to complete research tasks. The openness and involvement that they experienced by being involved in the project was expected to be a model for them as researchers in their own studies.

#### **3.2.4. Zone of Proximal Development**

Vygotsky's Zone of Proximal Development [1975] was born in child psychology, was part of Vygotsky's research into thought and language, and has been used in the analysis of learning such as the Dynamic Assessment Procedure [1995]. Vygotsky describes ZPD as:

*...the discrepancy between a child's actual age and the level he reaches in solving problems with assistance...*[1975, p.103]

This research project uses the notion of the ZPD [1975] as a framework for analysing the impact of the particular framework of learning under investigation. The ZPD concept has three components:

- a baseline, namely the child's actual developmental level, or mental age, as indicated by his/her problem solving capabilities



- mediation through an external factor related to learning, namely assistance with learning
- an end line, namely the developmental level of mental age that the child reaches as an independent learner.

This researcher has taken these three components, and used them as a framework for the research project in this way:

- a baseline, namely the girls' use of information skills at the start of the project
- mediation through an external factor related to learning, namely choosing an information literacy framework of learning
- an end line, namely what was the impact of that information literacy framework on their learning.

The researcher sought, and found in Vygotsky's ZPD a theoretical framework for the study that would contribute to the credibility of the research. The research essentially was looking at a new state that resulted from a mediating factor being applied to the original state. Expressed as an equation this might read:

$$C = A + B, \text{ where}$$

- A indicated the girls as users of information at the start of the research
- B indicated the intensive exposure of the girls to an information literacy framework of learning
- C indicated the girls as utilisers of information at the end of the research

### **3.3 THE RESEARCH**

#### **3.3.1 Broad sampling issues**

This research was conducted as a qualitative study using the case study design. As already mentioned the setting for the research is an approved school subject and the data were collected from and as work that the students completed in that subject.

Mindful of conducting the research in as naturalistic a setting as possible [Borg and Gall, 1989] the researcher was aware of two ramifications of the constitution of the sample. First, the researcher as a teacher uses an information literacy

framework in her three scheduled classes. For the period dedicated to the data collection none of these classes was in the same curriculum area as the one proposed. One of the classes involved students in the academic Year senior to the one proposed. The comparisons and contrasts that could have been made using these variables were not taken up in this research.

Secondly, to include in the research another group of students studying the same curriculum area at the same academic level would have been a workable reality. However it was not possible in the circumstances, because the particular subject SAC was not at the time offered as a subject choice at MSCW. It was offered as an additional elective option to the girls who were invited to join the research.

### **3.3.2 Limitations of the research**

#### **3.3.2.1 The research context**

Intertwined in the process that involved the selection of girls for this research were the matters of the curriculum area in which the project would be set, and the identification of the gifted nature of the girls.

As has been outlined in Chapter Two, in terms of the curriculum area, there are certain elements of the subject *Society and Culture (SAC)* that make it an appropriate setting for this research. SAC is a process-based subject. It requires students to conduct research that involves an inquiry requiring them to determine the key components of the task, access and utilise information, analyse their progress both as researchers and as learners, and present the results of their findings. Each of these tasks relates closely to the steps involved in an information literacy framework of learning that incorporates the information skills of defining, locating, selecting, organising, presenting and evaluating.

The researcher chose the curriculum area before the offer to join the research was made to the students. In this respect, students who chose to participate in the project were prepared to study *Society and Culture* for the Preliminary Year of their Higher School Certificate studies.

That SAC was not offered as an elective at the College meant that using it as the setting for the research subject had certain benefits. One benefit was that

it provided the girls the opportunity to have an extra elective to incorporate in their HSC studies, should they so wish. A second benefit was there were no complications resulting from assessment in terms of the remainder of the cohort. For example, had girls not involved in the research been studying SAC at the school, then they might have felt disadvantaged by not having had intensive work on the information literacy framework.

### **3.3.2.2 The gifted nature of the participants**

At the time of the research the school used a reporting system that resulted in the parents receiving a single sheet report for each subject that their daughters studied. Faculty groups designed what appeared on each of these sheets, but each sheet presented both objective (marks or grades) and subjective information (comments written by the teacher). As part of the pastoral care structures within the school, tutors – teachers in their role of looking after girls from the six Years in small pastoral care groups- write a general comment about each girl.

Another practice at the school that is relevant to this research is the bestowal of Principal's Awards. Teachers present to the Principal any work that a girl has done that is exceptional for her. The Principal decides whether or not this work is to receive an award. If she wonders about the merit of the work, she consults the teacher for clarification, and very few works nominated do not receive an award.

The identification of giftedness issue has been discussed in Section 2.3, and against this background the selection of the girls who would be offered a place in the research project took place in a three-stepped process.

First, the researcher reviewed reports that had been made by teachers of girls in Year 10. Sampling for the research was based on this review, from discussions the researcher had with the Year 10 teachers, and on Principal's Awards that had been made so far in that calendar year. Believing that a sound selection could be made from this mixture of objective and subjective information, the researcher developed a sample of 23 girls.

An outcome of this preliminary homogeneous sampling was that the final sample would form a non-random sample. The major advantage of this type of sampling allowed for *subsequent conceptually driven sequential sampling*. ... (one advantage being it)... *puts flesh on the bones of the general constructs*. (Miles and Huberman, 1994, p.22). This aim was achieved in the next stage of sampling now described.

The researcher expected that within this group of 23, there would be gifted girls. She sought to determine these by using the same identification model that the Catholic Education Office (CEO) used when selecting students to attend an Enrichment day for gifted students when this cohort was in Year 10 in 1995. The three students from MSCW who attended this day were part of the group that was offered a place in this research project. One of these three students joined the research group.

The identification model that the CEO used required that a student display at least six of the ten characteristics that were based on the Gagné model of giftedness [1995]. This model acknowledges the significance of aptitude domains - intellectual, creative, socio-affective, sensorimotor and others - which will be developed to a greater extent in students we call, gifted. This development might or might not coincide with training.

The notion of 'domains' fits well with the educational philosophy of the CEO, which is committed to providing opportunities for the students' spiritual, social, physical and academic development. It also fits well with the Marist Sisters' educational philosophy, which is committed to providing the best possible conditions for the girls' self-affirmation and growth to maturity [MCSW Diary, 2001, p.1].

Gagne's aptitude domains are apparent in behavioural characteristics. An informative collection of lists of characteristics that relate to the domains appear in the Directorate of Education, Victoria policy for gifted education [DEV, 1996]. The ten characteristics that the CEO chose to work with in their identification of gifted students are listed below. The CEO required that students display at least six of these:

- easily understands new ideas and concepts
- is interested in learning new methods and techniques

- enjoys reading
- communicates effectively
- uses appropriate materials, tools and processes at a high level
- follows instructions with enthusiasm
- is a leader in practical activities
- generates a large number of ideas or solutions to problems and questions, and often offers unusual, unique and clever responses
- is a high risk-taker, adventuresome and speculative
- displays a keen sense of humour in situations that may not appear too humorous to others.

The researcher sought to determine where CEO had sourced this particular list of characteristics, but this information was not available in print form. The researcher was confident that the CEO would have sourced these characteristics carefully. The year following the selection of the girls, a similar means of identification was included as an option for schools in Victoria [DEV, 1996].

Seventeen of the 23 girls were considered by the school to display at least six of these characteristics. The researcher met with these girls in three small groups, outlined the proposed research to them and gave them a verbal offer to join. A letter containing the offer was sent to the parents of each girl. A copy of this letter is included in Appendix 1.2. Girls had a week to consider the offer, to discuss it with their parents, and to notify the researcher of their acceptance or otherwise of the offer.

As a result of this procedure, seven girls chose to become part of the research. This was followed by a letter and a consent form from the researcher to the parents, and then an information sheet to the parents. Copies of this notification are included in Appendices 1.2, 1.3 and 1.4.

The seven girls were part of the 1992 study [Todd, Lamb and McNicholas]. That study was a short one that was conducted three years prior to the research reported in this thesis. Data in the study were collected one day, after the girls had experienced 15 lessons of 53 minutes involving the six skills.

The researcher considered this to be an ideal number. It allowed for intensive interchange of ideas at group meeting, and for an intimate sense of belonging to develop within the group. Given the learning context of the research and both the type of data instruments that were planned this number in the research group allowed the collection of rich data.

### **3.3.2.3 Limitations in relation to the research overall**

This research had certain characteristics with certain resultant limitations. These limitations are not considered to be weaknesses in the research itself, but rather they are seen as matters that could become the focus of further research.

First, the research involved a group of students within an academic Year, and at one school. Seventeen girls were offered a place in the research group, with there being no pressure on any of the girls to participate. Indeed, had no girl accepted the offer, then the research project of the nature presented in this document simply would not have happened. Those who were offered a place were

- girls. The one reason for this is that the college at which the project was conducted was single-sex.
- in the Preliminary year of their Higher School Certificate studies. SAC is a subject offered in the final stage of secondary education in NSW. At the time of establishing the research group the curriculum area was not offered at the College as an elective for the girls.

Secondly, the cultural backgrounds of members of the research group were not representative of the cultural backgrounds of the students of the College as a whole. This was not a deliberate limitation.

The College population embraced 52 nationalities at the beginning of the research, with 57 % of both parents having been born in Australia. Of the seven girls in the final group, only two did not have at least one parent born in Australia.

The reasons eight of the group offered a place gave for not joining the group did not appear to relate in any way to the cultural issue. Their reasons were varied, as can be seen in Table 3.1.

For four of the girls, having an extra elective course was predicted as taking up too much time; three girls were less troubled with the time they would have to devote to the course, but rather more with the intricacies in negotiating transport to the school out of regular school hours (the school is located on a peninsula and public transport is not frequent); and, one girl thought that the time the research would take outweighed the benefit of having the opportunity for an extra HSC subject.

TABLE 3.1  
REASONS FOR NON-ACCEPTANCE OF OFFER JOIN THE RESEARCH GROUP

REASONS GIVEN FOR NOT JOINING THE RESEARCH GROUP	No.
Not enough time to do another subject (including one girl who had family commitments in the mornings)	4
Transport difficulties involved in attending regularly out-of-school hours	3
Possibility of having an extra HSC elective not seen to be worth the extra time involved	1
No reason given	2

A 1992 study conducted at the College showed that for teachers and girls, pressures on their time as they went about their learning and their teaching was cause for concern. This study investigated the impact of an Information Literacy framework on learning and teaching in mainstream classes. One of the findings was that time indeed was saved:

- ... students ... claimed that they understood more subject content in a shorter time... (Todd, Lamb and McNicholas, 1992, p 29);
- ...teachers indicated that time is saved, both in preparation and in the time taken to deliver prescribed content in class (Todd et al 1992, p 29)

Thirdly, the research investigated a particular learning framework and a particular group of students.

Finally, the research did not investigate other factors that might have had an impact on the learning of the girls other than, or in addition to, the information literacy framework.

### 3.3.3 Ethical Issues

The research project was designed so that the data collection did not encroach on the personal lives of the girls. The research focus – the impact of an

information literacy framework on the learning of gifted secondary students- did not require girls to reveal sensitive matters about their personal lives. Most of the data instruments related to the girls as learners. When the girls were asked to provide personal information, this tended to be biographical in nature. Data instruments that required the girls to supply results of their reflective thought were related to their learning.

The researcher fulfilled the requirements set down by the College Principal for anyone conducting research, namely consent, confidentiality and quality controls of the nature of the information expected from the girls. The girls were offered confidentiality in the analysis of the findings of this research, and they will be given coded names in the report. Owing to the oral nature of some of the data collection, the girls were not offered anonymity. The utmost care was taken by the researcher to ensure that the girls understood that their responses to the research tasks in no way influenced or were influenced by the work the girls did as part of their curriculum studies in SAC. The parents of the girls were informed that although the understanding was that their daughters would remain with the group for the duration of the research, they were free to withdraw at any time if unforeseen circumstances arose. Parents were invited to attend to any of the group's meetings.

The researcher sought and gained approval for the research from the Human Research Ethics Committee (HERC) of the University of Technology, Sydney in February, 1996. The ethics approval number is UTS HREC 96/10A. Appendix 1 contains copies of the documentation related to this ethics clearance, namely:

- Human Research Ethics Committee approval (1.1);
- approval of the Principal of the College the girls attended, and at which the research was conducted (1.2);
- letters to parents, including the consent form for the girls (1.3); and,
- an information sheet for parents of girls who accepted the offer (1.4).

### **3.3.4 Framework**

This research uses the definition of information literacy that was developed by the Australian Federal Government's Standing Committee for Long Term Strategies [1991, p.41]:



*The ability to find, evaluate and use information for decision making*

In developing a graphic representation of the research, the researcher aimed at explaining the key factors involved in the study and the relationships that might exist between them (Miles and Huberman, 1994). This graphic representation appears as Figure 3.2 overleaf.

The key factors of the research were:

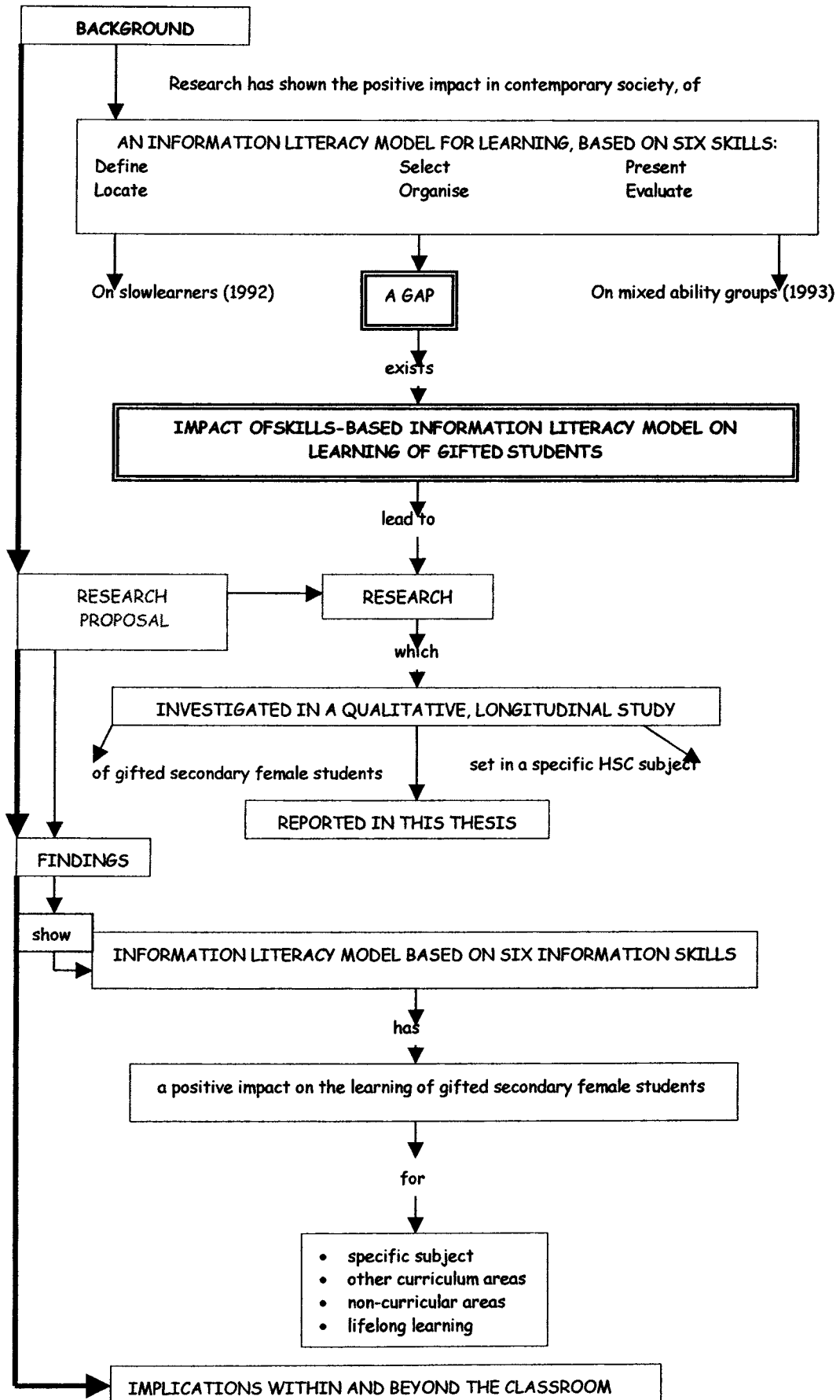
- an information literacy framework of learning
- the learning of secondary school girls who were identified as being gifted
- the research context.

These three components of the research each relate to the development of competence in using a particular set of information skills:

- the terms of the above definition of information literacy incorporate skills involved in finding, evaluating and using information;
- the learning framework in which the girls were involved while participating in the research incorporated the use of information skills, namely the skills of defining, locating, selecting, organising, presenting and evaluating; and,
- SAC was selected as the setting because its aims clearly overlap the outcomes of using information skills.

Earlier research has shown that the six information skills – defining, locating, selecting, organising, presenting and evaluating- impacted on the learning of students in mixed ability and lower ability classes, and transferred to wider learning.

FIGURE 3.2  
 GRAPHIC REPRESENTATION OF THE RESEARCH REPORTED IN THIS THESIS

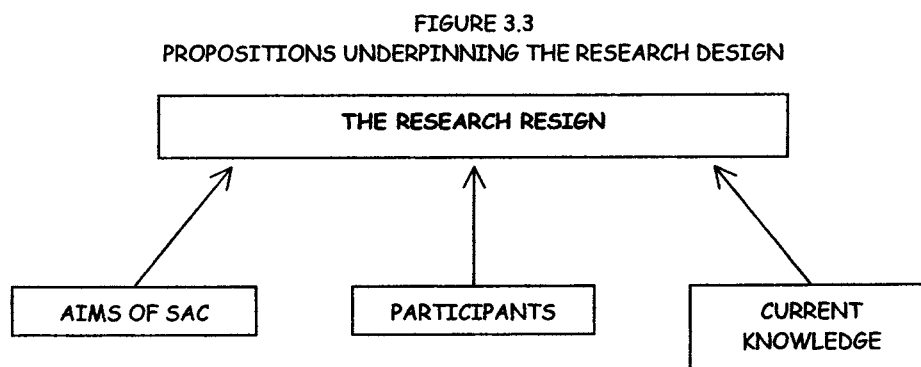


The end result of refining the information skills coincides with the desired outcome of SAC, and common to both of these is the processing of information, a process that requires competence in the use of information skills. This overlapping of the three elements – gifted learners using an information literacy framework in *Society and Culture*- ensured that there were no teaching approaches aimed at influencing the findings of the research. The researcher's role was teaching the subject as is required for the Board of Studies requirements.

### 3.4. THE RESEARCH DESIGN

#### 3.4.1 Focus and underpinning propositions of the research design

Yin [1989,29] makes the point that one should not confuse *logical* and *logistical*, and this distinction underpins the research design used, and this design successfully seeks evidence that addresses the initial research question. The research design presented here conveys the unity of the aim of the project and the evidence gained from the data collection. The focus of the research is the impact of an information literacy framework of learning on the learning of a group of secondary students who have been identified as gifted. This focus raised certain propositions. First, that being gifted might set a person apart from the group that has been shown to have experienced an impact from learning within an information literacy framework; and secondly, that a person's facility in an information literacy framework entailed developing competence in using information skills. Figure 3.3 presents the underpinning propositions of the research design



### **3.4.2. Components of the data collection**

The researcher adopted a multi-instrument approach [Wolcott, 1990, p.204] in the collection of data, the intention being to gather worthwhile thick data [Lincoln and Guba, 1985]. A copy of each data instrument that was administered appears in Appendix 2.

The instruments were administered at times ordered by the natural rhythm of term and school life. Data were collected in three time blocks. The first time block for data collection led to the selection of girls who were to be offered a place in the research. This process occurred between August and October 1995. This is referred to as the research (stage 1) period. The second timeblock involved data collected while the girls were working in the research (stage 2) period, and they were collected between November 1995 and July 1996. This time is referred to as the research (stage 2) period. The third time block refers to data that was collected after the girls completed their SAC work in the research group and it was collected in April 1997, September 1997 and November 1999. This time is referred to as the research (stage 3) period. The chronology of the data collection appears in Table 3.2.

In this section of Chapter Three the components of the data collection are described in terms of form, purpose and content. In total, data were collected from 53 sources organised in five categories:

- data providing general information involving biographical details, recapitulation after the long Christmas holidays and attitude to school- coded GEN;
- data on the issue of giftedness- coded GIF;
- data on information use and utilisation- coded IL;
- data from interviews, incorporating general, gifted and information use and utilisation- coded INT;
- data gathered from journals kept by the researcher and each girl- coded JOU; and,
- data collected from reports from staff members- coded REP.

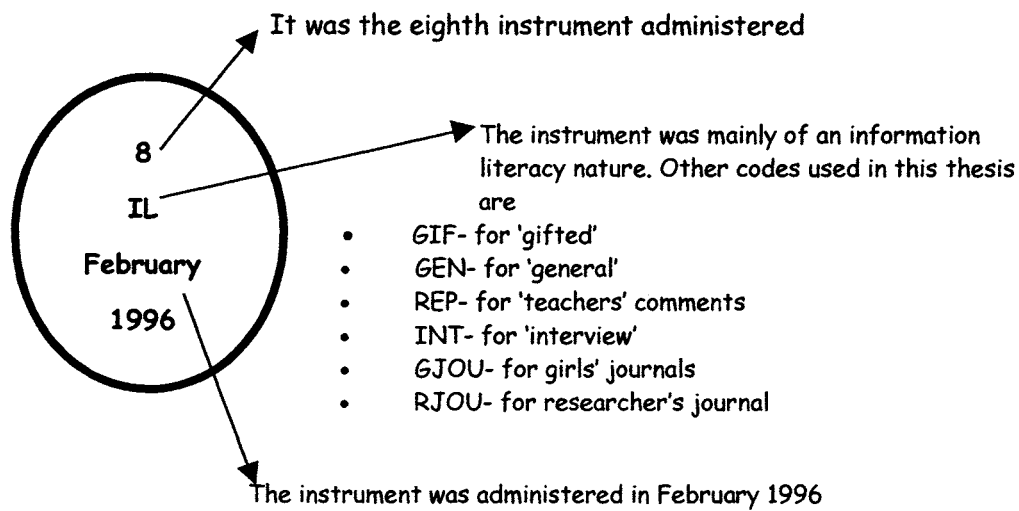
TABLE 3.2.  
CHRONOLOGY OF DATA COLLECTION

AREA	INSTRUMENT	DATE										
		10/95	11/95		2/96	3/96	4/96	5/96	6/96	7/96	9/97	11/99
GENERAL	School life survey		■	L O N G  S U M M E R  C H R I S T M A S  H O L I D A Y S					■			
	Interview						■		■	■		
	Concept map				■							
	Personal details profile								■			
	Recapitulation after Christmas holidays				■							
GIFTEDNESS	Profile - self		■				■	■				
	Profile - group					■	■					
INFORMATION LITERACY	Comparative analysis						■	■				
	Minute paper		■	■	■	■		■	■			
	PIP sheets						■	■	■	■		
	Planning sheets		■			■	■					
	Research (stage 3)									■	■	
	Research tasks					■	■	■				
	SAC- specific presenting sheets					■	■					
	Self evaluation of research task					■	■					
	What have I achieved				■	■		■	■			
	Comparative comment on self as inf'n user								■			
	Personal profile as a user of information		■									
	Checklist				■							

In this thesis the referencing of data has three components, as shown in Figure 3.4.

- a number indicating the position of the particular instrument in the data collection
- the code for the category of data instrument as indicated above
- the date the data instrument was administered

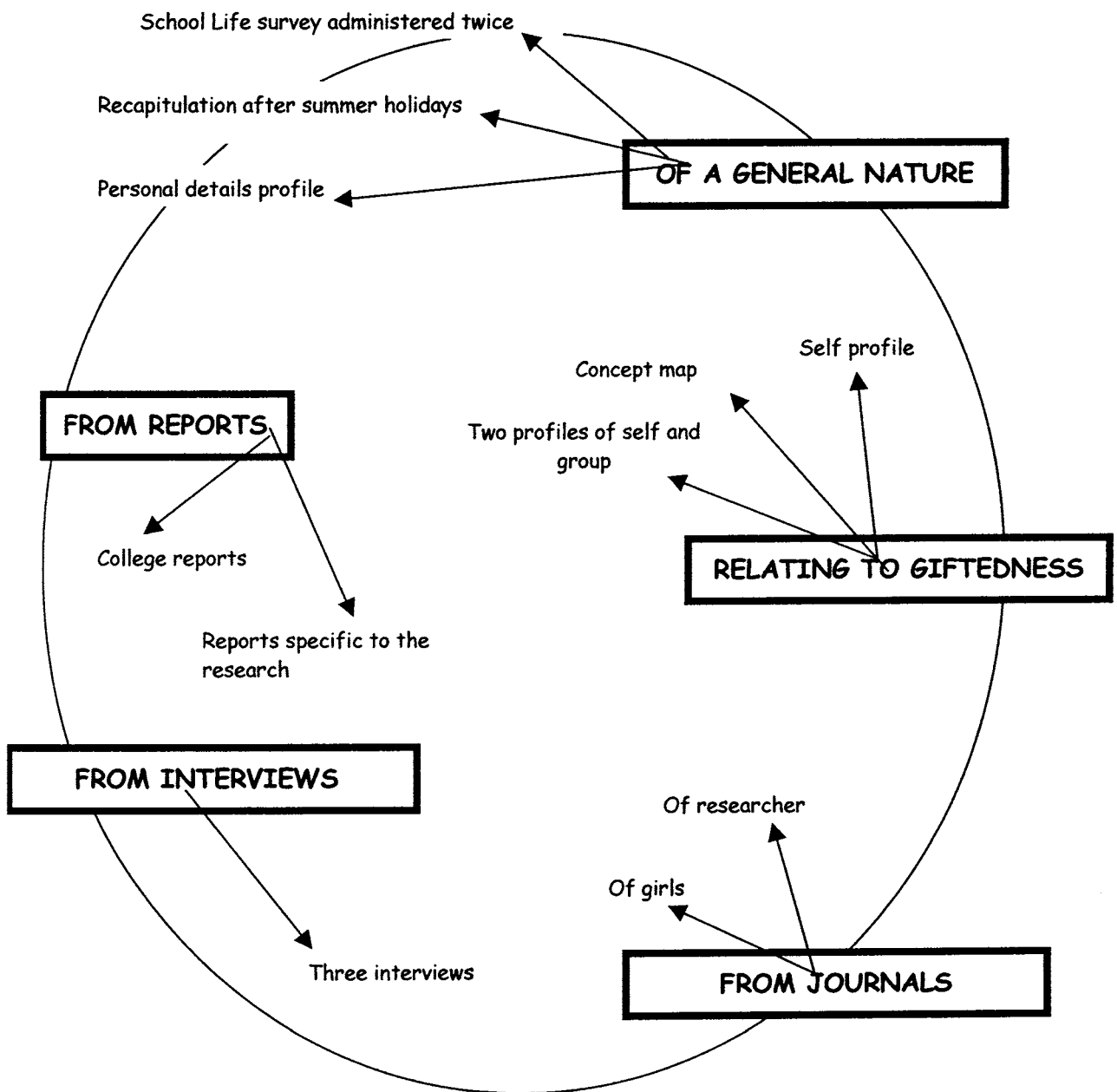
**FIGURE 3.4**  
**LABELLING OF DATA INSTRUMENTS**



For example: '8 IL February 1996' refers to an interview that was held in February 1996, and was the eighth data instrument to be administered. Lists of the data instruments are included in Appendix 2.

The subgroups and component instruments of data collected that was not of an information literacy nature is shown in Figure 3.5

**FIGURE 3.5**  
**SUBGROUPS AND COMPONENT INSTRUMENTS OF DATA COLLECTED**  
**NOT DESIGNED SPECIFICALLY TO BE OF AN INFORMATION LITERACY NATURE**



### 3.4.2.1 Data of a general nature, coded 'GEN'

Table 3.3 lists the data instruments that were of a general nature, aimed at providing information about the girls beyond the strict parameters of the research.

TABLE 3.3  
DATA COLLECTED OF A GENERAL NATURE  
SHOWING CODE AND NATURE OF INSTRUMENTS

CODE	INSTRUMENT
3 GEN - November, 1995	school life survey
6 GEN - February 1996	recapitulation after Christmas holidays
41 GEN - June 1996	personal details profile
46 GEN - June 1996	school life survey (GEN 01 repeated)

(Note that the numbers in 'CODE' relate to the chronology of the data collection.  
This pattern is used for all similar tables in Chapter Three)

This category consisted of three instruments:

- School life survey

The school life survey was a profile devised by the Australian Council for Educational Research (ACER, 1987). It consisted of 40 items that related to the girls' attitude to school in terms of schoolwork, peers, teachers and self as they began their involvement in the research. The items were listed randomly. Next to each item was space for the girl to indicate her response to the idea expressed in the item on a four-point scale: strongly disagree, disagree, agree, strongly agree. This instrument was administered twice.

- Recapitulation after the Christmas holidays

This instrument was aimed at refocussing the girls after a break of eight weeks that consisted of the final week of the 1995 school year, six weeks holiday, and the first week of the 1996 school year. The meeting that was scheduled for the last week of the 1995 school year coincided with a Staff Development (pupil-free) day, and in the first week of the 1996 school year the researcher was involved in a function off campus at the scheduled meeting time.

The data instrument had three parts. The first consisted of seven items referring to the girls as *Society and Culture* candidates and for each the girls were asked to indicate on a +/- continuum where they saw themselves. The second part asked students to make



their own comments on where they perceived themselves to be as members of the research group. The third part referred to planning considerations that the girls had for the remainder of the Preliminary Year section of the course.

- Personal profile.

This required each girl to provide biographical details; reflective information concerning interests and hobbies and her reasons for having them; career ambitions; preferred styles of her teachers; her plans for the next six years; and, what she believed a close friend's perception of her would be. The purpose of this instrument was to gain information on each girl as a person.

### 3.4.2.2 Data relating to giftedness, coded 'GIF'

Examples of data instruments related to giftedness are shown in Table 3.4

TABLE 3.4  
DATA COLLECTED RELATING TO GIFTEDNESS  
SHOWING CODE AND NATURE OF INSTRUMENTS

CODE	INSTRUMENT
2 GIF - November 1995	profile (self)
7 GIF - February 1996	concept map on self as gifted learner
21 GIF - April 1996	profile (self and group)
33 GIF - May 1996	profile (self and group)

This category consisted of two instruments:

- Profiles.

These instruments listed the ten characteristics of giftedness that were used in the selection of the girls. On the 'profile (self)' the girls indicated the characteristics that they considered applied to them. On 'profile' -(self and group)- girls indicated their perceptions of themselves and then of each of the other members in terms of being gifted. The purpose of these instruments was to gain information on each girl's perception of herself and the other group members in terms of being gifted. The information the girls gave on themselves was discussed in the interviews.

- Concept map.

The map prompted each girl to clarify her self-perception in terms of four of the characteristics of giftedness from the original identification table. Elements of four characteristics were printed:

- active role in own learning
- a variety of solutions to problems and questions
- new concepts and ideas
- new methods and techniques.

The girls were asked to comment on themselves in terms of these elements by providing a linking comment between their names and each of the elements. The purpose of this instrument was to gain information on each girl's understanding of aspects of her learning.

#### **3.4.2.3 Data from Journals, coded JOU**

Each girl was directed to keep a Journal. The aim was for each girl to reflect regularly on herself as a learner, and note the core of these reflections. This intention was explained to the girls. Given the nature of a journal, the journal writing was an open-ended exercise. Apart from the hourly meetings, the time girls spent on SAC was independently organised, and so they were required to keep a log of hours. Into this log they entered the date and number of hours or minutes spent working on SAC. The journal hours were part of this log. Students were asked to make entries in their journals out of class time for the duration of the project.

The girls were instructed to see the journal as a subjective account of their experiences in this information literacy framework. They were asked to include ideas, thoughts, comments on processes used, explanation of why they used particular resources or equipment, comments on the tasks themselves, or on their own thoughts. In reality some of the girls did not make regular entries, and some of the entries were not reflective in terms of their learning; these comments ranged from expressing how they felt in general terms at that time, to a spot of creative writing.

The researcher kept a journal of observations of significant interactions and reactions of group members, and of ideas for future group meetings that

arose from the present one. The researcher also noted the essence of conversations with other teachers of the girls, and the Principal.

#### 3.4.2.4 Data from interviews, coded INT

Table 3.5 shows when the interviews were held within the research (stage 2) period.

TABLE 3.5  
INTERVIEWS AS A DATA COLLECTION INSTRUMENT  
SHOWING CODE AND NATURE OF INSTRUMENTS

CODE	INSTRUMENT
18 INT- April 1996	Interview 1
37 INT- May 1996	Interview 2
48 INT- July 1996	Interview 3

The purpose of the interviews was to gather information from each student on her experience in the research group as a gifted person using an Information Literacy framework for learning.

Each girl was interviewed three times during the course of the research project, with the average length of the interview being 21 minutes. The interviews were recorded on videotape and were conducted by the researcher and recorded by a staff member. They were semi-structured in that there was a combination of set questions and areas of discussion, as well as probing questions that originated in the particular responses that were given. Both the set questions and the probing questions were expressed in simply constructed questions. The more straightforward questions were asked before the more complex ones. While the researcher worked at establishing a conversational tone for the interview, she ensured that the girls did by far the most talking.

Recognising that being filmed can be a daunting experience, the researcher chose to conduct the interviews in a pleasant area familiar to the girls, namely the College library and Information laboratory where research group meetings were held.

Mindful that an end result of conducting interviews is the large volume of text that has to be managed somehow (Holbrook and Butcher, 1996) the researcher

prepared an interview schedule that had questions that each girl would be asked and provision for the probing questions mentioned above. The researcher found that by transcribing the first interview within a day of its being held, memory provided a good check on words that were spoken unclearly. Consequently, the researcher transcribed the second and third interviews in similarly short time after they were conducted.

The researcher and the person who filmed the interview did simultaneous checks of the tapes and the transcripts, looking for inaccuracies, and as a result of these checks errors were addressed such as

- In the first interview Danielle, when speaking about giftedness, said *only in an area I don't really mind working*. Initially, this was transcribed as *only in an area I don't really like working*.
- In the third interview Gloria, when speaking about the time factor, was initially heard to have said *saves me doing it all and that sort of thing*. In fact, Gloria had said *saves me doing it all at the end sort of thing*.

#### **3.4.2.5 Data from school reports, coded REP**

These data from selected reports are coded 45 REP, and refer to written reports teachers made about the girls. When referred to in Chapter Four and Five, the dates vary according to which of the reports a point of analysis refers.

#### **3.4.2.6 Data relating specifically to information literacy, coded IL**

The data were collected throughout the research (stage 2) period, from October 1995 to July 1996 and in the research (stage 3) from July 1996 to November 1999. These data can be arranged into 6 subgroups as indicated in Figure 3.5. Table 3.6 and Table 3.7 show details of the data instruments relating specifically to information literacy, from two different perspectives. Table 3.6 arranges the instruments as they appear in the thesis in the six groups, and Table 3.7 arranges the instruments chronologically.

##### **1. Comparisons.**

Four sets of instruments fall under this heading:

i. Checklist as user of information

The purpose of this instrument was to help to establish at the beginning of the research what degree of competence each girl had in terms of information skills. The checklist provided opportunity for each girl to position herself on a five-point scale, and to give a personal written response in which she commented on her abilities with reference to the six information skills.

FIGURE 3.6  
SUBGROUPS AND COMPONENT INSTRUMENTS OF DATA COLLECTED OF AN INFORMATION LITERACY NATURE

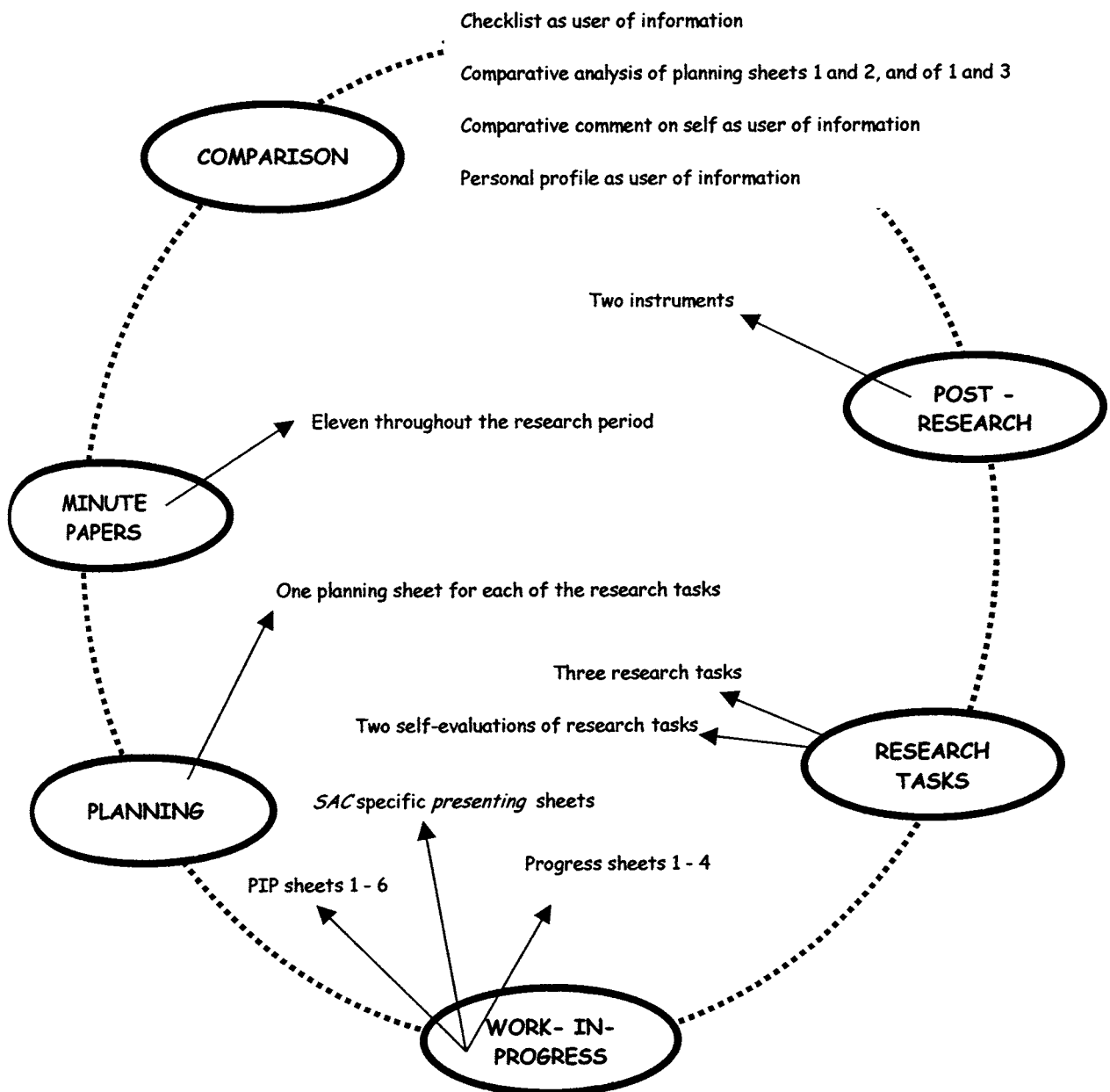


TABLE 3.6  
 DATA COLLECTED OF AN INFORMATION LITERACY NATURE,  
 ARRANGED CHRONOLOGICALLY WITHIN SUB GROUPS

CODE	DATE		INSTRUMENT
04 IL	November 1995	COMPARISONS	Personal profile as a user of information
09 IL -	February 1996		Checklist as a user of information
22 IL	April 1996		Comparative analysis of planning sheets 1 and 2
36 IL	May 1996		Comparative analysis of planning sheets 1 and 3
42 IL	June 1996		Comparative comment on self as user of information
05 IL	November 1995	MINUTE PAPERS	Minute paper 1
08 IL	February 1996		Minute paper 2
10 IL	February 1996		Minute paper 3
12 IL	March 1996		Minute paper 4
14 IL	March 1996		Minute paper 5
17 IL	March 1996		Minute paper 6
24 IL	April 1996		Minute paper 7
38 IL	May 1996		Minute paper 8
40 IL	June 1996		Minute paper 9
43 IL	June 1996		Minute paper 10
44 IL	June 1996	Minute paper 11	
01 IL	November 1995	PLANNING	Planning sheet 1
23 IL	April 1996		Planning sheet 2
32 IL	May 1996		Planning sheet 3
19 IL	April 1996	RESEARCH	Self-evaluation of research task 1
20 IL	April 1996		Research task 1
34 IL	May 1996		Self-evaluation of research task 2
35 IL	May 1996		Research task 2
47 IL	July 1996		Research task 3
11 IL	February 1996	WORK-IN-PROGRESS	'What have I achieved?' sheet
13 IL	March 1996		'What have I done, and when?' sheet 1
15 IL	March 1996		Course specific 'Presenting' sheet 1
16 IL	March 1996		Course specific presenting sheet 2
25 IL - 30 IL	May 96		PIP sheets 1-6
31 IL	May 1996		'What have I done, and when?' sheet 2
39 IL	May 1996		'What have I done, and when?' sheet 3
49 IL	September 1997	RESEARCH (STAGE 3)	Research (stage 3) - 1
50 IL	November 1999		Research (stage 3) - 2

TABLE 3.7  
DATA COLLECTED OF AN INFORMATION LITERACY NATURE,  
ARRANGED CHRONOLOGICALLY

CODE	DATE	INSTRUMENT
01 IL	November 1995	Planning sheet 1
04 IL	November 1995	Personal profile as a user of information
05 IL	November 1995	Minute paper 1
08 IL	February 1996	Minute paper 2
09 IL -	February 1996	Checklist as a user of information
10 IL	February 1996	Minute paper 3
11 IL	February 1996	'What have I achieved?' sheet
12 IL	March 1996	Minute paper 4
13 IL	March 1996	'What have I done, and when?' sheet 1
14 IL	March 1996	Minute paper 5
15 IL	March 1996	Course specific 'Presenting' sheet 1
16 IL	March 1996	Course specific presenting sheet 2
17 IL	March 1996	Minute paper 6
19 IL	April 1996	Self-evaluation of research task 1
20 IL	April 1996	Research task 1
22 IL	April 1996	Comparative analysis of planning sheets 1 and 2
23 IL	April 1996	Planning sheet 2
24 IL	April 1996	Minute paper 7
25 IL - 30 IL	May 96	PIP sheets 1-6
31 IL	May 1996	'What have I done, and when?' sheet 2
32 IL	May 1996	Planning sheet 3
34 IL	May 1996	Self-evaluation of research task 2
35 IL	May 1996	Research task 2
36 IL	May 1996	Comparative analysis of planning sheets 1 and 3
38 IL	May 1996	Minute paper 8
39 IL	May 1996	'What have I done, and when?' sheet 3
40 IL	June 1996	Minute paper 9
42 IL	June 1996	Comparative comment on self as user of information
43 IL	June 1996	Minute paper 10
44 IL	June 1996	Minute paper 11
47 IL	July 1996	Research task 3
49 IL	September 1997	Research (stage 3) - 1
50 IL	November 1999	Research (stage 3) - 2

ii. Comparative analysis of planning sheets

The comparative analysis exercises related closely to the Planning Sheets, which are considered below. The instruments were completed at the meetings at which the second and the third research tasks were issued. The purpose of the comparative analysis sheets was to provide information on whether or not the girls were noticing that there were changes in their learning within an information literacy framework, and if there were, whether or not they were able to articulate these reflections. The first Comparative Analysis sheet was issued immediately after the completion of the Planning Sheet for the second research task; and the second was issued and completed immediately after the completion of the Planning Sheet for the third research task.

The Comparative Analysis sheets were so structured that each girl was asked to indicate in a written response ways in which her planning for the new task compared and contrasted with that of the earlier one(s).

iii. Comparative comment on self as user of information

This instrument aimed at having each girl - after having completed a task that required her to use information- provide data on her facility working within the information literacy framework. The instrument had two parts. The first listed the items used in the above checklist in random order. Each girl was asked to note her perceived effectiveness concerning each of the items, when she had done a particular task. The second part asked her to indicate which skills she used in the exercise, and which one(s) that, on reflection, she could have used.

iv Personal profile on self as a user of information

The *Information Skills for Schools* document [NSWDE, 1989] lists for each of the skills what the outcomes would be in a student using them competently. In the 'Personal Profile as an Information User' sheets, these outcomes were listed. Each girl was asked to indicate on a five-point scale how well she believed she was achieving each of those outcomes. Then the girl was asked to write a comment on her ability with reference to each of the outcomes.

2. Minute papers.



The purpose of the Minute papers was to have each girl reflect regularly on where she was at as a learner, and as a researcher. The girls completed Minute papers at the end of 11 of the group meetings, throughout the course of the research. The structure of a Minute Paper was very simple, and was adapted from Thompson, Deer, Fitzgerald, Kensell, Low, Porter, 1990. On the sheet appeared the heading, and a place for the girl's name and the date. When a paper was issued, the girl had one minute to write as her thoughts flowed. There was no minimum number of words set. The girls were asked to comment on themselves as learners in particular, as well as comment on their thoughts and impressions about being in the group, and working within the particular learning framework. It must be noted that occasionally what was written had less to do with experiences as members of the research group, and more to do with reflections on life in general. Whenever this happened the researcher reminded the group about the type of comments that were anticipated in the Minute papers.

### 3. Planning.

At the time each of the research tasks was issued, each girl was asked to complete a Planning sheet. In this she was required to outline how she would proceed with the task. The purpose of the Planning Sheets was to provide data on her competence at planning within an information literacy framework. The instrument was so structured that in completing it, the girl was to write a free, open-ended response.

### 4. Work in progress.

Four sets of instruments fall under this heading:

#### i Personal Interest Project sheets

A major component of the Higher School Certificate section of *Society and Culture* is the Personal Interest Project (PIP). Although the girls were not doing the HSC PIP they completed six PIP guide sheets in May 1996 while they were doing their second research task. Each of these sheets was part of a set of sheets, which originated in the professional association for teachers of *Society and Culture*. The sheets were working papers for the students to complete at intervals as they worked through a research project. The aim was to have each girl supply data about the process she

was using in doing the research task, and gave her the opportunity to reflect on her progress. The broad headings for each of the sheets were:

- What do I have to do?
- Where can I find the information I need?
- How do I find what I want?
- How do I choose my information?
- How can I use these resources?
- What should I keep a record of?

ii SAC 'Presenting' sheets

The purpose of these instruments was to have the girls consider in quite specific terms varying ways they might present information of a comparative and a contrasting nature. The first of the exercises required them to indicate on a matrix:

- ways of presenting the information
- the strengths and weaknesses for each of these ways for the research task on which they were working currently
- what circumstance would prompt them to use that particular way.

They then proceeded to draft the presentation of that information. The second comparative analysis exercise required them to indicate the process they used in choosing their form of presentation for a class exercise, and to evaluate the choice.

iii 'What have I achieved?' sheets.

The purpose of this instrument was to have each girl reflect on herself as an information user, and to comment specifically on

- what she perceived as her areas of strengths and areas of weaknesses as a user of information;
- what she learned in doing the research task and the issue of transferability in relation to this;
- the merit of the work presented.

## 5. Research Tasks.

Two sets of information relate to this heading:

### i Research tasks

As part of her studies in SAC during the research (stage 2)

period each girl was required to do research tasks, the topics for which were issued at meetings of the research group. The purpose of each of the tasks was to provide opportunities for the girls to practise the Information Literacy learning framework in a realistic way. Each task consisted of a higher-order question that related to the SAC syllabus. Three of the tasks that the girls completed were major ones, and contributed significantly to the grade the girl received for SAC. With the girls' permission the researcher used these tasks as data.

### ii Self-evaluation of research tasks

From this instrument data were collected on how each girl saw herself as a learner and a user of information and on the girl's ideas on the transferability of skills. The sheets contained six questions, each calling for a written response:

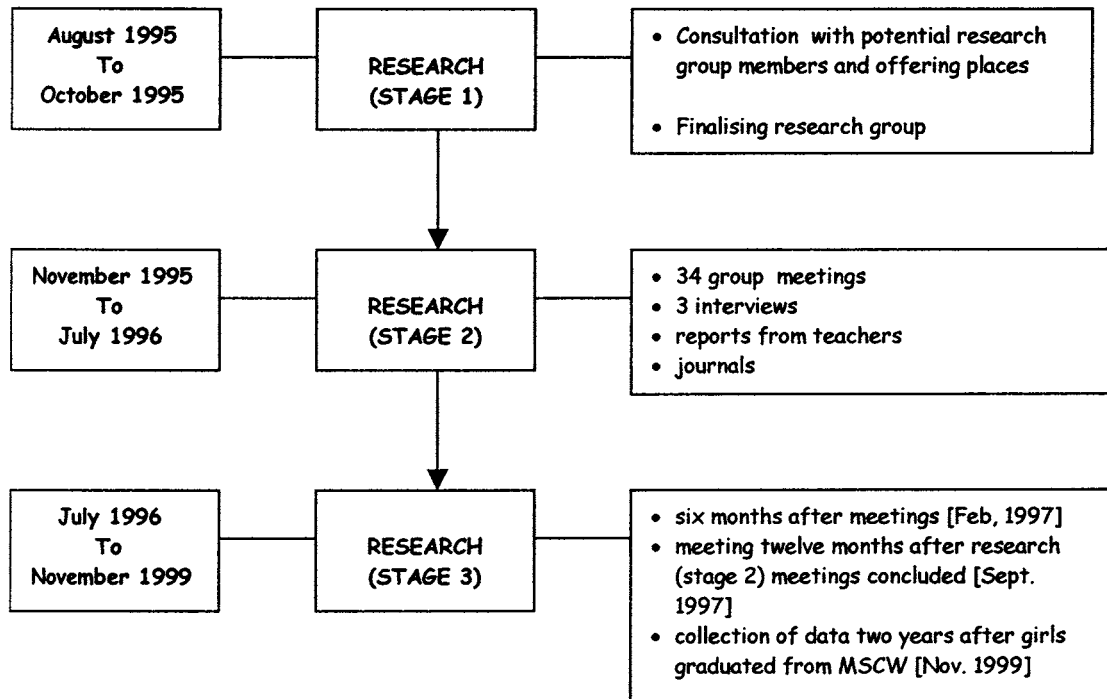
- What things have you learned about in doing this research task?
- Have you learned any skills that you did not have before?
- Are there any skills you need to learn?
- What grade (A – E) do you think your response to the task deserves, and why?
- What could you improve, and how?
- How can you use what you learned, in other subject areas?

## 6. Research (stage 3)

The instruments that fall under this heading asked the girls to reflect and comment on the information literacy framework. The group met twelve months after the research (stage 2) period finished, and completed the first of the post research instruments. The second instrument was administered at the end of the girls' second year out of school. Each girl was sent a letter asking her to reflect and comment on the information literacy framework.

Figure 3.6 is a summary of the research activities described in this Section.

**FIGURE 3.7  
SUMMARY OF RESEARCH ACTIVITIES**



### 3.4.3 Justification of the research and its design

#### 3.4.3.1 Benefit of a naturalistic setting

In designing this research attention was given to Moore's [1995] proposition that meaningful use of the skills in context leads to the users more effectively transferring their use across different environments.

Mindful of this statement the researcher opted for an embedded multiple case study. A significant consideration of the researcher in choosing this design was the naturalistic setting it afforded. The perceived advantages of the naturalistic setting were:

- it accommodated the use of SAC as the preferred research context;
- the skills incorporated in the information literacy framework were experienced as part of the research context;
- it allowed the research to happen in a context that did not cause undue interruption to the girls' HSC studies; and,
- both the nature of the subject, SAC, and the development of the information skills experienced in it were predicted to suggest to the

girls that the skills might have application elsewhere, both in other parts of their study programs and beyond.

Considerable care was made to ensure that the design of the research would result in findings that in general terms:

- were accessible to communities who were interested in any of the three major components of the research issue
- were understandable to other researchers who might want to investigate matters arising from within the findings or the project itself
- were respectfully considered by the educational community.

The researcher believed that the naturalistic setting of an embedded multiple case study would achieve these three results.

#### **3.4.3.2 Determination for honesty in the research**

There is some variance in the literature about what constitutes quality in research. Leavitt (1995) implies that instead of finding ways to make the findings from qualitative research respectable to the sceptics, researchers should accept the inherent differences between qualitative and quantitative paradigms. For Leavitt, almost by definition the measures that apply to quantitative research do not transfer to qualitative research. The basis of the difference between the two is the difference in the gathering of data. Qualitative research involves a degree of intersubjectivity, with the relationship between the researcher and the participants often developed quite deliberately. Not everything is measured, because not everything is measurable, and yet attempts are made to capture these very things that cannot be measured. In doing so,

*our theories about the phenomena we are studying guide how we observe it* (Leavitt, 1995, p.2)

On the other hand Miles and Huberman [1994] state that given that it is the real world and the real people who are part of qualitative research, a reasonable view of the phenomenon should be given-

*and we who render accounts of it can do so well or poorly, and should not consider our work unjudgable* (1994, p.277).

Standards for judging the worth of qualitative research vary from writer to writer, but common to them is the concern that even accepting Leavitt's claim about subjectivity, there should be what this researcher calls honesty. This honesty is seen as a value that should be obvious to the reader of the findings. If it is not clear, if it cannot be arrived at logically from the research design, data collection and data analysis, then questions should be asked about the worth of the findings. Miles and Huberman [1994] present five points as tests for drawing and verifying conclusions (1994, pp. 277 - 279) in a research project:

- internal validity;
- external validity;
- reliability;
- confirmability; and,
- application.

Similar characteristics that relate to the sample, the data collection and analysis and the findings are found elsewhere in the literature (e.g., Guba and Lincoln, 1989, p.229 - 244). The researcher finds them useful tests for considering the honesty of the research design as well.

First, there was the matter of internal validity, which in qualitative research is concerned with the credibility of the findings. The most knowledge any of the girls had of the subject SAC prior to joining the research group was from hearing friends at other schools talk about it. The overlapping of the three components of the research question built up a naturalistic setting in which the data could be collected in an uncontrived way. The data were designed to provide opportunities for context-rich descriptions. Although some of the information given by the girls - particularly in the Minute papers and the journals - was not conducive to meaningful descriptions, most of it was.

The research - including data collection across 12 categories of data instruments - was conducted over

- 34 group meetings, each of one hour;
- two five hour group sessions;
- three videotaped interviews of each girl, average time for each interview being 21 minutes; three meetings with staff;
- two research (stage 3) meetings with the girls; and,
- one research (stage 3) contact not in a meeting.

The original design included a staff member other than the researcher being present at the group meetings. This happened for only three of the group meetings, owing to personal circumstances that impacted on the staff member's time. Another staff member who operated the video camera during the interviews collaborated with the researcher in the checking of the transcripts of the interviews. In the research (stage 3) period, each girl was given the opportunity to read through the draft of the analysis of the data that she had provided. If there were errors of fact, then these were addressed, and if there were disagreements about the researcher's interpretations, these were noted and reported in the data analysis. Examples of the results of having the girls read the draft related to matters such as:

- error of fact. The draft stated that Danielle's older sister was four years older than her, when in fact the age difference is three years
- interpretation. The draft stated that Vivienne had indicated in one of the instruments that she found the *locating* skill easy. She queried that, but when she checked the instrument, that is what she had written. She said at the research (stage 3) meeting that the tasks she was thinking of when she completed the instrument referred:

*more to my creative nature, such as locating ideas for a textiles garment or a music competition, rather than the type of locating [involved in SAC.]*

Seeking feedback from the girls in this structured way has been described as

*one of most logical sources of corroboration...an alert and observant actor in the setting is bound to know more than the researcher ever will about the realities under investigation* (Miles and Huberman, 1994, p.265)

The focus of this research project was on the impact of a particular framework of learning on the learning of a particular group of students. There is scope for further research to consider whether or not other factors –maturation, for example- also impacted on their learning.

Secondly, was the matter of external validity. From Guba and Lincoln [1999] this can be presented in the following equation:

$$A \longleftrightarrow B = A \longleftrightarrow B \text{ elsewhere,}$$

where A represents the first reality, B represents a second reality, and the double-headed arrows represent the interrelationship between the two. In this research the interrelationship is based on the group of gifted girls experiencing the information literacy framework.

The design of this multiple case study did not ever allow for pure replication, because by the time the findings were published, the girls were no longer at the College. Given the varied paths they took after completing their secondary studies, it seems unlikely that they would come together for a longitudinal extension to the project.

However, the project was considering a learning framework that was not generated in the local community of the researcher. The learning framework has been of global interest for several years. The information literacy framework incorporates certain skills, and the set of skills that was employed in this research was set down as a statewide initiative in New South Wales circa 1989, for schools conducted by the NSWDE. The researcher was keen that the design of the project would be open to use in other situations, with other groups of subjects. The design enables the research results to be generated to other populations and settings, where the same variables operate. The confidence that the researcher has that this is possible rests with three factors that the final design allows for:

- comparisons with other samples. The subjects in these research projects had three common characteristics: gifted, girls and secondary. The reasons for the limits on the selection of the sample have been documented elsewhere. The design could be used to conduct research into 'gifted - girls - primary', or 'gifted - boys - secondary.' These data were collected in a secondary curriculum area.
- transferring the design to conduct research into the learning in the primary school situation. The researcher is not aware that any of the extensive research that has been conducted into the learning of gifted primary school children has involved an information literacy framework.



- broader, non-school transferability. The information-rich nature of the world is a reality. Having the connection between the information literacy framework and learning as two key factors in the research focus, and exploring this in relation to Vygotsky's ZPD [1975], sets a background for wider business or commercial research.

Thirdly, the researcher needed to test for reliability. In establishing the research design, the researcher was interested in planning for stability, both to protect the naturalistic setting and to ensure that the data collected reflected fair and equal treatment of the reflections of each of the girls.

One omission in the design was how to deal with the absence of any girl at any meeting, that is at data collection points. There were few of these. Where it is relevant in the analysis of data to do so, it is noted when not all girls contributed. When the circumstance first arose, the researcher had two choices: accept the data instrument from the girl at a later date, or work with the data collected from the girls present. The latter was chosen, to eliminate any unknown impacts on the freshness of the information.

This omission aside, the design was clearly and openly structured. Eleven of the twelve categories of data related specifically to the key components of the research focus. The data instruments were designed to provide consistently meaningful data; on a few occasions the thoughts presented in the Minute Papers and the journals were a little more personally reflective than the design anticipated. The research design provided for an independent auditor to check the consistency and accuracy of coding of data, and the accuracy of coding references made in the dissertation.

Fourthly, it was incumbent on the researcher to assure confirmability. The path that the research project took can be seen clearly from the design. The order and logic of the data collection were tied closely to the girls' movement through their studies in SAC. This researcher did not investigate that alternative hypotheses to the one being researched currently might exist at this time. The reason for this non-investigation is that such a matter would be best considered as a focus for a separate study. For example, it may be that 'maturation' could be an influence on the girls' learning. To come to any

conclusion about this requires investigation that is beyond the realistic scope of the current research.

And finally, there was the matter of application. The research design sets out clearly how the data were generated in the naturalist setting, in as unobtrusive a way as possible. It uses patterns for data collection, which could be applied in a range of curriculum situations, which were used as settings for research.

#### **3.4.4 Components of the data collection process**

Data were collected in three blocks as shown earlier in Figure 3.6. The purpose of collecting data in the research (stage 1) period was to identify the girls to whom the offer to join the research group would be made.

In the research (stage 2) period the data collection began in the second meeting of the group. The first meeting was concerned with ensuring that the comfort and ease that the researcher believed the girls would have in the group did eventuate. In a casual atmosphere girls talked about

- the reasons they had for joining the group. Three of these reasons show the variety of their motivation. To one girl's suggestion that it would be fun, from around the group there was a light-hearted expression of seeming 'derision', actually expressing agreement. One girl said she was looking forward to being in the group because it was a research group. She anticipated doing research at university, and she thought that being in the group would provide interesting first hand experience. Three of the girls said that they liked the idea of having the extra elective.

The researcher's main aim at this first meeting was to establish a comfortable climate. However, on reflection the researcher can see that it would have been interesting to formalise this sharing of reasons the girls had in joining the project.

- their expectations. The girls discussed the challenge they would face in organising their time to cope with the extra subject they were doing.

- the feelings they experienced when they were offered a position in the group. When the researcher asked them about this the responses included:
  - considering it to be humorous- because of having been identified as gifted
  - pleasure- at having been asked
  - interest- because friends at another school spoke about SAC

At the second meeting- the beginning of the research (stage 2) period, and incorporating the first data collection- the girls completed two data instruments aimed at establishing each girl's competence as a user of information. After the girls had completed the instrument that listed the information skills, they expressed the view that there was no real need for the skills to be spoken about, because they used them anyway, without even knowing what they were. One girl said that one could not do a task without defining, so why bother talking about defining as a skill.

As presented in the 'Calendar of data collection' (Appendix 2] the girls completed data instruments throughout the research (stage 2) period. The eleven Minute Papers were the most regularly completed. These provided opportunity for recording of metacognitive reflections, and were considered by the researcher to be useful in their flexibility and open-ended nature.

Planning Sheets, comparative analysis of planning sheets, and completed SAC research tasks were spread across the research (stage 2) period. It was believed that they would provide useful comment on the continued use of information skills.

Other instruments in varying forms were aimed at formalising metacognitive comments of the girls. Some asked the girls to provide information on their progressive work in research, others asked them to evaluate their work, or their progress as learners.

Some instruments were repeated, with a view to noting changes of perceptions. These instruments included ones related to giftedness and these related to information literacy.

In establishing the research project the researcher had planned to collect data through the instruments mentioned above. The girls also completed two unplanned data instruments. These instruments were developed by the researcher as a response to needs that became apparent during the group meetings: the girls were limited in the ways they presented information that lent itself to the use of tables. During the research (stage 2) period, the girls completed other exercises, but these instruments were not used to collect data. These two occurred as they referred specifically to information skills.

Three times during the course of the research (stage 2) period, the researcher conducted semi-structured Interviews. The content umbrella in these interviews was the girls as learners:

- as learners who had been identified as gifted;
- as learners who were researchers;
- as learners who were working in an information literacy framework; and,
- as learners who were people.

#### **3.4.5 Group meetings**

From the outset the girls understood that the group meetings were forums of learning at which they would share their learning experiences. They could comment on, and maybe share resources. They could express need for assistance or clarification in the course work they were doing independently out of group meeting time, as well as participate in the more formal research group activities. The meetings were held out of regular school hours, as were some other courses at the College, and they counted as part of the mandatory time that was required for the Preliminary Year of the NSW HSC.

The style of the meeting made it more of a tutorial than a regular lesson, and the planned structure was as follows:

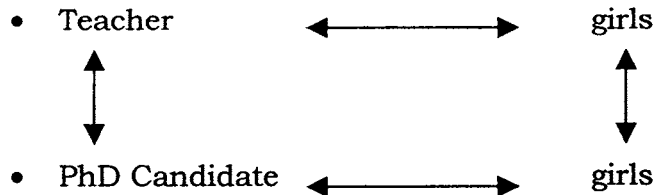
- Introduction. This period might include girls' sharing ideas and experiences that they had while doing their independent study. Or,

the researcher might comment on her learning experiences. From this introductory phase the researcher might learn that there was a course area or skills area that was presenting difficulties.

- Input. Sometimes this period involved a film, or stimulus material of some kind, or formal treatment of a course area skill that had been raised as a difficulty either in the introduction or at the last meeting.
- Data collection.
- Minute paper.

This pattern was the planned structure, although it was not allowed to overtake the flow of development. The researcher was ever mindful of the responsibility of having the girls complete their *Society and Culture* course as well as having them supply data for the research.

The researcher believed that one way of maintaining the balance required in this responsibility was to reinforce continually a three-way operational relationship. This relationship resulted in the following combinations of relationships:



### 3.5 SUMMARY

The research reported in this thesis was a qualitative study using a case study design. Such a design allowed for the research context to be a subject that was part of the curriculum offered for HSC studies. The value of this to the girls was that they had the option of taking SAC into their HSC year studies. The structure of the research accommodated the five points that Yin [1981] holds as underpinning a case study, namely that the inquiry is:

- empirical
- contemporary
- related to real life
- not divided clearly in terms of phenomenon and context
- able to access multiple sources.

As indicated in Figure 3.1 these five points are complementary to the eight features that Miles and Huberman [1994] state are the requisites of qualitative research. Two elements of Problem-Based Methodology [Robinson, 1993]- openness and scrutiny- were incorporated in the research.

The research took a group of girls at a particular point in their learning, exposed them to a particular framework of learning, and investigated the impact of that framework on their learning. The three-part nature of Vygotsky's Theory of Proximal Development [1995] was adapted and used as the theoretical framework for the research. The three elements in this framework were:

- the baseline- i.e., where the girls were in terms of information literacy at the start of the research
- the mediation factor- i.e., intensive exposure to an information literacy framework
- the endline- i.e., where the girls were in terms of information literacy at the end of the research

In terms of sampling, four deliberate limitations were that the research would involve:

- girls
- identified as being gifted
- in the Preliminary Year of their HSC studies
- studying SAC.

Other limitations were not deliberate. They resulted from the freedom that the girls who chose not to accept the invitation to participate in the research had. In seeking richness of data the researcher chose to administer a large number of data instruments, each related to the concerns of the research question. The bulk of these data were collected over a period of nine months, with follow-up instruments being administered first twelve months and then a further two years after the research meetings finished. The researcher had to establish a fine balance between having a strict regime of administering data instruments, and allowing for the natural flow of learning experiences to occur. To achieve there was a determination to collect data from across six component groups, and the spread of this collection is shown in Tables 3.2 and 3.7. There was flexibility in the timing of the instruments.

## **CHAPTER FOUR:** **DATA ANALYSIS**

### **4.1 INTRODUCTION**

In this thesis the analysis of the research is reported in Chapter Four and Chapter Five, and the structure of the analysis appears in figure 4.1.

The purpose of Chapter Four is to provide a detailed account of the analysis of the data from the girls on their attitude to school life, and on their giftedness. It has three functions. First, the chapter provides the conceptual framework for the major findings of the research that appear in Chapter Five. In establishing this framework and in analysing the data, the issues of external validity, reliability, objectivity, internal validity and construct validity are addressed. Trends and preliminary findings that emerge in the data analysis are presented. Secondly, the chapter presents information of a general nature of the girls. Thirdly, the research investigates the impact of a particular framework of learning on a discrete student group: gifted students studying at secondary school level. In the chapter the process of selection of the group is analysed.

In addition to its introduction, this chapter has four parts. It presents the goals that underpin the analysis of the data, and it outlines both the conceptual base of the analysis, and the conceptual framework for presenting the analysis. The conceptual base of the analysis derives from Vygotsky's Zone of Proximal Development [ZPD] [1975]. The conceptual framework for presenting the data consists of the six information skills that are the basis of the learning framework that is under scrutiny in the current research.

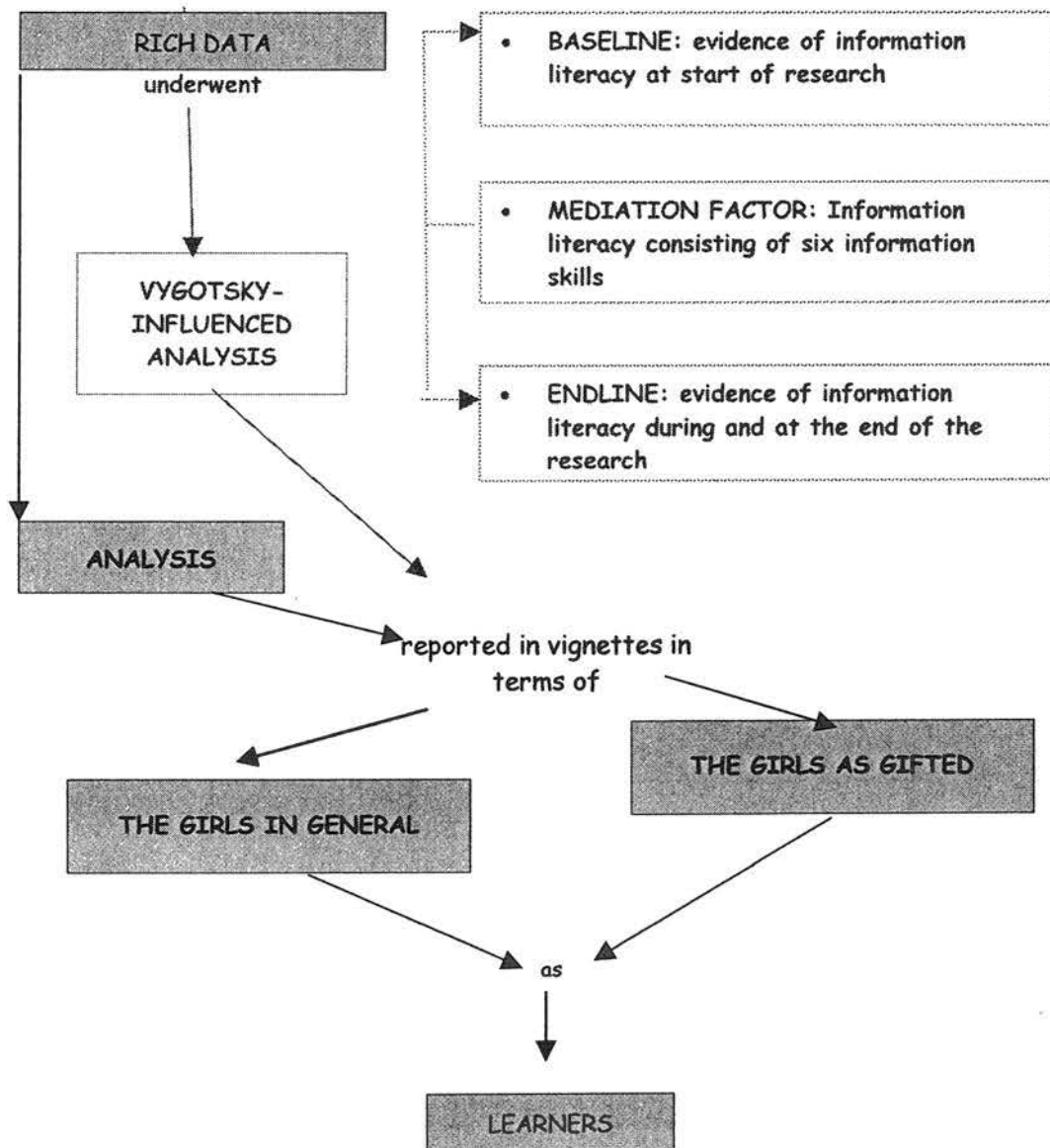
Then the chapter traces the path of the research study, from the broader selection process for programs for gifted students conducted by the CEO, through the selection process that operated in this study, to a brief profile of each of the girls.

Thirdly, the chapter presents a detailed analysis of the data instruments that relate to attitude to school and to giftedness. Each of the categories of instrument is identified and discussed in terms of its contribution to

illuminating the research question. Procedures to ensure external validity, reliability, objectivity, internal validity of the categories are explained.

Finally the chapter presents a summary of trends that present themselves in the analysis. These trends are presented in terms of the girls' attitude to school life, and to giftedness. These trends are the bases on which the findings and recommendations of the research are made. They are presented in Chapter Five.

FIGURE 4.1  
STRUCTURE OF THE DATA ANALYSIS





The research for this study was so designed that the collection and the analysis of data would be done qualitatively. The rationale for this approach has been presented in detail in Chapter Three. For the findings of this study to be considered external validity, reliability, objectivity and internal validity must be present in both the data collection and in the data analysis. Means to assure these requirements are presented in two chapters.

As the data were collected while the girls were progressing through a particular curriculum area, instruments were presented sequentially across categories, in order to minimise disruption to the girls' learning. The potential worth of each category of instrument, and the obvious need to collect data in each instrument from as many of the students as possible, resulted in extensive data. The key to protecting the integrity of the analysis of these data was to develop a systematic approach to it. As a result the researcher carefully chose a conceptual basis and a conceptual framework that would facilitate an analysis of data that would allow the presentation of findings to link clearly to the research question.

The conceptual base of the analysis is adapted from Vygotsky's Zone of Proximal Development [1975, p.103] [ZPD] and is described in Section 3.2.4. Common to the consideration and analysis of most of the data in the current research collected from each of the categories of data instruments was the establishment of two points of perspective. The first is the baseline (the starting point) and the second is the endline (the level or stage which is reached by the participants at the end of the study). In between the baseline and the endline is a third element, the mediation through an external factor. In this thesis the baseline is the characteristic way the girls worked with information at the beginning of the research, as shown in the data (November 1995). The endline is the characteristic way the girls worked with information at the end of the research, as shown in the data. The external mediation factor is the girls working overtly in an information literacy framework.

This three-part structure was used in the consideration of most but not all of the data collected. The key to whether or not it was used related directly to the mediation factor. With reference to the analysis reported in this chapter it is

not used. The reason is that the research project does not aim to track any changes in perception that the girls might have about their attitude to school life, or to their own or others giftedness. When they read through the data well after the instruments were collected, the girls noted that there were differences in these perceptions. Certainly this is an issue that merits investigation, but it sits beyond the confines of this research. The ZPD principle is used with the data relating to information literacy based instruction. The impact of this instructional experience on the learning of gifted students is the focus of this thesis, and is reported in Chapter Five.

In Chapter Four, the structure of the analysis has three parts. First, the nature and purpose of the instrument is described. The limitations of the instruments are reported to confirm the authenticity of the research. Finally the process of the analysis of the instrument and an overview of the responses are presented.

In choosing a framework for the data analysis the researcher was mindful first that effective information use entails a process. Effective use of the process enables the user to internalise information and to use the resultant increase in knowledge to solve problems. The researcher was also mindful that the process of information use entails certain skills. Given this, the researcher explicitly used the framework in the research meetings. The use of these information skills might or might not be linear in progression but competence in the use of the skills does contribute to the effective use of information.

Given that the impact of these skills is the mediation element in the current research, these information skills were used intensively in the group meetings and in the work completed by the girls when they were working beyond the group meeting times.

The skimming of the data suggested that the participants, albeit without academic consideration of the concept of information literacy, were aware both of the process and the skills.

In choosing and establishing a framework for the data analysis, the researcher chose to incorporate both the process as a whole and the information skills as discrete units that constitute that process.

As documented in Chapter One, the investigation took place in a school that is part of a system of schools operated by the Catholic Education Office (CEO). Prior to the current research the CEO had conducted two separate initiatives in gifted education. These initiatives were in addition to the CEO's position on gifted education, as is stated in the organisation's Vision Statement [Sydney Archdiocesan Catholic Schools Board, 1995], and its encouragement of schools to implement a policy on gifted education. Schools in the system are required to have a school-developed policy on the education of gifted students; with this policy as a base, the schools are to incorporate the needs of gifted students in their curriculum policies and programs. In the curriculum Audits of schools within the system, the CEO requests evidence that these policies and programs are operating in the schools.

As mentioned in the previous paragraph, as well as working at the programming level, the CEO has taken two initiatives to raise the profile of the education of gifted students in schools. The first specific initiative was in 1995 and it involved schools nominating two gifted students from Year 10 to attend Enrichment Days at which they worked at problem solving. One of the girls who is in the current research was one of the school's representatives at this day. The other representative was offered a position in the research program, but declined.

The second initiative of the CEO occurred in the years 1996, 1997 and 1998. It was the establishment of a Selective Schools program for Higher School Certificate (HSC) candidates. The program was conducted weekly for the six weeks prior to the period in the school calendar when students sit for practice HSC examinations. Six of the girls from the current research group participated in this program.

The intention behind each of these initiatives is not documented. Anecdotal evidence suggests that the Year 10 initiative had as its aim not only to have the particular group of students enjoy the activities on the day, but also to

provide opportunities for them to work for a sustained time with their intellectual peers, and to establish networks (52 RJOUR March 1996). Anecdotal evidence also suggests that the aim for the Selective Students Programme was that in the final stages of their HSC studies, the HSC students would benefit from curriculum-related workshops that were geared to their academic level. (52 RJOUR March 1996)

Part of each of these activities involved participant evaluations. These evaluations included two observations that are useful for the current research. The first was that across the system there was some teacher resistance to these students having system funding spent specifically on them. However if the particular framework of learning being used in this research proves to have a positive impact on the learning of gifted students, then it could be used in mixed ability classes with the confidence that no group of students would be disadvantaged. The framework of learning has been shown already in Section 1.2.3 to impact favourably on the learning of lower ability groups and mainstream groups.

The second observation highlighted how diverse were ways used to identify gifted students. This diversity was particularly evident in the selection of students for the HSC Selective Students programme. The directive from the CEO was that the programme was to target the gifted students, defined as those who were likely to be in the top 10% of the final HSC results. To attempt to predict such a result is not as fanciful as it might seem to be, because schools are required to conduct assessment task programmes of HSC standard, and results from these tasks would have been quite useful in the predictions. Even so, some schools interpreted the directive rather loosely. One school sent students who were *'as good as the students who got the top results for the school last year'* (CEO, 1996). Another included all members of the 3 unit class (3 unit being the highest level at which the course could be taken), the reason being *they must be bright to be doing the course* (CEO, 1996).

Decisions such as these made by schools seem a little illogical, but more importantly they suggest that a consideration of the learning of gifted students is viewed in many ways, as is the nature of giftedness itself. These differences have been examined in the review of the literature in Chapter Two.

The selection process is detailed in Section 3.3.2. In summary, it consisted of three stages:

- preliminary gathering a pool of girls, developed through consultation with staff. This resulted in 23 girls being shortlisted.
- refining of the group of 23 by using the Gagne-based characteristics of giftedness list that had already been used by the CEO. This refinement resulted in 17 girls being invited to join the research.
- 10 of the girls chose not to accept the invitation to join the research, leaving a group of 7 who became the research's participants.

The plan for the research was presented to the Principal of MSCW for her consideration. She not only gave her permission for the research to be conducted at the college, but also supported its implementation and progress.

## **4.2 ANALYSIS OF THE DATA OF A GENERAL NATURE ABOUT THE GIRLS**

### **4.2.1 Introduction**

Two points need to be made about the data instruments. First, they were varied, given that they were administered over a considerable length of time. Secondly, they were aimed at providing information on three discrete areas:

- general information about the girls;
- information on the girls with specific reference to giftedness; and,
- information on the girls' experience when working within a framework of learning that was based on six information skills.

Given the research question, the key focus of this thesis is the last of these - the girls working within an information literacy framework. While the first two areas are not the primary focus of this research, they are integral to it. The purpose for collecting the data of a general nature was to provide a personal background that would indicate the state of contentment of the girls. The aim of this collection was to allow for the identification of any reason for joining the study other than the stated ones:

- opportunity for an extra unit in the HSCE;
- research experience; and,
- learning to use a particular learning framework.

The critical motive for all decisions made by the researcher in designing the research, collecting and analysing the data, and developing findings was the protection of the integrity of the research, so that the reporting of it in this thesis would be transparent and respected.

The choice and timing of administering data instruments was guided by *logical tests* (Yin, 1994, p. 40) that determine the worth of research designs, and by the criteria set down by Guba [1989] to judge fourth generation evaluation (1989). Table 4.1 outlines these tests and criteria, and flags the response to them made in this thesis.

The written nature of the data instruments, particularly those relating directly to information literacy, guided the researcher to the method of analysis. This analysis began with several readings of the data. This repeated reading both established and reinforced the two-fold grouping of data presented in Figure 3.4 and Figure 3.5. During this reading and grouping the researcher conducted comparative reoccurring practice to seek words and phrases that indicated comment on the impact of the information literacy framework under investigation.

After identifying these key words and phrases, the researcher used colour coding to organise them into a workable form. She then plotted them on a series of concept maps according to whether the words and phrases referred to the information literacy framework incorporating the six component skills, or to the skills discretely. This final plotting stage provided the information that became the framework of the findings.

TABLE 4.1  
THE RESEARCH'S INBUILT TESTS FOR AUTHENTICITY SHOWN TO ADDRESS THE CONCERNS OF YIN AND GUBA

TESTS OF RESEARCH AS SEEN BY		SUMMARY OF YIN AND GUBA	ADDRESSING THESE SUMMARIES IN THIS RESEARCH
YIN (1989)	GUBA (1989)		
EXTERNAL VALIDITY	TRANSFERABILITY	The uniqueness of the research ought not to be exclusive of the possibility of further research developing from it	The participants, the research context, the conceptual framework are readily available
RELIABILITY	DEPENDABILITY	The essence of the research ought to be so transparent, and the design, collection of data and analysis of data ought to be so clearly organised and presented, to enable duplication of the research to arrive at the same findings.	The findings deriving from the analysis, and perceptions made by the researcher
OBJECTIVITY	CONFIRMABILITY	The conclusions ought to derive from the steps of the research process.	Clear tracing is possible between the findings and the data collection, irrespective of the phase of data collection
INTERNAL VALIDITY		Inferences made about the impact of the effect of a particular variable ought to be supported with rich data. <i>It is not enough to say that well-carried out tactics will make for good conclusions</i> (M and H p 277)	The 53 data instruments allowed for information to be gathered on each of the three elements of the research, based on Vygotsky's Zone of Proximal Development
CONSTRUCT VALIDITY		Research ought to be based on a design that displays logic, and strives to minimise subjectivity in the collection of data	The 53 inter-related data instruments were administered, and the place of each in the overall research is presented in Table 3.2...The analysis and findings on data relating to each girl was given to her for reading and comment.

#### **4.2.2 Data of a general nature about the girls**

Three instruments or sets of instrument provided information of a general nature.

The first was a school life questionnaire. The current research reported in this thesis is concerned primarily with the impact of a particular framework of learning on a particular group of students, and the data were collected within a particular curriculum area. The researcher believed that the girls involved had a positive attitude to school life, but wanted to determine whether or not the appearance of satisfaction was indeed a reality. This determination was needed because if any girl were dissatisfied at school, then this would need to be dealt with in the research, to protect its credibility.

It was considered inappropriate to use Vygotsky's ZPD [1975] as the conceptual base for analysing the data gathered from this instrument, because while the potential baseline and endline were the same instrument, the research did not explore whether or not the framework of learning was the primary mediation factor. Such an exploration would warrant becoming the research question in future research.

The questionnaire was administered twice, seven months apart. It was adapted from a questionnaire produced by ACER [Appendix 2.3], and it consists of 40 randomly arranged items from five categories (self esteem, one's interpersonal comfort, metacognitive ability, one's awareness that life skills are developing, and relationship with teachers). For each of the 40 items girls were required to mark their degree of agreement on a four-point scale: strongly disagree, disagree, agree, strongly agree.

Two of the girls were absent for the second administration of the instrument. To maintain the integrity of the instrument it was not given at a later date to these girls.

A simple but efficient procedure was used to analyse the data, beginning with identifying each of the items on the instrument for semantic regularity. Generally the wording of the item was such that 'strong agreement' suggested



contentment with life as a student. However, four items implied a negative feeling (I feel depressed, I feel lonely, I get upset, I feel worried), so a 'strongly disagree' response indicated a positive attitude to school life.

The clearest way of preparing a response for analysis was a table that allowed the randomly presented items on the questionnaire to be sorted according to the headings:

- self-esteem
- interpersonal comfort
- metacognitive ability
- awareness that life skills are developing
- relationship with teachers.

Two participants responded positively on all items in both instruments. Two participants indicated in the second instrument that they '*get upset*' and no investigation of these responses was made. Two participants indicated on one of the instruments that they '*feel worried*', and in each case the reason was the HSC [51 GJOU- December 1995]. One participant consistently indicated that she felt '*depressed*', and again concern about successfully completing the Higher School Certificate was given as the reason [51 GJOU- February 1996].

One of the items on the instrument [appendix 2.3] was ambiguous: '*I feel restless*'. From a discussion with the girls after the researcher made a cursory appraisal of their responses to the instrument, it appeared that there was a difference in interpretation of the word 'restless'. Six girls understood it to have negative connotations, and one saw 'restlessness' as a positive feeling, one that '*precluded ...becoming stagnant...*' [18 INT- April 1996].

The responses to the 40 items on the instrument which five participants completed twice and two participants completed once indicated that the participants had a positive attitude to themselves as students at their school.

The second was a recapitulation instrument [Appendix 2.6] that was administered after the 1995-1996 Christmas holidays, and crosses the boundary between instruments relating to the girls in general, and in their being users of information skills. It is considered in this section of the analysis because of its

purpose: to get the girls to refocus on the research after the long summer Christmas holidays. As was indicated on the instrument, it aimed at having them comment on some propositions on the research group's path, to provide opportunity for each girl to comment on where she saw herself in the group, and to involve the group in the planning for the next block of group meetings. This instrument was not planned to fit in any formal way to the 'baseline-mediation- endline' progression. However, some of the responses did provide further support that there was a continuing of the confident metacognitive development that was indicated in responses on the school life questionnaire.

In the section where the girls were asked to indicate where they saw themselves in the research, plotting on a plus-to-minus continuum was used. This loose structure led to lack of certainty in analysis because the actual position of the plus and minus points was open to interpretation.

In the 'continuum' section of the instrument, even with the limitation mentioned above, a visual- as opposed to a numerical- interpretation could be made of the responses.

The section of the instrument that asked for three open-ended responses in terms of where the group was at, allowed for a more satisfactory gathering of information. Two girls provided one response, two provided two, and the remaining three provided three responses.

The 15 responses were then categorised. Four of the responses referred specifically to the curriculum area in which the research was conducted

- *...I am committed to completing the Preliminary Course, but do not have to do it in the HSC...*
- *...in the next two terms we will be working through the topic areas...*
- *...it teaches us how to live efficiently in a culture, and research life*
- *...we still have new topics to do...*

Three of the remaining 11 comments linked the curriculum area to the learning framework that is the subject of this research. Eight of the comments related directly to two of the categories of the school life questionnaire, namely developing interpersonal skills and metacognitive skills.

There was no need to categorise responses to the third section of the instrument, because the responses were unanimous. In this section the girls discussed planning considerations for future group meetings. Then each girl wrote what she would like included in the group meetings. Each girl indicated that continuing discussions would be appreciated.

The impression gained from the girls' responses is that they were content with their lot as students, and that there was no striking issue that seemed to be of great concern to them that might have had, in turn, relevance to the research. This notion was well-substantiated in other instruments administered throughout the research.

The third category consisted of data collected across several instruments. These instruments included:

- personal details collected towards the end of the research. In
- journals
- interviews

The time of the administration of these instruments is displayed in Table 3.6.

#### **4.2.3 Vignettes of a general nature about the girls.**

The information gathered from the instruments mentioned earlier is presented here in vignette form. The researcher was convinced that analysis of the data would be well suited to this form of presentation because of two characteristics of the research:

- its longitudinal nature
- the number and variety of data instruments.

These two characteristics resulted in rich data that Lawrence-Lightfoot and Davis [1997, p.40] would see as crucial to writing vignettes, as indicated here:

*For the portrait writer there is an ongoing reconciliation between what has been seen in the multi-dimensional context of observation and interview, and the final portrayal in narrative.*

The longitudinal nature of the research and the number and variety of instruments enabled the researcher as the *negotiator on this scenario* [Lawrence-Lightfoot and Davis, 1997, p.40] to produce a narrative that honestly portrays each of

the girls as students of SAC and as increasingly competent users of the information literacy framework, both of which are integral to the research from which the vignettes evolve [Lawrence-Lightfoot and Davis, p.12].

It is the responsibility of any researcher to define the research question and the methodology to be used in its exploration. Lawrence-Lightfoot and Davis consider the nature of the current research imposing further responsibilities on the researcher:

*with portraiture, defining the focus and the field of the inquiry, but also in navigating the relationships with the subjects, in witnessing and interpreting the action, in tracing the emergent themes, and in creating the narrative* [Lawrence-Lightfoot and Davis, 1997,p.13].

The *witnessing* and *interpreting* in the quotation attribute significance to context. The authors suggest five ways that portraiture uses context, and each of these is relevant to the current research and its analysis:

- *Internal context- the physical setting* [Lawrence-Lightfoot and Davis, 1997, p.44].

The focus of the research moved from the *outermost circle* consisting of 134 girls in Year 10, to a group of 7. The process that gave rise to this group was systematically executed, and there was *no detail too small in establishing the field setting* [p 44].

- *Personal context: the researcher's perch and perspective* [p.50].

The girls were fully aware that parallel to them studying an HSC subject and developing competence as utilisers of information, they were part of research.

- *Historical context: journey, culture, ideology* [p. 52].

So that the points of divergence and convergence of the experience of the girls and the parameters of the research were clearly in focus, the researcher administered instruments that were varied in both content and style.

- *Aesthetic features: symbols and metaphors* [p. 55].

The researcher sought to interpret signs that became apparent during the research, to investigate them, and to clarify them so that they did not impede the purity of the research. A significant example of this feature was a widely held perception in the group that the work in SAC

was not progressing because of the amount of time spent on information skills. The researcher provided opportunity for detailed discussion on this matter, and the fears of the girls were thereby allayed.

- *Shaping the context* [p. 57.]

While the researcher had a broad plan for the timing of administering data instruments, there was also an inbuilt flexibility.

Vignettes on all of the girls are presented in Sections 4.2.3.1 to 4.2.3.7.

The vignettes are based on two sets of data. First there is elementary background material (41 GEN June 1996). While not of great magnitude in terms of supporting the five areas of the school life questionnaire, it provides contextual detail on the girls' approach to their lives, and on studying for the HSC. Secondly, data collected throughout the research was analysed to locate comments the girls made that were relevant to the five areas present in the school life questionnaire:

- Self esteem

Evidence was forthcoming from data instruments that suggested- a reluctance to readily articulate their own giftedness aside- that the girls' self esteem was sound.

- Interpersonal comfort

Comments and insights into relationships with other people were both recurring and individual in essence. A frequently- appearing notion was that of the balance of being quite openly confident and being self-effacing.

- Metacognitive ability

Data instruments provided much information on the girls' abilities to comment on themselves as learners. All these comments related to their work within the learning framework that is the subject of this research. These are considered under Sections 5.2 and 5.3 of this thesis, when the analysis is made of the girls as users of the information literacy framework.

- Awareness that lifeskills are developing

The comments that the girls made throughout the research reinforced the results of the school life questionnaire [Appendix 2.3] that suggested they were not only developing life skills but also that they were aware that this was happening

- Relationship with teachers

Comments made by the girls about their teachers relate to learning and teaching preferences and expectations. The comments that follow originate not from the girls but from teachers and their tutors in College reports, and in data instruments. Integral to pastoral care and personal growth at the College is the House system. To a large extent the emphasis at the college is on the House rather than on the Year. Under this system girls are arranged into six Houses, each with six vertically streamed tutor groups. There are about 20 girls in each tutor group, and each group is the responsibility of the tutor. Girls stay with the same tutor while they are at the College. Generally it is only when a tutor leaves the College that the group would have a different person as their tutor. One of the outcomes of this structure is that a tutor's comments about a girl in the group are believed to be accurate and realistic.

Data of a general nature on each of the girls is now discussed in turn, in Sections 4.2.3.1 to 4.2.3.7

#### **4.2.3.1 Christina**

Christina came to the college at the beginning of Year 9 in 1994, having begun her secondary schooling at another K-12 girls' school elsewhere in Sydney. At the time of joining this project she was aged fifteen years and six months. She is the third of four children, having an older brother and sister, and a younger brother. Christina's family respected her successes, and was supportive of her moving into tertiary education after she completes her Higher School Certificate. A tangible indicator of the support Christina had from her family was a comment she made in an interview:

*...my dad had to drive me here on Friday morning ... took him out of his way ... he was happy for me to do it [48 INT- July 1996].*

Even though transport presented difficulties for Christina, she seemed to have no regrets about having joined the group. In a journal entry she made at the end of the research project, Christina wrote:

*I would involve myself in the group if I had my time over* [51 GJOU- July 1996].

Christina indicated that her family was important to her:

*my family plays an important part in my life and in me. They impress upon me the values and ideals they feel I should live by. It is my acceptance or rejection of these and other values and ideals that makes me* [51GJOU- June 1996].

There was an interesting balance in Christina's opinion of what a close friend would say of her, a balance that suggests the ability of honest self-appraisal. On the one hand she believed that friends see her as a caring person and a good listener, someone with lots of love to give. She was confident that they would see her as being prepared to take risks both for herself and for others. On the other hand, she believed that it would be said of her that she had little patience, and that she had a lot of advice to give. She knew that when she was in an intense discussion she liked to have the last word.

Christina gave two reasons for involvement in sports - in team sports specifically - being of top priority: health and social benefits. She enjoyed reading, and said:

*I've always found it an excellent way to relax and I enjoy escaping my world for a little while and being involved in someone else's* [37INT- May 1996].

Christina was undecided about her career plans. Her immediate aim was to achieve a Tertiary Entrance Ranking [TER] that would admit her to university. Her earlier ambitions were to work in scientific research, or medicine, and then she considered entering the field of communication. She indicated that whatever her final decision, she plans to defer her studies for a year during which time she would travel and work in Europe.

From Christina's point-of-view, one's ability to express an opinion is important to self-growth:

*I am a person who lives life for the purpose of achieving goals. One of these goals is to live a full life. I see opinion as important and as a major character building component and I therefore try to respect others' opinions* [51GJOU- April 1996].

Comments made by Christina's tutor in the College reports made mention of Christina's leadership qualities. In the final Preliminary Year report, the tutor wrote that Christina was a mature and helpful member of the tutor group. In the mid-HSC report, Christina was referred to as:

*a mature and co-operative member of homeroom (sic) who has fulfilled her leadership role responsibly* [45REP- April 1996].

Here, 'leadership role' referred not only to Christina's contribution to the tutor room but also to her appointment as College vice captain for 1995-6.

Christina made steady progress in her senior studies, and teacher comments in her reports when she was half way through her HSC year were:

- *Christina is to be congratulated on this fine result*
- *... to be congratulated on her excellent results*
- *... has achieved a high level of competence in the processes, skills and knowledge of the course outcomes and her classwork always is of a high standard*
- *... her exam results are excellent and she has achieved an outstanding result ...*
- *to be commended on her mature approach* [45 REP- April 1996]

#### **4.2.3.2 Danielle**

Danielle is one of three children in her family. She has two sisters, one three years older than her and the other her twin. Danielle was born in Capetown, South Africa, and her family came to Australia when she was 8 years old. She was at the college from the beginning of Year 7, having come from one of the local primary schools. Danielle's family values personal growth in areas of talent, and their support have enabled her to develop into an accomplished musician. Her family supported her in decisions she made concerning her education.



Danielle believed that her friends knew that she has strong opinions and that she has a tendency to be judgemental. She also believed that they would see her as a sincere friend who is sensitive and is a good listener.

She was interested in reading, finding it to be relaxing and enjoyable, and she spent considerable time refining the art of working with dried flowers. Outdoor interests included netball:

*(fun ... exercise ... group activity) and walking (. exercise ... fun ... clears the head...)* [18 INT- April 1996]

She is a talented violinist. She did not pursue this interest with as much vigour as she did before she began her Preliminary Year studies, because she chose to concentrate her efforts on her HSC studies. She intended to resume serious playing on a more regular basis after she completed her secondary schooling.

Danielle planned to study in either the area of law or interior design. While she acknowledges that these are quite different areas, she saw that each one requires an ability to communicate effectively.

She was regarded as a polite member of the College community, and as one who is sensitive to others, and her sense of humour was most noticeable in group work and group discussions. She displayed initiative and responsibility in her tutor group .At the end of Year 10 her tutor wrote that:

*Danielle's politeness is an example to the younger students*  
[45 REP- December 1995].

#### **4.2.3.3 Gloria**

Gloria began at MSCW at the start of 1992, entering Year 7. The primary school from which Gloria and a small group of other students came is located in a parish on the periphery of the college's feeder area. Girls from this parish school constitute only a small percentage of the cohort. At the time of joining this project Gloria was aged fifteen years and six months. She is the youngest child in her family of six brothers. She enjoys a supportive family who are quite open in their pride of her, and while they were not active members in the parents' and friends association, they supported in active ways the college functions in which Gloria participated.

One of the data instruments asked the participants in the research project to complete a personal profile and in this Gloria said that she believes that her friends would say that she was:

*fun, friendly, always happy, loyal and supportive without realising it* [41 GEN-July 1996].

The researcher investigated the apparent contradiction in this statement. Gloria said that sometimes she does not realise that she is being supportive of her friends, but that they have told her that she is.

Given her interest and success in sport, and her results in Personal Development Health Physical Education (PDHPE) Preliminary Year studies - which placed her fourth in a class of eighteen - Gloria's career ambitions of being either a PE teacher or a personal trainer were not at all surprising. After her reading of the draft of this section, Gloria indicated that she had removed personal trainer as a possible career, and that social work was interesting her instead.

Gloria was able to distinguish the different motivations for her involvement in swimming (encouraged by family, and grew into an important part of her social life); netball (encouraged by friends); and, touch football (personal choice). Her plans were to complete her tertiary studies and then travel overseas prior to embarking on her career. She indicated later that she had deferred this trip because she had put her available resources into the purchase of a car.

Gloria's tutor group was small, having only twelve members. All of the Year 12 girls are called on to be College leaders, and they are presented with a badge at the Changeover-of-Office ceremony. Paralleling the senior leadership structure is the Senior Office Bearers' structure. All the girls in the House choose by ballot the two who will represent them as House Captain and House Vice Captain. For the 1996-7 term of Office, Gloria was elected to the important and prestigious position of captain of her House.

Gloria is a friendly and sensitive young woman who related well to people in general. One of the reports from her tutor described Gloria as being *courteous*

*and cheerful* [[45 GEN- December 1995]. She is respectful and honest, and was identified as a suitable role model for junior girls at the College. Six months later her tutor wrote of her in the following way:

*she is always cheerful, co-operative and supportive of the best values and attitudes of the school* [45 GEN- July 1996].

At the end of 1996 her tutor wrote that Gloria was:

*a very cheerful and co-operative member of our Tutor group. She is an excellent role model for younger students* [45 GEN- 1996].

Her sparkling sense of humour contributes most significantly to the occasion, but was manifested in an understated way. Not only was this characteristic commented on in terms of her general demeanour, but also in terms of the sparkle she brought to oral class presentations. As House captain Gloria addressed both House and College assemblies, and she did so with straightforwardness and good humour. Her sensitivity to place and person meant that she could predict courses of action that were beneficial, helpful, or simply sensible. Her House Co-Ordinator commented on this trait when referring to Gloria's involvement in the public relations exercises that were attached to the running of major House celebrations [45 GEN- September 1997]. She assumed responsibilities with a vigour that is commendable, and her reliability was one of Gloria's qualities that was valued highly by the College.

#### **4.2.3.4 Helen**

Helen came to the college from one of the local parish schools at the beginning of her Year 7 studies. She is the youngest of a family of three girls, and she enjoys support from them and from her parents. Her parents have been involved actively at MSCW. Their contact with the College was a long one, Helen's sisters also having been students here for all of their secondary schooling.

She is quite a humble person, with a simplicity that can allow her to appraise herself, and give an honest and unashamed report. When asked what she thought a close friend would say about her, Helen wrote that

*I think a close friend would say that I'm loyal and that I am quite nice. I think people would see me as a very happy, cheerful and confident person. People also see me as an organiser who can sometimes take over and be a bit bossy* [41 GEN- June 1996].

Helen enjoys sports, and has played netball for many years. Her reason for participating in them was her liking an active life:

*I like these sports because they are outside, and I enjoy being active*  
[37 INT- May 1996].

Motivation of a somewhat different sort was the basis for her enjoyment of debating in which she successfully represented the College. As she said herself:

*I feel it's an area in which I'm quite talented.... I like debating. I get a bit of a rush out of arguing and trying to prove my point* [37 INT- May 1996].

Her involvement in debating was marked by dignity and good grace, characteristics that are evident in her daily life.

A career in law was a serious consideration for Helen but then her interests moved to accounting and finance, and as far as long-term goals were concerned she commented:

*I would like to manage a company or something but I realise that it is something you have to work your way up to* [41 GEN- June 1996].

Maybe this touch of realism is related to her family's values: her parents have their own importing business.

Helen also expressed that:

*hopefully while at uni I'll get a cadetship with a firm so I have some experience when I graduate* [41 GEN- June 1996].

This part of Helen's plans was fulfilled a little earlier than expected, with notification from a large firm of chartered accountants that she had been awarded a cadetship with them, before she completed her HSC studies. Her plans were to take the cadetship because of the field experience that she would get, and to do some travelling.

Contrary to a comment Helen made about herself, 'bossiness' was not a characteristic noted by Helen's tutor in her reports. What was noted was:

*her sense of humour and her cheerful co-operative attitude have been of great value to the good spirit of the group. she is always most courteous and co-operative in the tutor group* [45 GEN- September 1997].

#### 4.2.3.5 Lottie

Lottie was aged 15 years and seven months when she joined the research. She was born in Australia, and has a sister ten years her senior. She came to the college at the beginning of her secondary school studies, having attended one of the local primary schools.

When Lottie was commenting on what she thought close friends might say about her, she said they would say:

*annoying, and waffles on about nothing... likes going to the theatre  
...Feeling either extremely happy or extremely miserable* [41 GEN- June 1996]

On paper this description sounds somewhat depressing. The researcher's observation of Lottie in the College community would suggest that Lottie is respected and well liked. One extra-curricular involvement that Lottie enjoys is Public Speaking in which she has enjoyed considerable success over the six years she has been at the College. She has represented the college admirably in interschool competitions, and in her HSC year she reached the State semi-finals of the *Sydney Morning Herald* Public Speaking Awards. Her peers who expressed pride in her achievements follow her public speaking experiences with interest.

Lottie was involved in the Performing Arts and is an accomplished singer and pianist, and student of the saxophone. After her post-draft reading she said that her saxophone playing was not up to the same standard of her other playing. She enjoys the theatre. Her love of, and involvement in theatre was not limited to attending plays - which she did on a regular basis with her family. She acted in local theatre, and she wrote unpublished scripts. One of her ambitions is to have at least one of her scripts published. All of this she describes as *enjoyable and interesting*. [41 GEN- June 1996] Her writing is not limited to scripts. She also derives pleasure from writing poetry, and from reading widely. Lottie also takes an enjoyable academic almost historical interest in the Beatles. Perhaps this interest stems from - or explains - her stated love of all things British. She has an interest in politics, and became a member of the youth arm of one of the major political parties. Her career plans were undecided, except for the fact that Lottie did not plan to lock herself into any career path early on. This proposal was apparent in her stated plans for the next six years:

*Finish school and then do a Bachelor of Communications, or if successful go to NIDA ... to build up a collection in scripts and continue music and acting. Do a little journalism here and there and write some more ... a bit of everything, really* [41 GEN- June 1996].

Her first option for career was in the performing arts, but she was keeping her options open in terms of politics. Either way she hoped to travel a lot.

In her tutor group Lottie interacted well with the other members. She was seen to be:

*well-mannered and friendly ... a valued member displaying a good example for her younger peers* [45 REP, June 1996].

#### **4.2.3.6 Sandra**

Sandra was at the college since the beginning of Year Seven, and she was 16 years of age when she joined the research project. She is the middle of three children in her family, having an older and a younger brother.

Her general demeanour is gentle, and she believes that close friends would say

*that I was quiet but caring, and fun once people get to know me better* [41GEN- June 1996].

This spirit was captured in a report made by her tutor when he commented:

*Sandra completes her House duties in a considerate way and is always co-operative and polite* [45REP- June 1996].

In a personal profile completed towards the end of Sandra's time in the research project she indicated that her interests were netball, reading and art. She began playing netball when she was ten years old, and has continued to do so *purely for health and enjoyment*. She explained that she became involved in reading *from an early age I was exposed to literature so I developed an interest in it* [41 GEN- June 1996]. She paints regularly - *I've always enjoyed painting in my spare time* - and the satisfaction she derives from it seems to be quite profound. In her words:

*I find it a great way of expressing your feelings, similar to that of a diary* [41 GEN- June 1996].

She was able to couple her interest in Art with her studies throughout her schooling, and she took Visual Arts as a subject for her HSC.

Career plans for Sandra related to an interest in language, and in a data instrument completed towards the end of the research project she indicated

that she would like to pursue the path that she explored during her work experience programme, during which she spent time at a publishing company. Her long-term goal was to be a book editor, *since English is one of my most favourite subjects* [41 GEN- June 1996].

She approached her HSC studies with a quiet confidence and planned to do Communications and Psychology studies at university *after gaining successful marks in the HSC* [41 GEN- June 1996].

In the research group Sandra contributed positively to discussions with perceptive comments and higher order questions that would challenge the prevailing climate. These qualities were noticed and commented on by Sandra's teachers in other subjects:

*her work suggests a sound understanding of the texts and Sandra is a most perceptive reader and her oral contributions have added considerably to class discussion* [45 REP- April 1996].

#### **4.2.3.7 Vivienne**

*Vivienne* is an only child and at the time of the research she lived with her mother and grandmother. She has a broad range of interests and is particularly competent in music.

As can be seen from the process of analysis and the overviews of responses concerning the other girls, a significant instrument for collecting data in this section of the research section was the Personal Profile. *Vivienne* was absent when this instrument was administered, and in keeping with the element of the design mentioned in Chapter Three she was not asked to complete it on her return.

In a report from her tutor, *Vivienne* was commended as being *a positive and enthusiastic member of the tutor group* [45-REP- September 1997]. She was an active participant leader in her tutor group, and was *always willing to share her ideas with the other members of the group*. Her sense of responsibility, and her caring nature was evident in that *she is particularly attentive to younger members of the tutor group*.

#### **4.2.4 Vignettes relating to the girls and giftedness.**

The collection and analysis of data sought to illuminate understanding of a particular learning framework on a particular group of students, a group that the research has not to date considered in terms of that learning framework. The data also related to the girls being part of a subset of learners, viz., gifted learners. Data instruments pertaining to giftedness had two distinct purposes. The first was to select the students, and the rationale behind this decision is presented in Chapter 3. The second use to which the data were put was to maintain the position of giftedness as a consideration in the study.

Data on the girls as gifted students was derived from three main sources:

- One instrument [Appendix 2.14] was specifically related to giftedness: 'Profile of giftedness'. This listed the characteristics of giftedness used throughout the research. The instrument was used to assist in the selection of the participants. Girls completed the instrument three times, each time providing information on how they saw both themselves and group members in terms of giftedness. The girls were invited to reflect on these tables three times [2- GIF-November 1995, 21 GIF-April 1996 and 33 GIF- May 1996] and to comment on them. Girls' teachers also were invited to complete the profile. The tables appear in Appendix 2.

One purpose of administering the 'Profiles of giftedness' instrument is obvious- identification. A second purpose was to remove the concept of 'giftedness' from some notion of abstract perfection into the definition that was being used in the research, and had been the basis of the girls' selection into the research group.

- Although the three interviews were not aimed specifically at collecting, much information relating to giftedness was obtained from them. During each of the three interviews the researcher sought reflections on giftedness from the girls. The girls in their journals and across other instruments made some reflections on giftedness.

In terms of the profiles the researcher considered presenting the analysis of the data in a series of s that would present for each of the characteristics a



synthesis of all of the responses. This idea was rejected because the resultant information would have little bearing on the focus of this research. The researcher extracted from other instruments, references that people had made to the profiles.

In terms of the other instruments, the researcher sought comments on two aspects of giftedness: what the girls saw giftedness to be, and how they perceived themselves as gifted students. The results of these two approaches are presented below in integrated summaries.

#### 4.2.4.1 Christina

In each of the first two profiles Christina identified herself in terms of the ... easily understands new ideas and concepts...' characteristic. In the first interview she said that by 'gifted' she meant:

*a person who can work independently, understands concepts quickly, uses initiative to learn and uses all of the resources available to them ... who understands maybe quicker than others'* [18 INT- May 1996].

In the second interview Christina indicated that a gifted person is one:

*who can understand things quickly and can take in the concepts, look at things from different perspectives ... I think I do all those things* [37 INT- May 1996].

In that interview she said that she considered herself to be gifted by virtue of the fact that she had been invited to join this research group. Other than that she considered herself intelligent rather than gifted. She believed that her teachers and her peers in this research group might consider her to be 'gifted' because

*I pick up concepts quickly, and learn by myself if I need to ... being able to look far beyond the content, the facts ... see them grouped together* [37 INT- May 1996] .

Comments that she made in the third interview on her understanding of the term 'gifted' were consistent with this idea:

*somebody who can understand things quickly and take in the concepts ... look at things from different perspectives* [48 INT- July 1996].

In this same interview, when she was asked if she saw herself as 'gifted', Christina said: *Yea, those things*. By 'those things' she was referring to the characteristics that had been marked on her profiles.

One data instrument that is referred to later in this section is the concept map [7 GIF- February 1996]. The major component parts of this instrument were thought balloons in which were written 'new concepts and ideas', 'new methods and techniques', and 'a variety of ideas and solutions to problems'. Lines connected each of the balloons with a central balloon in which each girl wrote her name. Each girl was asked to write on the lines comments that linked her and the ideas in the balloons.

Christina's responses were

on (a): *'important'*

As a background to the comments that appear in subsequent paragraphs, it should be noted that in the four self-profiles she had indicated openness to new concepts and ideas as one of the characteristics of giftedness that applied to her. In the three in which she ranked herself in terms of the characteristic, she indicated that it was strongly evident.

Christina's response in this data instrument [7 GIF- February 1996], indicated that she saw the new concepts and ideas as being:

*important parts of the path between me now and me when I've finished learning.*

Later, when she was asked to explain what she meant, she said that the point she was making was that being open to new concepts and ideas is an integral part of learning [37 INT- May 1996].

on (b): *'wary'*

In two of the four self-profiles she ranked this as one of the characteristics of giftedness that applied to her; others in the group did not identify this as a characteristic that was evident in Christina.

Her response to the 'new methods and techniques' of the concept map instrument suggested that she preferred not to be channelled into using new methods and techniques. She is *a bit wary of them, as I like to be left to my own way and devices.*

on (c): 'try ... but not always successful'

In Christina's self-assessment and in the opinion of others in the group, this characteristic – using a variety of ideas and solutions to problems and questions- was indicated as being strongly evident in Christina's learning.

When asked to comment on the concept map, on the 'using a variety of ideas and solutions to problems and questions' Christina commented:

*I try to do this but I am not always successful as sometimes the first idea I come up with is the one that sticks.*

Data collected from teachers indicated that nine of the characteristics applied to Christina. Her capacity for leadership in practical activities was placed as the characteristic that most strongly applied to her, and this coincided with her perception of herself as a gifted student.

#### **4.2.4.2 Danielle**

In Danielle's opinion, the term 'gifted' implied both inherent ability and interest in learning, and metacognition. In an interview she said - albeit hesitantly:

*I think gifted would just be you actually want to learn like I suppose the term gifted means you have got something special I suppose*

[48 INT- July 1996].

Later in the interview Danielle said that gifted learners were interested in the way in which they learned, and in improving their learning:

*...are interested in learning and you are interested in actually bettering your work and can actually see that you are, either not going as well as you would like to go and then you think -well I had better work harder so I'd say - gifted would be to actually see my weak points and actually try to fix them up... [48 INT- July 1996].*

She commented that her giftedness was evident in her academic success:

*In some instances I do, in my classes when I compare my marks and ... I can see that I get high marks. But I think everybody has got something gifted, in different ... departments. And in her creative work? : maybe yes, maybe music sometimes if I practise. Yeah, sometimes [48 INT- July 1996].*

Danielle had noticed that other students thought and learned differently from the way she did, but she had never really attributed that difference to her being 'gifted'.

*I don't think I've actually thought of being gifted, I don't think I think of being gifted much or anything like that, I just usually get on with my work but sometimes if I understand something in a class and we'll have a discussion and I just will sit back and listen to other people's opinions, like they are their opinions and so you should listen to them and not look down on them, but they haven't got the idea properly as it should be, like I won't put up my hand and correct them or anything but I realise they are not on the same track sometimes as I so I suppose that makes me think sometimes that they are ... (followed by a little shrug and a somewhat embarrassed smile) [48 INT- July 1996].*

The characteristic that the College identified most consistently was Danielle's ability to communicate effectively. In each of the three self-profiles Danielle also identified her communication skills as one characteristic she displayed, ranking it third in one of the self-profiles, and first in the other two.

The characteristic that the College did not consider to be displayed by Danielle was being '... a high risk taker ... speculative and adventurous...', and her self-profiles indicated an agreement with this opinion. From the College reports, Danielle was seen to display an ability to '...understand new ideas and concepts easily...' in linguistic-based, logical-mathematical-based and creative-based areas of the curriculum.

On the concept map [7 GIF- February 1996] Danielle commented on herself as a learner in terms of:

- (a) new concepts and ideas
- (b) new methods and techniques
- (c) a variety of ideas and solutions to problems and questions.

Danielle's responses are as follows:

On (a): 'open mind to them'

In three of the four self-profiles indicated that she was prepared to work with new concepts and ideas.

She wrote that if she understood the new concepts and ideas, she found them interesting, and that if she did not she would *put them to one side* [7 GIF- February, 1996].

On (b): *helpful*

In two of the four self-profiles Danielle ranked 'new methods and techniques' as one of the characteristics of giftedness that applied to her. Other participants in the research group also indicated that they believed that Danielle was interested in learning new methods and techniques.

Danielle said that as far as learning was concerned, new methods and techniques were *helpful in doing tasks* [7 GIF- February 1996].

On (c): *'gives you room'*

In three of the four self-profiles she ranked this as one of the characteristics of giftedness that applied to her.

Danielle connected the prompt 'a variety of ideas and solutions to problems and questions' with the notion of having more choice in seeking solutions to tasks.

#### **4.2.4.3 Gloria**

The College determined that of the ten characteristics of gifted students listed, seven applied to Gloria, and that the one that most strongly applied to Gloria was her capacity to communicate effectively. This determination by the College was corroborated by reports from Gloria's teachers made in two of her mid- Preliminary Year reports, two terms after the research project had begun. One teacher wrote that

*she participates well in group discussion* [45 REP- April 1996].

Another teacher wrote that in a unit of work Gloria's submission

*lacked details to support the argument however she enjoys preparing for oral discussions* [45 REP- April 1996].

In Gloria's first self-assessment made at the beginning of her time in the research project she too identified this capacity for effective communication

as the characteristic that she displayed the most strongly. This characteristic became the most consistently indicated item on the self-profiles she completed throughout the project.

Across the three self-profiles, the characteristic that was the second most consistently ranked was 'displaying leadership in practical activities'. The College identified this as well. Gloria's leadership ability was apparent from the time she entered Year Seven. Her peers would choose her to lead them in class activities, and in this role she displayed a sense of justice which meant that less-popular girls were not excluded from activities or discussions.

Staff commented that Gloria has a good sense of humour [52 RJOU- October 1995]. A word that staff and students would have used to describe Gloria is *happy*, Gloria also displayed an ability to see humour in situations not noticed by others, and this is presented with a subtlety that could be missed easily. For example, in one of the meetings of the research group there was a reasonably lively discussion about the task on which they were working, and one of the students was trying to get the discussion back on track - but she was not having much luck. Another student asked her what made her think that they were not already on track, and on noticing that Gloria was sitting there observing, just looked at her. Then she asked Gloria if she thought that the purpose of the discussion was being lost - or words to that effect - to which Gloria's response was *Define-itely*. That resulted in a few seconds silence, and then some of the group tuned in to the play-on-words, and then the discussion did indeed get back on task [52 RJOU- March 1996].

It is the researcher's opinion that Gloria's enthusiasm in following instructions was positively motivated by a need to get things moving along, not because of satisfying a need to be directed. She showed initiative within set structures, and when she was faced with new concepts generally she did so confidently.

With the three characteristics that the College did not consider as applying to Gloria, there was almost total congruence with Gloria's self-profiling. Not showing 'an interest in learning new methods and new techniques', and not

using 'appropriate materials, tools and processes at a high level' could be linked.

Her responses on the concept map [7 GIF- February 1996] were:

on(a): 'like', 'interesting'

Evidence of her finding new and interesting ideas was apparent in a Minute Paper completed on February 9, 1996. Gloria wrote that:

*I did not realise until now that SAC involves concepts, interaction, cross-cultural studies and methodologies. I enjoyed discussing these and also seeing others responses. It was interesting to see at the end of the lesson how the others have gone about doing their assignments.*

on (b): 'dislike', 'changes'

At the beginning of her time in the research project Gloria said that she liked to get the task done and hand it up in a rewritten first draft form [11 IL- February 1996]. In the self-evaluation of the second research task Gloria:

*I have learned to evaluate before handing it [the research task] in, however I have also learned that you must leave time to make the changes to the assignment after evaluating it' [34 IL- May 1996].*

on(c): 'I often provide the minimum'

Gloria's thoughts expressed in a Minute Paper completed on November 24, 1995 were that:

*In today's lesson I thought we wasted time going through the purple sheets. I don't assess my assignments or marked work. I think of it in terms of how I lost marks, and how to improve with the intention of getting better marks next time.*

In term of marks achieved in her Preliminary Year courses, most of Gloria's results placed her in the top 15% of her cohort. For a course in which her results were most markedly removed from the top 15%, the teacher commented on Gloria's not having success with some of the conceptual work [45 REP.]. Gloria continued this subject through to her HSC studies, and in the mid-course examination at the HSC level, her teacher indicated that Gloria had achieved a mastery of concepts [45 REP- December 1996].

Throughout the data collection Gloria was asked to comment on being chosen to participate in the research project on the basis of her being considered by the College to be *gifted*. The characteristics that the College identified as being ones that Gloria displayed were quite similar to those that she

identified herself. In the third interview Gloria indicated that she had refined her ideas on what *gifted* meant:

*before I said it is someone who is naturally talented in an area, but now I sort of think that someone who is gifted is someone who naturally has the talent but also has the intelligence to use it... I don't think I use my intelligence to the full extent [48 INT- July 1996].*

In the first self profile on giftedness that she completed, Gloria had 'communicates effectively', 'is a leader in practical activities', and 'generates a large number...' as the top three characteristics applying to her [2 GIF- November 1995].

In the second interview [34 INT- May 1995]) when asked to restate what the research was concerned with, she fumbled around with words such as 'intellectual' and 'intelligent'. When challenged on her apparent reluctance to recognise herself as gifted she said that 'gifted' just '*had not popped into her head.*'

The conversation concerning her being gifted went as follows:

Researcher *Do you see yourself as gifted?*  
Gloria *No, not really. I think I am above average but not necessarily gifted.*  
Researcher *What might it be about your learning that makes other people think that you are gifted?*  
Gloria *Maybe they don't see the work that I do, like I do study for my exams. I do study for my assignments. They might not think I have spent as much time....*

The *I have to work for my results* [37 INT- May 1996] in the second interview changed to *I don't use my intelligence to the full extent* [48 INT- July 1996] in the third interview to explain her reluctance to call herself 'gifted'. A speculation that one might make about this change in opinion is that Gloria was developing among other things, a sense of herself as a learner.

#### **4.2.4.4 Helen**

In the third interview Helen defined a gifted person as someone who:  
*more than above average... gives a lot of input into the subject ... contributes a lot* [48 INT- July 1996].

Helen's teachers at the end of Year 10 made comments that indicate that they would most likely agree with this self-assessment. Three of the comments refer to Helen's input to her own studies:



*This sound results reflects Helen's conscientious effort towards her theory work...hardworking and enthusiastic ...has thoroughly completed all class work and has attained an excellent examination result [45 REP-October 1995]*

and, a fourth teacher commented on the input Helen gave to the class:

*She is prepared to share her own thoughts and feelings with the class....[45 REP- October 1995].*

Helen's responses to the

- (a) new concepts and ideas
- (b) new methods and techniques
- (c) a variety of ideas and solutions to problems and questions

on the concept map were:

On (a): *excited*

Helen's preparedness to work with new ideas and concepts was recognised by the rest of the group. Across the three sets of profiles that appear in the tables above, sixteen of the eighteen individual responses considered that Helen did 'easily understand new ideas and concepts'. She wrote

*I get excited when these come up [7 GIF- February 1996].*

On (b): *hate*

While Helen easily understood new concepts, her preference in methods and techniques was for the tried and true. When asked to comment on how she related to 'new methods and techniques' she responded

*I hate learning new methods. I like those already familiar to me [7 GIF-February 1996].*

Thoughts expressed in the third interview completed six months after this data instrument was completed, referred to her preference for the known. She said:

*when I first {joined the research group}. I was thinking that the steps were a waste of time because they do - did - take more time - to go through each step rather than just do them, or get in and answer the question - I was quite happy with the way I worked- whereas now I do take the time and I think I answer the question or whatever I have been asked to do a lot more thoroughly [48 INT- July 1996].*

On (c) *challenge*

In terms of 'a variety of solutions and ideas' two of the six College respondents and seven of the nine peer profiles recognised this in Helen's learning, and although she identified it as a personal characteristic she did not rank it highly. Her comment on the data instrument was:

*Find this a challenge. I often stop once I have one solution* [7 GIF- February 1996].

Other students who believed that Helen followed instructions with enthusiasm ranked this characteristic highly, and the staff consistently saw this as a characteristic that Helen had. However, Helen did not rate this at all.

A characteristic that was ranked consistently across self, peer and College profiles [2 GIF- November 1995, 21 GIF- April 1996, 33 GIF- May 1996] was *communicates effectively*. As well as being able to communicate her ideas in written work -

*her written work and practical work are pleasing and her written examination result is most sound* [45 REP- 1995].

Helen's oral skills are well developed. She is successful in formal oral presentations - *quite confident* - [45 REP- December 1996] and she is articulate and confident in informal discussions. In the research group she presented ideas and challenged those of others.

When she was asked if in her opinion there were hardworking people who were not gifted her reply was: *Of course*.

#### **4.2.4.5 Lottie**

Lottie seemed to have a degree of difficulty coming to terms with the notion of 'giftedness'. In the first interview she saw a correlation between being gifted and being a hard worker. She said that gifted people are those who:

*work hard, I guess or people who are classed as generally hard workers* [18 INT- April 1996].

Later in the third interview, Lottie contradicted this idea that interest and hard work lead to the developing of giftedness. In this interview when explaining why she did not consider herself to be gifted, she alluded to the fact that she had to work hard to achieve the successes she experiences whereas:

*there are a lot of people in things I do that can put in a lot less work and still do better than I can, if I work really hard I still can't manage to get to the level that they are at* [48 INT- July 1996].

In the interview she said that:

*don't think there is a gifted person I honestly don't think there are gifted people, I think it just comes down to the person in the end* [48 INT- July 1996].

In the same interview Lottie expressed the opinion that 'interest' affected performance, and consequently 'interest' could determine giftedness. She said:

*You are gifted in something if you are interested in it and are prepared to work hard at it ... and you can't be gifted at something that you don't like.* [48 INT- July 1996]

This certainly was a view different from what is offered in the literature as an explanation of giftedness, and when asked to explain it more, Lottie modified it a little saying *gifted people generally like what they are doing.*

In the concept map (7 GIF- February 1996) she responded

on (a): *liked*

Lottie stated simply that she *liked learning about new and interesting concepts.*

on (b): *dislike*

Lottie expressed herself strongly on this point, saying:

*I don't like new techniques. If I can understand one way why should I learn another technique to get the same answer. It just confuses me.*

This opinion was supported by the fact that in very few of the profiles - completed by herself, by her peers or by the College - was being 'a high risk taker, being adventuresome and speculative' considered to be a characteristic of Lottie. It is interesting that of the characteristics on which she did rank herself consistently highly in the profiles was 'is interested in learning new methods and techniques'.

on (c): *like*

The notion of being comfortable with the known and successful way appeared in Lottie's response to the stimulus 'variety of ideas and solutions to problems and questions':

*I like to learn a variety of ways to solve things providing I don't already know how to do it. I hate being confused by finding difficult ways to do simple things.*

#### **4.2.4.6 Sandra**

When Sandra was asked for the first time as a participant in the research group to identify characteristics of giftedness that related to her, she identified four. Three of these – displaying an ease of understanding of concepts, showing an interest in new methods and techniques, and being an effective communicator - were three that the College identified as relating to her. The fourth characteristic that the College identified - showing enjoyment of reading - also was identified by Sandra but it was identified marginally less important than the three top characteristics were.

Both the College and Sandra determined that Sandra's use of *processes, tools and processes at a high level* was not a characteristic that Sandra displayed strongly, and yet her peers identified it quite strongly [2 GIF- November 1995].

One characteristic that was not identified by Sandra - that she 'generates a large number of ideas or solutions to problems and questions, and often offers unusual unique and clever responses' - was ranked as one of the four top characteristics in eight of the nine responses made by her peers during the course of the research project. It was a characteristic that was identified quite strongly by the College in the selection process for the project. In a data instrument that was completed 14 months after the meetings of the research group concluded, one of Sandra's teachers commented that Sandra:

*likes to learn what a product can do, but she does not want to try it Sandra thoroughly enjoys the theory side of the course. She enjoys to read [sic] and can enter a discussion in relation to artists and their artworks without any hesitations..... She is always very confident as to what she is saying* [45 REP- September 1997].

Considerably earlier, Sandra had stated in the second interview that

*I'm kind of quiet I don't excel in public speaking and discussions but in other forms of learning I'm ... pretty good* [37 INT- May 1996].

Putting forward her ideas orally might not be something with which Sandra was comfortable, but her ability to communicate her ideas effectively was rated consistently across College and peer identifications based principally on her competence with written expression. In her personal identification Sandra

[9IL- February 1996] indicated a belief that she could communicate ideas effectively, and this indication referred to her written ability as well. In the data instrument in which she presented her career plans she stated that she would *enjoy journalism if I can't do that* ('that' being working as a book editor for a publishing house) [41 GEN- June 1996].

For Sandra the concept of 'giftedness' is related to inherent ability. In the second interview Sandra defined 'gifted' in terms of:

*a person of high intellect, someone who can ... who is just really smart* [37 INT- May 1996].

Sandra repeated this idea in a journal entry made two months before her involvement in the research project finished. She said that:

*giftedness means of high intelligence - have a natural flair.*

In Sandra's opinion intelligence is an inherent attribute that might or might not be realised:

*I don't think it is something that can be developed no matter how much time and effort you put into it ... you either have a talent for whatever it is or you don't* [51 GJOUR- May 1996].

In the second interview Sandra was somewhat apologetic in identifying herself as being gifted, saying in quite a stumbling manner:

*Um-but yeah- but many people - because I don't participate in discussions and things like that think of me that way because they think I - kind of quiet and stuff - but I tend to think of myself - it's just I'm not - I don't excel in public speaking and discussions and things like that but in other forms of - in other methods of learning I'm ... pretty good* [37 INT- May 1996].

In the third interview she was prepared to use the term 'gifted' more confidently with reference to herself. When asked if she considered herself to be gifted in terms of her definition of the term she replied:

*Yeah, in some things I think so ... in particular subjects and stuff ... not so much in Maths and Science and that but more in Art and History* [48 INT- July 1996].

Comments on responses made on the concept map [7GIF- February 1996] cannot be made because Sandra did not submit the instrument at the meeting.

#### 4.2.4.7 Vivienne

Vivienne's responded to the concept map as follows:

On (a): *excited*

Vivienne indicated that new concepts and ideas interested her. This related closely to her characteristics of giftedness self-profiles, where she ranked this characteristic as the one that related to her the most strongly. Four of the other girls ranked this characteristic either first or second.

On (b) *aren't needed*

Vivienne was less enthusiastic when it came to new methods and techniques. She could not see the need for these, and said that a disadvantage was that *they call for extra work*.

On (c) Vivienne found the variety of techniques *helpful*

In the second interview Vivienne explained giftedness in terms of a person's being:

*intellectually sort of talented, like they've got a sort of clearer understanding, a person who is a lot faster like at learning*  
[37 INT- May 1996].

She expanded this a little in the third interview, saying:

*ah, just sort of having a special characteristic that would sort of be that little sort of being able to understand things easier or sort of taking things in quickly* [48 INT- July 1996].

### 4.3 SUMMARY

Set in the context of a subject that is part of the HSC curriculum, the research has two components:

- the research participants being identified as gifted
- the impact of an information literacy framework on the learning of that group.

This chapter has presented the goal, the conceptual base and the contextual framework of analysis for each of these components, as well as the path of the research.

Data concerning the research participants in terms of their giftedness and as students at the MSCW were analysed. The results of this analysis indicate nothing that the researcher considers threatening to the research or to the analysis and findings presented in Chapter Five.

From both the data and the findings deriving from analysis of the data, and from the researcher's observations, the girls appear to be well-balanced young people with a zest for life and a preparedness to learn about themselves. There was a widely held sense in the group that they were not really gifted. The parameters of the research did not extend to investigating the cause of this reluctance. The girls' areas of interest and expertise were varied.

Against the backdrop of the two sets of vignettes, Chapter Five presents the findings in terms of the impact of the information literacy framework on the girls' learning.

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# **CHAPTER FIVE:** **FINDINGS**

## **5.1 INTRODUCTION**

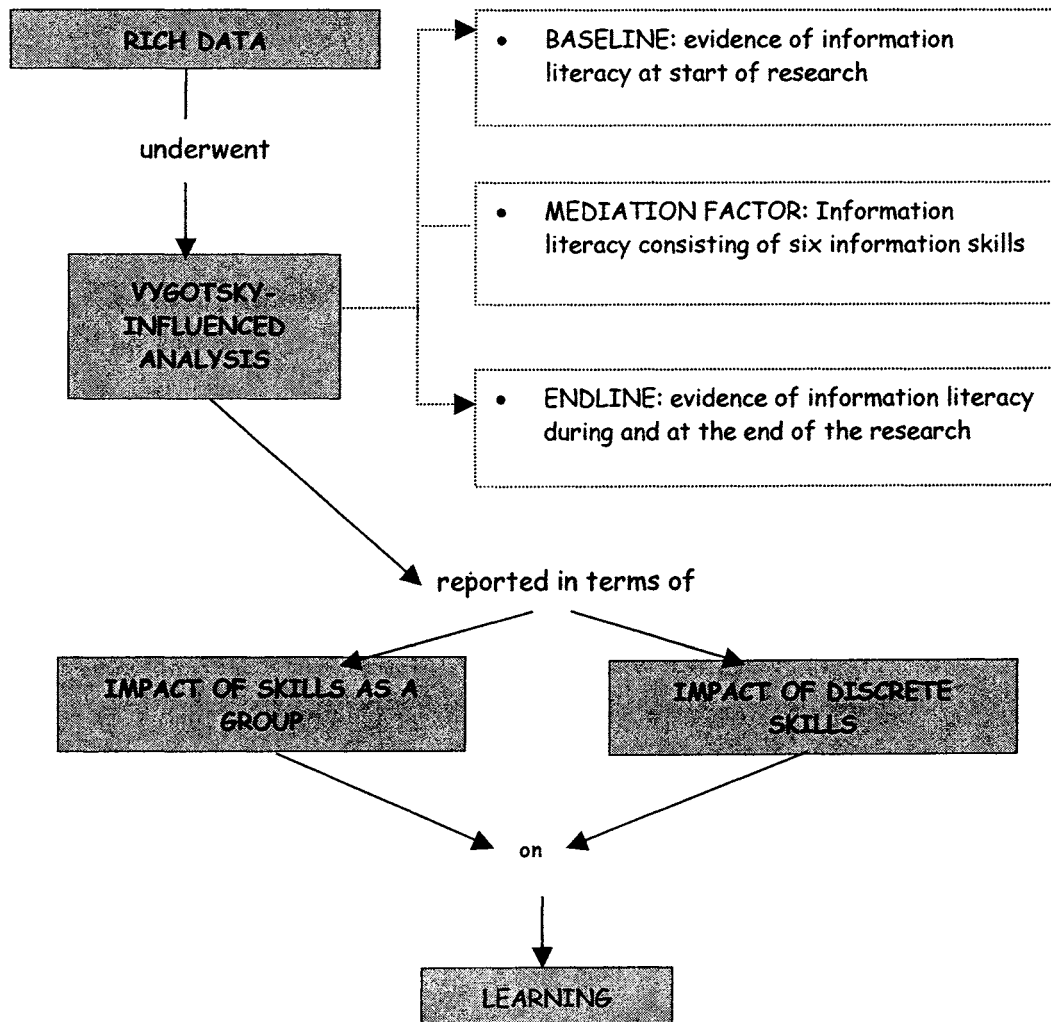
The current research has investigated the impact of an information literacy framework on the learning of seven secondary school students who have been identified as gifted.

Figure 5.1 has two purposes: to show the structure of chapter five, and to provide the framework for the findings of the research.

**FIGURE 5.1**

### **THE STRUCTURE OF CHAPTER FIVE**

Figure 5.1 shows the framework for the findings of the research





The research investigated the impact on the learning of the girls of six information skills that comprise an information literacy framework. The six information skills are:

- *defining*
- *locating*
- *selecting*
- *organising*
- *presenting*
- *evaluating.*

The pattern of the analysis borrows from Vygotsky [1975]. The baseline for the research was determined from evidence the girls provided in early data instruments [Appendix 2] and the endline from instruments administered when the girls had been exposed to the mediation factor (that provided a metacognitive scaffolding) over the research period of the school terms of their Preliminary Year studies, totalling nine months. This mediation factor was the information literacy framework and its six component information skills.

The reporting of the data analysis presented in this chapter varies in quantity from girl to girl, because of

- the varying nature of the responses they made
- the absence of some girls when some instruments were administered.

As a result there is more information for Christina and Helen than for the other five girls. The least amount of information is presented for Lottie because she was absent owing to illness for more group meetings than were the other girls.

Detailed analysis is presented in Sections 5.2 and 5.3. In the former the six information skills of the information literacy framework are analysed as a group, and in the latter the separate component skills come under close scrutiny. The analysis was done from these two perspectives because of the richness of the data that resulted from the qualitative nature of the research design. Most of the instruments allowed the girls freedom in the content of their responses; the perceived advantage of this freedom was that they could

report freely about their experiences working within the information literacy framework. This freedom resulted in information about the skills being reported at different times and in different ways. The researcher considered these differences and decided that the most effective way of organising the results of the data analysis was to establish two sets, as indicated above, viz., one set of analysis deals with the information skills as a group, and the second set deals with the six skills as separate entities. It should also be noted that there was no constraint on the girls being required to use and develop the skills in a linear fashion. As well as presenting the analysis of the skills, Chapter Five also presents concluding observations using the model based on Vygotsky about the way the learning of the girls changed throughout the research.

It should be noted that there is some interchanging of the words *process*, *step* and *skill* in the quotations from the girls. However there appears to be no misunderstanding of which are the parts and which is the whole in terms of an information literacy framework and the component information skills.

Appendix 3 contains two sets of information particularly relevant to an understanding of Chapter Five.

First, Appendix 2 contains a copy of each of the data instruments. Appendix 3 contains a chronological listing of the data instruments showing:

- a number indicating the chronological position of the instrument, and the date on which it was administered
- an identifying code
- an identifying title

The method used for referring to data instruments is shown in Section 3.4.2, appearing as Figure 3.4.

## **5.2 IMPACT OF AN INFORMATION LITERACY FRAMEWORK CONSISTING OF SIX INFORMATION SKILLS.**

### **5.2.1 Impact on Christina**

#### **5.2.1.1 Changes in attitude to the framework**

At the beginning of the research [4 IL- November 1995] Christina was asked to indicate how she perceived herself as a user of information. On the data instrument indicators of a person's use of each of the six Information Skills were listed. The girls were asked to mark their perceptions of themselves as users of information, on a five-point continuum ('very poorly'/'poorly'/'undecided'/'well'/'very well'), and they were asked to comment on themselves as users of information. Christina responded that she used the information skills:

- 'very well' in 32 items;
- 'well' in 10 items; and,
- 'undecided' in 4 items

These responses indicated that at the start of the research Christina considered herself competent in using the six information skills. Although she was not asked, she probably would have categorized herself 'information literate'. In part this result might have reflected Christina's attitude to new methods and to new techniques. Three weeks after having completed the exercise using the five-point continuum mentioned above, Christina wrote that when the research began and it was apparent that information skills were going to be a key focus in the group meetings, she was:

*a bit wary of them as I like to be left to my own ways and devices*  
[51 GJOU November 1995].

Even two months into the research Christina maintained a degree of scepticism on the matter of information skills. She did not consider that they played a significant part in her learning because:

*[using information skills] is automatically done when answering a question* (8 IL- February 1996).

Three months later Christina's comments were different from her earlier ones. In a self-evaluation of the second research task Christina reported on the impact of working overtly within the information literacy framework:

*I also find it easier to complete a subject assignment while mentally going through these skills, like they are steps [34 IL- May 1996].*

By the end of the research, Christina wrote:

*I have matured in my writing and in my use of the information skills. I now understand their importance and relevance and am willing to openly use them (44 IL-June 1996).*

One could say that by the time she reflected on her learning in this way, Christina had internalised the information literacy framework into her process of learning. There is quite a shift in her responses on these three data instruments (in the journal entry, Minute paper, self-profile and self-evaluation as a learner). Christina moved from having an impression that being conscious of working within an information literacy framework was irrelevant to her as a learner. After having worked within the information literacy framework for the three terms of her Preliminary Year studies, Christina acknowledged that consciously working within an information literacy framework had an important and relevant impact on her as a learner. This shift occurred over time, and it involved her being willing to observe her own learning.

There is some interchanging of the words *process*, *step*, and *skill* in Christina's writings. However, there appears to be no misunderstanding of which are the parts and which is the whole in terms of an information literacy framework, information skills, and steps in the process involved in the use of information.

#### **5.2.1.2 Recognition and use of the framework.**

Not long after the beginning of the research the group discussed the notion of information skills and the relevance of these skills to their learning. In a journal entry Christina expressed not only her opinion of the place of recognising the information skills that underpinned this particular framework of learning, but also what she perceived to be her opinion of the work that the research group was doing:

*we came to the general conclusion that although we all feel that IS are relevant we also feel that we complete them unconsciously and thus we don't need to concentrate on them [51 GJOU-November 1995].*

The spirit of this opinion had been presented two weeks prior to the group discussion:

*I feel I do them all in one way or another* [51 GJOU- -November 1995),

and in a subsequent journal entry soon after that entry Christina expressed almost frustration at the place that the structure of the information literacy framework had in the research group's activities:

*this takes time I could be spending looking into sources*  
(51 GJOU-November 1995).

When the research resumed after the 1995-1996 Christmas holiday break, Christina's mood of frustration had been replaced by one of resignation:

*It seems that IS will probably play a large part in the course*  
[8 IL-February 1996].

### **5.2.1.3 Ability to recognise impact of the framework on learning**

In one of the last entries in her journal Christina reflected on the impact that the information literacy framework had on her as a learner. First she stated the position at which she had arrived in terms of the framework, and she indicated an intention that this framework would become part of her future learning:

*I now see them [information skills] as extremely useful and beneficial and I intend to use them in all my future ventures ...* [51 GJOU- May 1996].

Then she continued reflecting on the difference between her current position as a learner and her position at the beginning of her involvement in the research group:

*At the beginning of the course I was slightly annoyed at the amount of time spent on the IS. I felt that I already personally completed IS unconsciously and unintentionally when completing tasks. I now know this is not true as I was often not completing all the steps*  
[51 GJOU-May 1996].

Finally Christina indicated a clear confidence of what is entailed in this information literacy framework:

*I now feel confident in using these skills in my other areas of study as I understand their relevance as separate processes as well as their relevance as a group of information skills* [51 JOU-May 1996].

From what she wrote in a journal entry three days later, it was clear that the skills she had developed as a user of information within the information

literacy framework of the research group had become part of her perceived learning style:

*I believe this course has been of great use to me as I find myself using the skills acquired here in other subjects* [51 JOU- May 1996].

This indication was reinforced in a journal entry a week later:

*I see it as a system that I can use in whatever I do.... So any type of learning I do it's just a basic framework that I see as effective* [51 GJOU-June 1996].

This journal entry supported a notion Christina had intimated in an interview that part of the comfort she experienced as learner within the information literacy framework resulted from the benefits it gave her in her learning as well as in terms of her self-esteem:

*Once you know how to use the framework you get more confidence* (37INT- May 1996).

#### **5.2.1.4 Impact on the quality of planning**

One of the data instruments administered at the beginning of the research was a planning sheet, one of three such instruments used throughout the research. The purpose of the planning sheets for the researcher was to provide information on whether or not information skills featured in the girls' planning. The planning sheet was so structured that in completing it, the girl was to write a free, open-ended response. Two data instruments – comparative analysis sheets- grew from these planning sheets. The comparative analysis sheets required the girls to reflect on similarities and differences in the way they planned research tasks. In the first Comparative Analysis sheet they considered planning sheets 1 and 2, and in the second they considered planning sheets 1 and 3.

In the first of the planning sheets [1 IL- November 1995] Christina provided evidence that she had an understanding of the locating skill, and that she planned to seek information from a variety of sources. She planned to select the material she finally would use on the basis of the relevance of its content to the task in hand. She made mention of the various ways she would present the material, but these were listed, and they were not ordered in any particular logical sequence.

In the second planning exercise Christina identified and articulated the importance of the *defining* skill. Reference to the task in hand had not been mentioned in the first planning sheet. She put as her first planning activity that she would:

*analyse the question so as I can understand it completely and then move on to begin to answer it.* [23 IL- April 1996].

The *locating* skill was treated with similar understanding. She planned to gather information as it related to her definition; then to revisit the question to make sure that her information collection was relevant; and finally to collect more information, again from a variety of sources, to fill in gaps of information.

After she compared and contrasted planning sheets 1 and 2, Christina said that:

*Information skills are important steps to go through when planning an assignment as they do clear up what you want to do.* [22 IL- April 1996].

Whereas in the first planning sheet Christina was somewhat random in her submission, in the third planning sheet her ideas were ordered. She wrote her notes under headings, these being names of five of the Information Skills. The sixth - *evaluate*- was not written under that heading, but its essence was included in her notes:

*consider all of the information in terms of it...[it' being the task in hand]* [32 IL- May 1996].

When contrasting the third planning sheet with the first, Christina noted:

*My third Planning sheet is much more structured, to the point ... specific ... I have kept my locate, select and organise processes separate ... [in the third one]. ... it is much easier to complete each as a separate process [the third one]. ... is much shorter and less long-winded ... easier to follow and complete* [36 IL- May 1996].

In the first planning sheet Christina made no reference to the information skill of *defining*, but in the third planning sheet she did, and she made the comment:

*now I consider this as an important step in the process when I'm doing a task* [36 IL- May 1996].

### **5.2.1.5 Impact on quality of research tasks**

Each of the three research tasks that Christina completed as part of the course was answered, in that she addressed the terms of the task. There was a noticeable difference, however, in the clarity with which information was presented in these tasks.

Prior to joining the research group Christina had considered that the major resource for research tasks was books. In working through the first research task she branched out and chose to explore the topic by means of a profile. Her presentation of information gathered in this way tended overall to be descriptive rather than analytical. However, there were instances in which she made real attempts to validate her use of different source material.

The SAC task asked her to investigate the topic of 'Becoming an adult in my culture'. Christina included copies of certificates which marked different stages in the life of the person whose profile she presented. With the Birth Certificate she included the comment:

*this document is of great importance because it is both a proof of birth and of age ... shows whether you are considered an adult ... in terms of the law* [20 IL- April 1996].

In commenting on the Certificate of Baptism she said it indicated membership of a particular group and that:

*the influences and laws which accompany this effect ... the ways people think, talk and act* [20 IL- April 1996].

Copies of other documents were presented without specific comment, and their inclusion was justified with the covering comment:

*The members of my culture see all of the things I have included in the profile as being important to becoming an adult. They are all fairly self-explanatory ...*[20 IL- April 1996].

In Christina's second research task, there was evidence of her being more confidently analytical in her overall approach to the set task. She not only continued to locate information from various sources and comment on it, but also she compared sources and tested one against the other.



In Christina's response to the second SAC research task she competently synthesised the information she chose to use. She presented a personal response, supported by well-chosen information. Her response indicated that she knew she had worked within an information literacy framework. In the third interview Christina was asked to comment on the way she did her third research task, and she stated:

*In organising it is necessary to synthesise, and in doing so make the information become your own without adding opinion [48 INT- July 1996].*

When asked what grade she thought her research project deserved, she wrote:

*a fair grade, considering both my effort and time [19 IL- April 1996].*

Prior to their submission of their third SAC research task, the girls were asked to comment on any differences between the way they approached the first research task they did at the beginning of their time in the research, and the way they were doing the current one.

Christina noted that the differences between the two approaches were many and that there was a connection between her changed way of learning and the way she now worked within an information literacy framework:

*There are many differences and most of these occur with my usage of information skills [36 IL-May 1996].*

In this same data instrument Christina was asked to comment on differences between the way she approached and did assignments in other subjects at the start of the Preliminary Year and the way she was currently doing them. Her response was that the information skills were now incorporated into her learning, and she accounted for this change in these terms:

*my ideas have grown ... I've been exposed to 'wider' thinking, and to looking for other answers... I spend time doing useful and important things for the assignments ... I have used the skills in other subjects ... especially the synthesising [38IL- May, 1996].*

Christina not only experienced that the six information skills had become part of her learning but also that they impacted on it in a much broader way.

### **5.2.1.6 Summary**

From the comments that the researcher extracted from the information on the data instruments that Christina completed, it is apparent that Christina not only had adopted an information literacy framework for her SAC curriculum work. She had also recognised that she was using it with significant benefits in her learning beyond the curriculum area of the research.

### **5.2.2 Impact on Danielle**

#### **5.2.2.1 Change in attitude to the framework**

In the results for her Year 10 studies, Danielle was placed in the top 12% of her cohort. Except for one subject, Danielle's teachers commented on her keenness to achieve well. In the one component of one subject in which this was not the case, the comment called for more consistent effort. Danielle did not continue with that subject when she entered the Preliminary Year.

At the beginning of the research, Danielle expressed the opinion that she did not need to be schooled in the information skills, because although she could not actually name them, she worked her way through those skills automatically when she was doing her work. She believed that the group generally agreed with this opinion:

*the dominant opinion [in class discussion] was that IS were used but indirectly ... it is just an automatic reaction when doing work ...*  
[5 IL- November 1995].

The 'discussion' referred to here occurred as a shared reflection on the process. The girls had recently completed and submitted the first of the planning sheets. They were asked whether or not they were finding the information literacy framework apparent in their learning. During the discussion a concern was expressed that we were not really very far into the SAC course because we were devoting so much time to the information skills  
[52 RJOU- November 1995].

Seeing that the concern among the students indeed was firmly held, the researcher thought it deserved her special consideration, in case she had allowed her research to take over the meetings of the research group. After reflecting on the issue and discussing it with her supervisors, she decided that this was not the case. The skills involved in the information literacy

framework that is an integral component of her research, are not dissimilar to the skills of social literacy - and achieving a level of social literacy is an aim of the SAC course [1995].

Even though her scepticism was firmly held, Danielle followed through the commitment she had made on joining the research. As the research progressed she experienced a changed awareness about working within the information literacy framework. Halfway through the research Danielle indicated that she now used the information skills, and that she had observed advantages in so doing:

*'With greater ease, and I planned my work better with them, I kept to schedule, and I presented with the help of a computer [40 IL-May 1996].*

Danielle's earlier submissions had been handwritten and for this one she used a word processor, and incorporated sub-headings as an organisational means.

Two months later, at the end of her time in the research group, Danielle said:

*It's a good structure. When asked what she meant by 'good', she explained: 'You've got something to keep you relevant, and before you say the task is complete you have specific things to look for in your work [48 INT-July 1996].*

#### **5.2.2.2 Impact on quality of research tasks**

At the beginning of her involvement in the research, Danielle was required to do a planning sheet for the first research task. The plan she submitted had eight steps. In order these were:

- reading;
- group information gleaned from the reading;
- summarise the information;
- conduct interviews;
- write a response;
- further summarising;
- deciding on format of presentation.

Early in the research, Danielle wrote:

*I would not only do one culture but a range, ones in countries that have visible differences [1 IL- November 1995].*

Where this was written would suggest that it was a redefinition, a looping back to the original definition, but in fact it was the very first attempt at a definition in the planning exercise. This statement, coming as it does well down the list of planning steps, indicates recognition that her initial collection of information from resources was a little random.

The task that Danielle did from this planning sheet was descriptive. She based her response on interviews in which she asked the subjects their opinions on matters related to the topic area. She noted their responses, but there was no analysis of them, no real drawing of any conclusions.

During the course of the research Danielle expressed thoughts about herself as a learner within the information literacy framework, beyond SAC, noting:

*I can always see my faults at the end. I thought I was prepared. It was the first time I had actually prepared myself, and actually structured my assignment and had the time to do it [39 IL-May 1996].*

In a follow-up discussion Danielle was asked to explain what she meant by 'the first time'. Her reply was that it was the first time she had consciously used an information literacy framework in doing an assignment. Danielle developed the ability to make a judgement on the way she was organising her work. When she received back a task from the teacher, she evaluated her own work, and realised an area of oversight that had gone unnoticed in the teacher's assessment of the task:

*Yeah, I did use them and I saw where I had not completed the task. She [the teacher] over looked it [4 IL- November 1995].*

From being in the research, and working within an information literacy framework, Danielle developed the ability to focus effectively on the task at hand, to work through it with greater understanding, and to achieve a satisfying result. This 'understanding' is a key difference that Danielle noticed about herself as a learner. In the third interview she explained:

*... so I go through the information, select what I need ... [Before SAC]. I'd probably do along the same lines but not with as much understanding of what I was doing so I'm not as confused now and I can follow pretty solidly, I think, to get the right result [48 INT- July 1996].*

This comment of Danielle supported one she had made a couple of months earlier:

*... without IS I would have been all over the place trying to organise the work, trying to get it all together which perhaps might result in something that might have been appropriate. Yeah* [18 INT- May 1996].

What Danielle was coming to was a realisation that her learning was a dynamic process over which she could exert control. This realisation was evident in comments she made on noticing where improvement in what she had written was needed; on gaps in her research work; and, on improvement in her work.

### **5.2.2.3 Attitude to information skills of the framework.**

Danielle had stated in an early journal entry that

*I use them without thinking about them* ('them' being information skills.) [51 GJOU- November 1995].

In the second interview Danielle was asked if she saw any benefit in systematically working through the information skills. Danielle's response was:

*By doing these sheets I realised where improvement is needed.* [37 INT- July 1996].

The 'sheets' she referred to were SAC-based sheets [appendix.: IL-25/26/27/28/ 29/ 30 – May 1996 and they related closely to information skills. Each girl had to map her progress through her research task to date, in terms of:

- how she responded to the requirements of the task;
- what she thought were possible sources of information;
- ascertaining gaps in personal knowledge that needed to be resourced;
- planning ways to choose information from the resources;
- deciding how to use the resources she found; and,
- deciding what she should record.

Five months later, Danielle indicated that the use of information skills had helped her to improve in learning, and that they had become part of her learning framework:

*These skills helped me to assess my progress with the task and to see what I still had to do* [19IL- April 1996].

The shift in thinking from her claiming automatic use of the skills to considering them as part of her framework of learning suggests a real understanding of what working within an information literacy framework implies. For Danielle the matter was now more than simply working through a checklist in a mechanical way, but rather it was a process, which she understood, and about which she could articulate:

*when I come to my organisation and think ' ah I've missed something out ' I have to go back and see what was required by the definition and then select, locate and select more information before I can continue on, so I would say the looping ...then you can actually double check.....Well hopefully I wouldn't have to go back to defining as much as to redefining because then I would have to start all over again. I think you could pretty much go back to all but in different degrees - you wouldn't want to research all of your information all over again because then that means you have done something very wrong... if I actually have a clear idea of what I need, of what has to be done with the definition, then I can hopefully see where the faults are, I can hopefully see to get more information [48 INT July 1996].*

#### **5.2.2.4 Use of the framework in research (stage 3)**

On completing her HSC in 1997 Danielle accepted a tertiary offer to study a double degree- Bachelor of Design (Interior Design)/ Bachelor of Arts (International Studies)- and after one year she decided to focus on the Design degree. Danielle encountered the information literacy framework in her Interior Design course, where the teacher

*showed us the steps. of information skills, such as defining the topic, searching and locating information, and evaluating the response which we got ... this was not new to me, from the group [research group] at Woolwich [50 IL- November 1999].*

As well as working within a university course that is structured within an information literacy framework, Danielle has found the information literacy framework to be of continued benefit to her privately:

*...when completing my class assignments, in the form of reports and essays. When at the library I use their search methods on the computer. In my own research, when using selected texts, I use the information skills to locate the information I need and to select from it and to present it. .... They [information skills] are silent mechanisms which I undertake to complete my studies [50 IL- November 1999].*

#### **5.2.2.5 Summary**

It is apparent that Danielle benefited from working with the information skills in the information literacy framework. From believing that she was an automatic user of the skills at the start of the research, and not in need of any

work on them, she later expressed the benefit of overt instruction in their use. The quality of her work improved, she found the skills to be a useful framework for learning throughout her daily life, and she developed a metacognitive awareness.

### **5.2.3 Impact on Gloria**

#### **5.2.3.1 Change in attitude to the framework**

Gloria succinctly expressed her original and her changed attitudes to working in the information literacy framework 12 months after the research group met regularly.

*I thought we did not have to work on Information Skills. However, I now realise that we did [49 IL- September 1997].*

The thought expressed here is quite different from statements Gloria made earlier in the research. The differences suggest a developing change in understanding of this particular framework of learning. She began to develop an awareness of herself as a learner, shown in the data collected in terms of the impact on her learning of an information literacy framework.

At the start of the research, when Gloria was presented with what Information Skills were, her initial comments were that she had developed them, that she had incorporated them quite well in her learning [4 IL- November 1995 and 5 IL November 1995]. Perhaps part of the challenge that the research presented to Gloria was that the information literacy framework involved a change in learning style. Whatever the reason, three months into the research Gloria stated that she disliked change in learning techniques, and in ways of working [7 GIF- February 1996]. According to Gloria she was a competent user of the skills: that simply was the way she did her work.

By the time a further three months had passed, Gloria had changed this opinion. By the time she handed in the first SAC research task she indicated that she was open to looking at alternative ways of working. In a journal entry she made retrospective comments about the first assignment she had recently submitted:

*It was also interesting to see how people presented their assignments. I noticed Lottie's in particular was very well-presented and seemed as though she had put a great deal of work into it. I also noticed that I was the only one to have a pictorial representation... I found that writing*

*became quite difficult and that I could express myself easily with pictures.* [14 IL- April 1996].

The term 'pictorial representation' is a little grander than was the reality. The arrangement of clippings on the poster appeared to be random, and there was nothing written to suggest their relevance to the research task. The only source used in the written submission was questionnaires. There was a glimmer of analysis at the end of the written submission. This was part of the assessment for SAC, and drew from the researcher-as-marker the comment that the intention behind presenting the poster was not clear.

At the end of the research, in her final journal entry, Gloria wrote:

*In my first assignment my only source was my questionnaires which were not very in depth. Already I have located many sources for my Power and Authority assignment...When thinking about my first assignment it looks as though I put little effort into it. However it wasn't so much that. I did not really know how to use the information skills* [51 GJOU- June 1996].

Three points deserve comment. First, there is an awareness of depth in her work. Secondly, there is a preparedness to use, and to see the worth of using varying sources of information. Thirdly, there is an indication that learning within an information literacy framework has merit. This is quite different from:

*I understand we are working on Information Skilling, however, I'd like to work more on societies and cultures as we have done quite little on this* [6 GEN- February 1996].

where there was a concern that the group get into the 'real thing'-presumably, the content rather than the process.

### **5.2.3.2 Impact on the quality of research tasks**

The changes to her learning indicated in Section 5.2.3.2, and the developing change in understanding can be seen by considering the level of competence Gloria displayed in two groups of the data instruments:

- when using information, specifically in the Planning sheets and research tasks, and this appears in 5.2.3.2;
- in her reflections on herself as a user of information. These reflections appear in her interview responses and in the written data instruments, and are presented in Section 5.2.3.3.



The purpose of the planning sheets [1 IL, 23 IL and 32 IL] was to generate information that would indicate whether or not information skills featured in the students' initial planning of research tasks. The differences in the work submitted could have been predicted by the differences in the planning sheets.

In the first of the planning sheets, Gloria showed little evidence of actual planning. As information users move through a task, sometimes their movements through the skills are linear, and at other times they revisit skills already employed. Gloria followed neither of these patterns. She highlighted *researching*, *selecting* and *presenting*, but what she planned to do under these was quite random.

In the third of the planning sheets, she made comments that indicated a competence in her use of five of the six skills. For *locating* Gloria planned not only to investigate secondary sources, but also to use primary sources. To achieve her overall aim of showing where the statement did and did not apply, she planned to set out examples in tables, then analyse them by seeing if:

*things that looked parts really were, and not actually wholes themselves*  
[32 IL- May 1996].

Finally she planned to do an overall evaluation of what she had found, and the result of this became the basis of how she would organise the information she decided to use in her presentation. Her planning in terms of *presenting* was a little thin, in that she did not define the community to which she would present the information, but she did write of her concern that the information be *appropriate and attract the audience's eyes* [32 IL- May 1996],

The differences in the quality of work in the three research tasks were quite marked. The first SAC task was characterised by:

- a distinct lack of depth. Only one source of information was used, that being questionnaires that Gloria devised.
- no effective ordering of information. Work was descriptive, in the main, with a small analytical section at the end of the project. Even this was a little less than scientific, as evidenced in these comments which follow the

opinion that reaching the legal age and being an adult do not always coincide:

*Unfortunately I have not seen such behaviour in Mark and Paul. This is unfortunate as they are legally classified as adults and may be mentally incapable of making certain decisions which will enhance the running of our country, Australia* [47 IL- July 1996].

- and, an almost careless form of presentation. Comment on the poster has been made already. The written component of the presentation lacked organisation that enhanced the addressing of the research task topic.

Each of these deficiencies was overcome by the third SAC research task. Resources - *albeit* limited - were used, and cited. Work was organised and developed within useful sections. Care was taken with the presentation. In a data instrument completed when the research task was submitted, Gloria wrote:

*I need to practise my locating skills. I feel I could have got more information for this assignment. I also need to practise my organising skills. I could have done more tables ... However, this could come down to a lack of evaluating processes throughout the assignment. It was also due to a lack of organisation of myself as this assignment was quite rushed* [39 IL- May 1996].

When asked what grade she would give her work she wrote:

*It discusses power well, and shows various power structures. However, there is little on authority, and the examples from America could have been from somewhere else, as it is too similar to that of the Australian culture* [39 IL- May 1996].

### **5.2.3.3 Impact on quality of learning**

Three interviews were conducted throughout the course in April, May and July 1996 and are coded [18 INT- April 1996, 37 INT- May 1996 and 48 INT- July 1996]. The interview guides appear in Appendix 2. The interviews were conducted at the College, in the Library and in the Information Laboratory. Given the somewhat contrived nature of the interview situation, efforts were made to create a relaxed atmosphere, so that the students would not feel unnecessarily intimidated.

The information presented in the interviews complemented the areas of information collected in other instruments. It addressed:

- the girls as people, as students, as learners, and as users of

- information;
- giftedness; and,
- information literacy framework

There was a considerable difference between the ease with which Gloria spoke about an information literacy framework in the three interviews. In the first and second interviews, Gloria named four of the information skills: *organising, defining, locating* and *evaluating*. In the third interview, she named them all, mentioned that one often looped around the skills. When she was asked whether or not she could envisage herself learning within an information literacy framework beyond the research group she responded:

*I just think it's so much easier to organise ...quicker than writing out a lot of information when you can just condense it into a diagram. I do things in steps rather than trying to do it all together. It's going to help me with my other subjects* [37 INT- May 1996].

In the same interview she indicated that when her involvement in the research began, she found SAC to be different from what she expected, because it did not focus on content, but on the process of learning. This impression was echoed in a Minute Paper Gloria submitted early in the research:

*I understand that we are working on Information Skilling, however, I find working on societies and cultures far more interesting* [5 IL- November 1995].

The impression was echoed later in February 1996, as Gloria grappled with the notion that the information skills were integrated in SAC. This preference was reversed by the third interview:

*I mean it was interesting to look at all of the cultures and all the age groups and all that but it was also interesting to look at all of the skills* [37 INT- May 1996].

The reversal suggests that Gloria had developed openness to the idea of working within an information literacy framework. Her making the comment in the same interview that both her learning and her assignment work had improved because of practice in using the skills supports this opinion of her. She said that what she would most likely carry ahead from her involvement in the project were:

*the skills because you can use them in a wide variety of things whereas the content you can't use as much* [37 INT- May 1996].

In a data instrument issued while the group was working on the third research task, the participants were asked to comment on any differences noted between the way they had approached and were doing this task and the way they approached and did the first task. Gloria noted:

*I have used a wider variety of sources in this assignment than I used [in the first one]. I only used questionnaires and formed my own analyses from them. However in this assignment I have sent away for information as well as using newspapers as sources [36 IL- June 1996].*

Eight months after the research group's last meeting in the research (stage 2) period, the girls commented on their progress in various curriculum areas, and two of Gloria's teachers responded in terms of her ability to use information. The first one wrote that:

*she can retain information and use it in various situations ...*  
[45 REP- March 1997].

and the second wrote that:

*... particularly in class discussions she communicates ideas well and she is able to add to information that other students give*  
[45 REP- March 1997].

These comments indicate that Gloria was able to transfer information and skills from task to task, and that she could identify gaps in sets of information.

In terms of weaknesses that Gloria displayed as a user of information one teacher wrote:

*Gloria does not have noticeable weaknesses while using information*  
[45 REP- June 1996].

and the second wrote:

*at times Gloria does not use all of the information given in class*  
[45 REP- June 1996].

#### **5.2.3.4 Use of the framework in research (stage 3)**

Gloria's first preference for tertiary studies was Human Movement and Health Education, and in the year 2000 she was in the third year of that degree. Gloria works within the information literacy framework when studying. When she was asked about her use of information literacy framework two years after she left school, Gloria wrote:

*I have to say that I do use information skills at university, particularly with my essays however some of the skills are not used as thoroughly as others. As usual I leave my assignments to the last minute which doesn't leave a lot of time for me to evaluate my assignment during or after I have completed it [50 IL- November 1999].*

She might not use the evaluating skill, but she has retained two attitudes towards it: she implies its worth, and she recalls that as a user of information she loops her way around the skills. She did not mention any of the other five information skills; she alluded to them when she acknowledged that she did not use the *evaluating* skill as thoroughly as the others.

#### **5.2.3.5 Summary**

An interesting point about Gloria's early attitude that she was quite satisfied with how she worked and confident that she was information literate, was that she did not recognise that what she submitted for the first research task was so poorly done. Throughout the research (stage 2) period, as she was developing competence in the utilising of the information skills, the quality of her work improved. Gloria carried this framework of learning into the HSC year and beyond.

#### **5.2.4 Impact on Helen.**

##### **5.2.4.1 Change in attitude to the framework**

At the beginning of the research, Helen was somewhat sceptical about the value of working within an information literacy framework. Her opinion was the same as the group's at this time:

*IS are very obvious things that I think most people do naturally*  
(6 GEN- February 1996).

The group at the beginning of the research (stage 2) period held this opinion as indicated by the following entry in the researcher's journal:

*I could feel the relief when this was raised, and they nodded in agreement that they did not need the formal treatment of the framework*

*because working with the skills was automatic to them and their learning* [52 RJOU].

Helen's opinion on there being no need to focus in information skills was held strongly, and underpinned a somewhat resigned journal entry she made close to the start of the research (stage 2) period. In this she commented on possible benefits that this information literacy framework might have for her- even if it was an indirect rather than a direct one:

*may be something I'll get out of this course is to be more tolerant of new learning techniques* [51GJOU- November 1995].

Seven months after this less than enthusiastic opinion of the worth of an information literacy framework Helen noted two points about the impact of the framework on her learning. She found that the skills were transferable and she deliberately used them in subjects other than SAC, and they assisted her in more effectively answering questions. In a journal entry Helen reflected:

*I can honestly say I have gained quite a lot. At the beginning I thought IS were pointless and a waste of time. Now I can see that they are useful and since I have adopted them into my learning techniques I feel I have answered questions a lot more thoroughly. I used to only use them in SAC but now I use them in most subjects, especially Modern History* [51 GJOU- June 1996].

#### **5.2.4.2 Predicted use of the framework**

In the third interview towards the end of the research (stage 2) period Helen indicated two of the benefits that she had derived from working within the information literacy framework. She first referred to the use to which this framework might be put, stating:

*I can see I will use IS more in subjects than in general living* [48 INT- July 1996].

The second benefit related to her self-esteem as a learner, as expressed in this comment:

*Being in the group has made me more confident, now I know the skills and how to use them* [48INT- July 1996].

#### **5.2.4.3 Impact on the quality of research tasks**

The work that Helen did in her SAC research tasks provides support for her perception that working within the information framework helped her with addressing them more efficiently. In a journal entry made while she was working on her first SAC research task Helen tentatively wrote of using information skills that:

*With IS I think I will improve them just as I go along*  
[51 GJOU- November 1995].

This comment reveals a possible confusion Helen might have had in understanding the framework, given the expressed opinion cited in 5.2.4.1.

Later on, in early March 1996 she acknowledged that working with the information did not really 'come naturally' but after having worked within the information literacy framework, she sensed a greater level of competence in her use of the skills. She expressed this metacognitive observation as follows:

*When we first started the course I found it quite difficult to answer questions like What is it I need to find out? What sources can I use?...Now I find it reasonably easy to answer these [questions]*  
[51 GJOU- November 1995].

In a planning sheet related to the first SAC task the approach Helen outlined had no clear, realistic sequence. To address the SAC syllabus issue of becoming an adult member of a culture she planned, in order, to do the following:

*to read newspaper articles of the culture... interview people from that culture... join in their cultural activities... take photographs of rituals... do research in libraries to obtain a better understanding of the culture...set up a guest speaker... organise a speech*  
[1 IL- November 1995].

This disordered planning was setting up Helen for a submission that lacked order and analysis. She divided her research task into two sections. The first was a collection of largely unsubstantiated comments on her culture. The second was a copy of ten sets of responses to a questionnaire she had issued. There was no attempt to select information from the questionnaires, and yet in the responses there were points made from across generations that could have been discussed for their contrasting views. This potential for the responses to the questionnaire to be source material was not considered.

In the opinion of the researcher part of the weakness in Helen's research task was that she took a global view of its requirements, resulting in an unstructured reflection only loosely related to what was required. In an interview six months later Helen indicated that one of the effects of working in an information literacy framework- not only within SAC but also in other areas as well- to be:

*was I looking at questions more thoroughly... when answering a question ... split it up into different tasks* [37INT- May 1996].

Evidence that she was beginning to develop competence in answering questions became evident in a later SAC research task [47IL- July 1996]. In this task Helen addressed the sections of the research task and although there was still a degree of fragmentation, there was an attempt by her to analyse the information gained from responses to questionnaires that she issued. In this research task she also called on information from other sources, and attempted to use this information - rather than simply present it.

#### **5.2.4.4. Ability to note change in learning**

Towards the end of her time in the research (stage 2) Helen was asked to comment on any differences between the way she was approaching the current SAC task and the way she approached the first one. She said that two of the things that she noticed were that she devoted more time to defining the terms of the task in the current one, and that she was more selective:

*I now organise my information ... rather than just throw in as much information as possible.... I was wasting a lot of time putting in pointless information and I should have filled the space with relevant information* [36 IL- June 1996].

Helen's comments on her work in other subjects were similar to those made with reference to SAC:

*Now I can see I have to pick out relevant facts. I now try to synthesise my information especially in English and in Modern History* [36 IL- June 1996].

Perhaps the clearest, most concisely expressed comment on the impact of the information literacy framework on her learning comes from the third interview in which Helen said:

*At first I thought the IS were a waste of time... now I think I do the task or answer the question a lot more thoroughly* [48 INT- July 1996].



#### **5.2.4.5 Use of the framework in research (stage 3)**

While she was in her HSC year, Helen was offered a cadetship at one of the large accounting firms in Sydney, and she took up this offer, coupling it with part-time study in a Commerce degree. After a short time she left that firm, and in 2000 was studying full-time, and working part-time. She has re-ordered her study pattern from a double major in Accounting and Finance to a double major in Accounting and Industrial Relations. She has also moved in her part-time employment from accounting to industrial relations. The shift in her study pattern and her place of employment she explained was because *I missed the people contact* [50 IL- November 1999].

Helen's response to whether or not she found the information literacy framework useful in the research (stage 3) period was somewhat uncertain:

*My initial response was no, but after thinking about it I probably have. I use them more now since I have taken up Industrial Relations. This subject involves essay writing and discussions rather than numerical responses* [50 IL- November 1999].

While she expressed the feeling that she used information skills without realising it, she also said:

*If I did focus on each step individually I would probably do a more thorough job, but most of the time I don't have the time to do this* [50 IL- November 1999].

#### **5.2.4.6 Summary**

There is evidence in Helen's written work that working within an information literacy framework had a favourable impact on her learning. She developed competence in information utilisation, processing information effectively and efficiently to respond to tasks. Helen moved from a reluctance to see any benefit in working with the information skills specifically, to recognising that such close work assisted her learning. Three years after the research (stage 2) finished, after reflection she was prepared to acknowledge the benefit of the framework.

#### **5.2.5 Impact on Lottie**

##### **5.2.5.1 Change in attitude to the framework**

At the beginning of her involvement in the research group, indications were that Lottie was not operating within an information literacy framework. In the first planning sheet [1 IL- November 1995]. she focussed on presenting and on

locating, with little reference to defining and selecting, and none to organising and evaluating. However, in an instrument she completed on the same day [4 IL- November 1995] one that asked her to rank herself as a user of the information skills, she ranked herself highly in most of them. This apparent contradiction reflected her expressed agreement with another group member's claim that the skills were just a natural part of learning and did not really warrant separate attention. After she did the comparative analysis of the first and second planning exercises Lottie noted in her journal that:

*my information skills are a lot more specific in the second sheet*  
[22 IL- April 1996].

In the third interview Lottie indicated that working within the information literacy framework had assisted her learning:

*Overall SAC has basically made me more aware about how I go about research, and has probably improved my IS, which will help in Year 12 and debating and public speaking* [48 INT-July 1996].

#### **5.2.5.2 Recognition of impact of the framework.**

In a Journal entry made half way through research (stage 2) Lottie commented that

*I use some of the skills in Modern History. The skills aren't really used all that much in my subjects* [5 GJOU- April 1996].

Towards the end of her research (stage 2), Lottie made the point in an interview that for her as a learner, working within an information framework had helped her

- to become more organised:  
*I think they help ... make things a lot clearer basically...*
- to make her use of available time more effective  
*if you approach it in the steps instead of doing it straight off you know how much work you have got to do ... how much time you are going to need ... it's good for structuring how long you are going to take on an assignment* [48 INT- July 1996].

In a data instrument completed close to the end of research (stage 2) Lottie commented on any differences she noted between the way she approached and did assignments in other subjects at the start of the Preliminary Year and the way she was approaching current ones. She noted three things. First, the information literacy framework resulted in her work being more effectively structured:

*My work has become more structured and the information is much more to the point as I've made sure I've got the information necessary. This is a result of the 'checklist' method of finding resources [36 IL- June 1996].*

Secondly, this 'checklist' method is that which makes reference to the six skills, and questions associated with them. Secondly, the framework saves her time:

*The tasks I have been doing are now taking less time as the information has become easier to find now [36 IL- June 1996].*

And finally working within the framework has resulted in more cohesion in her work:

*This (increased ease in working with information) also effects the final organisation of the task, as the information is now much easier to 'link up' [36 IL- June 1996].*

#### **5.2.5.3 Use of framework in research (stage 3)**

Lottie's HSC results meant that she was successful in starting her preferred tertiary studies, a double degree in Media and Law. She is studying full-time and has part-time employment. She also spends considerable time doing volunteer work and a variety of writing.

Lottie has found information skills useful when she is preparing written pieces for various media, and in her formal studies. In both cases she has found that using the information framework facilitated her research work. In particular she has used the information literacy framework when preparing for publication [50 IL-November 1999].

#### **5.2.5.4 Summary**

Working within an information literacy framework benefited Lottie both in the quality of her work and in her ability to understand the way she learned. She expressed an awareness that the information literacy framework assisted her learning in SAC, and in other subjects, and she predicted it would help her learning in the future.

## **5.2.6 Impact on Sandra**

### **5.2.6.1 Change in attitude to the framework**

At the start of her time in the research project, Sandra shared the opinion of other group members that working within an information literacy framework was something done naturally when doing research, and certainly it was not something that required any real attention. Towards the end of the course Sandra noted:

*I guess by learning about the IS they made me more knowledgeable, so when you are doing any research you can apply them [24 IL-May 1996].*

In the third interview a couple of months later, Sandra commented on the impact of the information literacy framework as a researcher:

*... The skills teach you more about how to go about researching and I guess if you have got those skills and can apply them to your research I guess it makes you a better scholar.*

and as a learner in general:

*... being part of the group gave me more confidence to do assignments using the skills [48 INT- July 1996].*

### **5.2.6.2 Impact on quality of planning**

In a Minute paper that she completed early in the course, Sandra wrote that in her learning, information skills were important for researching, but they did not have to be addressed in any particular order [5 IL-November 1995]. On first reading this comment it might appear to indicate looping, a phenomenon that has been recognised as part of the information literacy framework. However, scrutiny of other comments that Sandra made close to the writing of this Minute paper would suggest that she had not incorporated the notion of process into her learning. In the first planning exercise [1 IL- November 1995], on the topic that involved 'becoming an adult member of a group in a culture different from yours', the first three steps she outlined were, in her order:

- conduct a survey;
- publish findings; and,
- seek information from secondary sources.

Following these was a series of randomly arranged tasks, which appeared to be aimed at filling in information gaps [5 IL- November 1995].

A change in Sandra's learning after she had been working within the information literacy framework is markedly apparent on comparing the first planning with the third one [32 IL- May 1996]. In this data instrument Sandra wrote that she would:

- define the terms of the task
- be open-minded in seeking information
- choose relevant points
- organise them in a way that 'made sense'
- check to see if there were gaps in the information - and seek more information if there were;
- transfer the information into a clear form of presentation; and,
- note the opinions that others offered about what she presented so that I might apply the opinions to other research tasks

[34 IL- May 1996].

Sandra initially might have had some doubt about the focus on information skills in research (stage 2), but even in the first term she indicated an openness to their possible benefit. In a Journal entry in November 1995, Sandra wrote:

*I think the framework will be of a great help in other subjects*  
[51 GJOU- November 1995].

By the time she completed a data instrument at the end of the meetings during research (stage 3) she indicated that this had happened:

*Whenever I get an assignment I can conjure up the information literacy process and know that I have to define, locate, select, organise, present and evaluate ... SAC has taught me how to use the information process and apply it to other assignments. ...* [43 IL- June 1996].

#### **5.2.6.3 Impact on quality of research tasks.**

Sandra's growing competence as a user of information was apparent to the research in the quality of work presented, and to Sandra herself. Sandra noted differences between the three tasks:

*'My first assignment was not as informative and reflective as my second one. The second one was more successful because I used a variety of sources ... I think it was less biased ... in the present assignment ...[the third research task]...I have absorbed different skills and now apply them ...I can now use the information steps confidently now* [36 IL- May 1996].

These observations coincided with the researcher's appraisal of the three SAC research tasks. The first one was superficial, and included no synthesis of the information presented. Organisationally, it lacked cohesion. Sandra's increased competence as a utiliser of information resulted in the third task being integrated, and it was a more efficient response to the task.

#### **5.2.6.4 Use of the framework in research (stage 3)**

Sandra has altered the plans she had in her HSC year, when she applied for BA (Communications). She deferred originally for a year, and now has decided to opt for TAFE and short courses that assist her in developing in a practical way the skills of her chosen profession- journalism. Her long-term plans include the possibility of entering the Bachelor program in Social Science (Leisure). In the meantime she is working in sales and marketing with a view to moving into business/finance/property journalism. She is in the last stages of her part-time Community radio Broadcasting course, and plans to follow this with a course in Information Technology (Computing and Multimedia).

Sandra predicts the demise of print as a major medium, and the consolidating of internet/radio's position as transmitters of information. Not surprisingly, she has moved from reporting in print to reporting on the internet/radio.

In her work Sandra has experienced benefits from working within an information literacy framework. She has found the framework assists her in presenting her information to her audiences in an authentic way:

*so that the data appears newsworthy and visually stimulating to the consumers that we sell our publications and web information to* [50 IL- November 1999].

Sandra did not specify which information skills contributed to this next benefit, but it is likely that the skills involved are *locating, selecting* and *evaluating*. Sandra wrote:

*I find that as a reporter and collator of information for public usage, the information skills have been beneficial in skimming away the crap from the reality* [50 IL- November 1999].

### 5.2.6.5 Summary

Evidence shows that Sandra benefited from learning within an information literacy framework. This was apparent in the increasingly high standard of work she presented throughout the course, and in the metacognitive comments she was able to make. She has been able to transfer the skills beyond research (stage 2) through to her post-school learning.

### 5.2.7 Impact on Vivienne

#### 5.2.7.1 Change in attitude to the framework

Early in her time in research (stage 2) Vivienne made her position quite clear in terms of the worth she placed on working through the stages of an information literacy framework of learning. In an early journal entry she wrote:

*I see these skills as something that students do naturally when looking for information. We do not need to be told to ask ourselves if we understand what we were asked to do, where we can find the information, how we can present it. We ask ourselves this - I see this as too basic to be studying in Year 11 [51 GJOU- November 1995].*

By the first interview Vivienne's attitude to working within the framework had started to change. In her response to being asked to comment on working with the information skills she suggested that she was beginning to research a little more systematically:

*[Information skills] have enabled me to look more closely into researching... rather than just skimming through... I usually just skim through and not really pay much attention...[18 INT April 1996]*

By the end of the research (stage 2) period Vivienne's attitude had changed, and she saw the framework as useful to her learning. In the second interview she said:

*Before I'd just go in there... but now with the steps [the skills] I know what I have to answer. It has [been of benefit] because by actually being able to identify these skills I can work on them and better them and be able to see what each of them involves [37 INT- May 1996].*

Further benefits were expressed in the third interview [48 INT- July 1996]:

- Increased sense of responsibility as an independent learner:

*Ah well, I can actually see how it is not up to the teacher to actually provide me with the information..*

- Ability to focus on the question:

*I think I am more confident about learning actually, because I just feel it is an extra special thing to have done and I think I have been able to*

*approach my work in a different manner. I get the question now, and think!*

- Increased confidence in independent learning:

*As a learner it has made me more interested to be better, to try out different ideas.*

- Comfortable in metacognition:

*I am probably a bit more open-minded, like I can actually look at myself and say, OK, I've done this wrong, and say, where can I better myself next time. I try not to think, I did it wrong this time,' and I hope I do it better next time.*

### **5.2.7.2 Impact on quality of planning**

In the first planning sheet Vivienne listed 12 points of planning, in which she alluded to three of the six information skills. In the first point she stated *Make sure the topic is understood*, which indicates the *defining* skill. Five of the next seven points referred to the *locating* skill:

*Look through books ... go to libraries, computers, people ... find as much information as possible ... look for areas such as new responsibilities ... collect all the information together ...*[1 IL- November 1995].

The other two points in this group of seven - points 2 and 4 on the overall list-referred to choice of areas that she might consider investigating in the task.

The remaining four points referred to the *presenting* skill:

*if presenting the information as a speech ... think of other mediums that could be used in your presentation ...you could hand out information sheets.*

The differences Vivienne noted when contrasting the first planning sheet with the second she completed referred to:

- the shorter time it took her to do the second one:

*I remember it took me a lot longer to think about the first one - whereas in the second one, it came more naturally; and*

- to a change she experienced in her learning:

*I am more likely to look further into presenting now after I have collected the information* [22 IL-April 1996].

### **5.2.7.3 Impact on the quality of research tasks**

The first SAC research task that Vivienne submitted was superficial in its treatment of the topic. Opportunities to develop the definition that she made were not taken up, sweeping statements were made, and no reference was



made to sources other than to handwritten page-length profiles of two people. The handwritten analyses were brief, shallow and somewhat randomly ordered. For example, there were about 250 words devoted to justifying the way in which the task was presented, the profiles appeared, and then there were three pages of conversational reflections on thoughts that the information from the profiles had provoked.

The third SAC research task was quite different. First, it was more effectively structured, with the terms of the task dealt with clearly in the opening section. The second section explored the notions of two of the key terms of the topic of the task. The third section analysed potential outcomes of these two terms. The final section explored three case studies, and concluded with a summary statement *albeit* quite brief. Included with one of the case studies was a copy of information downloaded from the Internet; this was included without any modification, but was alluded to effectively in her discussion.

Vivienne's submission was done on a word-processor, good use was made of style, and she presented the quotation from the research task as a header. A bibliography was included.

Vivienne became aware of this difference that was apparent in her work.

On being asked to comment in the third interview on how her learning had been affected by her use of an information literacy framework, Vivienne said:

*In the power one rather than just answering a task I think - how I can do it - sort of putting more detail or more depth into it [48 INT- July 1996].*

#### **5.2.7.4: Use of framework in research (stage 3)**

Prior to sitting her HSC, Vivienne had accepted a cadetship with one of the large accounting firms in Sydney. She plans to remain with that firm after she has finished her degree. At the beginning of 2000 Vivienne was studying part-time, planning to move to full-time study for the final three semesters of her course. Then after a trip overseas she plans to complete her Professional Year to become a member of the Institute of Chartered Accountants Australia.

Vivienne has integrated an information literacy framework into her work pattern:

*It is only really when I receive constructive criticism or believe that I have gone about producing the work at hand particularly well or particularly badly that I will be consciously aware of the process that I have undertaken* [50 IL- November 1999].

Vivienne identified the part that particular information skills have on her work:

*I regularly use information skills at work, particularly when conducting reviews and investigating the tax implications of a particular client's business circumstances, and looking at the implications of new and existing legislation...*

*I am regularly involved in and aware of the importance of properly defining the task, locating and collecting the required information [Vivienne listed examples of the types of sources she accesses]...organising and presenting the information in a format suitable either for the client or my managers, and evaluating my work (there is a strong emphasis on goals and performance-based appraisals)* [50 IL- November 1999].

From her experience, Vivienne believed that there is benefit to be gained from completing each of the steps that constitute the information literacy process. She wrote:

*in an environment where such skills are extremely important ... especially when your work will be subject to a performance review* [50 IL- November 1999].

#### **5.2.7.5 Summary**

There is evidence to show that Vivienne derived three main benefits from working within the information literacy framework. The quality of her work improved considerably. She developed the ability to make metacognitive observations about herself. Finally she confidently transferred the framework to her research (stage 3) experiences.

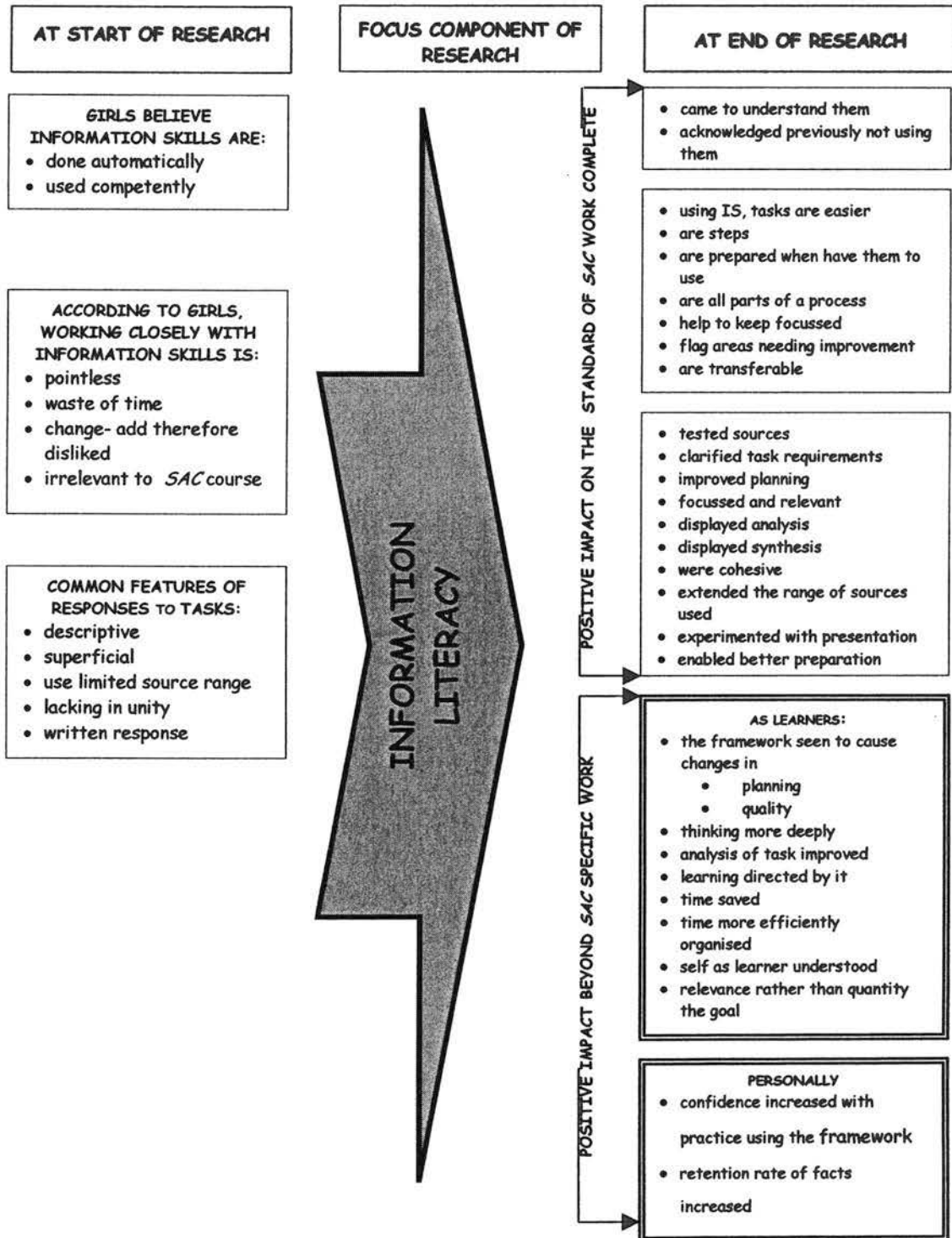
#### **5.2.8: SUMMARY OF KEY INSIGHTS INTO THE IMPACT OF THE FRAMEWORK**

An overview of the findings appears in Figure 5.2 on the following page. There is clear evidence from the data collected in all stages of the research that the girls experienced positive benefits from having worked with the six information skills that constitute the information literacy framework of learning under investigation. A detailed analysis of the impact of each skill is presented in section 5.3.

At the beginning of the research the girls' work displayed characteristics noted by Gordon [1998]:

*Even when there is no intention to copy 'word for word', many papers are the product of cutting and pasting information. They contain little*

FIGURE 5.2  
SUMMARY OF FINDINGS



*creativity and virtually no discovery has been tested, analysed and internalised by the learner* [p. 45].

By the end of the research, after the girls had learned to work in the framework over a period of time, their work was of a much higher standard than it was at the beginning of the research. Most significantly, their work showed understanding, analysis and synthesis.

The researcher noticed individual differences in the learning and thus the progress of the girls. There was no lock-stepping in the growth of competence in the use of the skills, as noted in the particular strengths and areas for improvement in the research tasks. Mindful of the Hawthorne effect [Franke and Kaul, 1978] the researcher acknowledges that the girls might have reached those points of development in ways quite distinct from working within the information literacy framework. The researcher includes a direction for future research based on this, in Chapter 6.

### **5.3 IMPACT OF THE LEARNING FRAMEWORK- DISCRETE SKILLS ANALYSIS**

#### **5.3.1. Impact of the information skill of defining**

The *defining* skill focuses the information user's attention on the task, and directs the user to understand what the particular task entails. Competence in this skill enables users to:

- *relate the task to their learning*
- *clarify the meanings of the words of the task*
- *identify and interpret key words and ideas in the task*
- *state the task in their own words*
- *work out the parts of the task* [NSWDE, 1989, p.7].

##### **5.3.1.1 on Christina**

In terms of the *defining* skill Christina noted that prior to working within the information framework she would restate the terms of the question or task, without actually considering - or at times fully understanding - the meaning of these words and terms. The result of this was that she researched very much in the general area of the task or question (4 IL- November 1995).

After having worked within the framework for five months, she acknowledged two benefits of using the *defining* skill. She said that:

*it's important to know what you are trying to find before you start the task because it saves time* [25 IL- April 1996].

and that using the *defining* skill enabled her to

*understand the questions and understand exactly what I am being asked* [18 INT- April 1996].

Christina indicated that the use of the *defining* skill assisted her while she worked through the given task, quite beyond the original definition:

*Defining gives you something to look back to for clarification*  
([9 IL-April 96.]

Towards the end of the time that she was working on the last SAC research task to be done in the research group, Christina was asked to comment on differences in the way she was approaching this one, and the way she had done the first one. In terms of the information skill of defining Christina wrote:

*I have developed a great deal in the way I use the defining skill and I now see it as more important and thus spend more time on it. I now know exactly what I want to find out before I begin to locate*  
[36 IL- June 1996].

Christina accounted for this impact of the *defining* skill on her learning in this way:

*I used to think the defining skill was done unconsciously but now I realise it is needed to improve time effectiveness it is vital to define properly so as not to have to redo it and ...locate irrelevant material*  
[36 IL- June 1996].

From having worked closely with the *defining* skill of the information literacy framework, Christina noted that she had undergone a change as a utiliser of the skill throughout the course, and that this change had impacted on her as a learner.

### **5.3.1.2 on Danielle**

In the first interview Danielle stated that one of the benefits of use of the defining skill was:

*by being able to define in a particular assignment what I have to do, it helps me to locate, to get my information, the ones I actually need. it*

*helps me understand by seeing what's required ... helps me to do the task* [18 INT- April 1996].

Danielle acknowledged that prior to being in the research group:

*[I would] have probably never consciously defined my work but now that I have it's sort of like ... you see what you want to do, and see if you have done it at the end* [18 INT- April 1996].

She said that there was definite benefit in doing this:

*because defining helps me set my mind on track...*[18 INT- April 1996]

and she supported this with a specific example:

*with an assignment that I have done after learning the steps, I found that I'd worked out what the assignment was, and pretty much gave it up to the teacher as she expected it* [18 INT- April 1996].

In the second interview Danielle reinforced the idea that she had changed her original view of the *defining* skill, and now viewed it with considerable respect:

*... I am able to see what I have to do, what I have to learn more, not just relying on my previous knowledge ... I have to go further by actually defining what's needed* [37 INT- May 1996].

Here Danielle implied that by using the *defining* skill in her research work, she not only had a clearer focus, but also she developed as a learner by using that skill. She reflected on her recent learning to provide examples to support what she was saying about her use of the *defining* skill:

*With English we had to do biography work, and with my essay like I actually- no, that wouldn't be an example - yes it would - with my actual speech writing. For my speech I defined what Miss X wanted and (inaudible - probably 'did it').. I think it is the first step you have to take, because if you skip the defining and go straight into research and try to get whatever information you have to - at the end you'll have a product that might not answer the question* [37 INT- May 1996].

The group's first research task required an investigation of the topic of becoming an adult member of their culture. In the planning sheet associated with this task Danielle made no reference to the *defining* skill. In her submitted work Danielle's attempts at defining resulted in rather sweeping statements being made, as shown in statements such as:

*The society of Australia recognises a person to be an adult by the individual's approach to life ...to become an adult in my culture, Catholic Australian, you must practise your faith and abide by the law* [11L- November 1995].

By the third SAC research task, which asked the students to consider the statement *The whole, is. the sum of the parts* with reference to an SAC depth study, 'Power and Authority', Danielle clearly was working within an information literacy framework. Her submission had three parts, and in each she considered three different examples that she analysed with reference to the quotation. She took 'Power' as the keyword and defined it and 'Authority', and then she set down the parameters of the social group she was analysing [47 IL-July 1996].

When she compared the planning sheet she did prior to beginning this third submission with the one that preceded her doing the first assignment for the course, Danielle noted that in the former she set out the skills. When contrasting the two she noted that in the planning sheet for the third assignment [36 IL-May 1996] she was able to confidently indicate intention to use the skills.

Evidence from both the quality of work that Danielle produced throughout the research, and the metacognitive observations she made, it is apparent that as a result of her working with the *defining* skill Danielle experienced a clarity of direction with her work.

### **5.3.1.3 on Gloria**

There is evidence to suggest that the *defining* skill has had an impact on Gloria as a learner. At the beginning of her involvement in the research group, Gloria was sceptical of observing learning as a process. She was more concerned with absorbing content. In the first interview five months after the beginning of the research, after she had submitted the first research task for SAC she said:

*after I'd done the assignment I realised I'd done it thinking I was going along the right lines but when I came back to the definition it wasn't right to begin with - the assignment wasn't really worth doing because it was following the wrong. ...sort of along the wrong lines*

[18 INT- April 1996].

Gloria's comments indicated that she thought there was worth in looking at the component parts of the task, in that this can lead to a meaningful whole. She believed that *defining* could help to maintain the focus needed to fulfil the requirements of the task.

In that same interview there was a contradiction that the researcher did not investigate. Gloria acknowledged that in the second research task the *defining* skill served as a guide:

*It was totally off the track.... I also learned that...defining was critical ...With the first one, the first assignment I did [for SAC]. I found that my definition of the task lead me to do things in a way I now would do differently [18 INT- April 1996].*

The researcher did not investigate how Gloria would have done the first task differently.

While Gloria acknowledged that *defining* was critical, she insisted that she used it automatically. However, in the comparative analysis of the planning sheets for the first and the third SAC research tasks, she said:

*[in my learning]...the defining skill helps me to look at specific things and understand them.... if you look at key words, then you know what you are talking about [36 IL- May 1996].*

Perhaps it was because Gloria had progressed successfully through her schooling 'doing it automatically' that caused her to resist the idea of the information skills of the information literacy framework. Her reluctance altered as the research progressed, and she experienced benefits from becoming more competent working with the *defining* skill.

#### **5.3.1.4 on Helen**

In an early data instrument [4 IL- November 1995] that required each member of the group to rank herself as a user of the information skills, Helen ranked herself 'well' or 'very well' in all of the items. In a journal entry soon after she expressed a re-evaluation in her thoughts. She recognised that she did not often define but that she could see the worth of doing so, stating:

*I can see it is very important to define the question to make sure you answer it thoroughly. This is something that I often don't do and is probably the skill I should focus on [51 JOU- November 1995].*

In the same journal entry Helen repeated the opinion that for her the *defining* skill was different from the five other skills. She said:

*The other skills seem kind of obvious.*

After she had been in the project for five months Helen was able not only to comment on the benefit that developing the defining skill in SAC had been but



also she could give grounds for holding this opinion:

*In SAC it enables me to answer the question ... makes it easier to understand. [I know this]. by comparing assignments where I have defined with those I haven't (19 IL- April 1996).*

In the first planning exercise that Helen completed early in the (stage 2) period she made no reference to the *defining* skill. In the second planning sheet completed five months later Helen indicated that she had difficulty understanding the task for which she was supposed to be planning:

*On first reading the question I don't fully understand it. I don't feel I could answer the question with the knowledge I have at the moment [25 IL-April 1996].*

Here Helen was confusing the task of planning how she would employ the information skills, with what information she might need to complete the task itself. It is interesting that the next sentence she wrote was:

*I would begin by defining the key words in the statement*

In a data instrument requiring her to evaluate the first and third planning sheets Helen noted:

*[In the first one]... didn't define component parts of the question. Between doing the: I've realised how important it is to have a clear understanding of the question [22 IL-April 1996].*

These points of awareness supported comments Helen had made three weeks earlier. Helen had been asked in the first interview what impact if any the information skill of *defining* had on her as a learner, and her response was

*I have a greater understanding of the question ... when you look at the question sometimes you don't understand it but if you go through it slowly and define all the key words you can answer it more thoroughly [18 INT- April 1996].*

Close work with the information skill of *defining* enabled Helen to become confident in her learning because she was able to get a clear focus on the task.

### **5.3.1.5 on Lottie**

In the first planning exercise Lottie did not address the matter of *defining* the topic, and moved into where she would collect information. This was followed up in the first interview, when Lottie said that *defining* did not need to be done separately because once she read the question she knew what needed to be done. Towards the end of her time with the research group she indicated that

she was not only aware that she was using the *defining* skill but also that she was open to the possibility of redefining. She experienced this when an examination of the information she collected opened up the possibility of an approach to the topic quite different from what she had originally planned:

*usually I find information straight away but if I find information that will fit into the topic but I haven't defined it that way I go back and define it again* [48 INT- July 1996].

This comment was preceded by her saying that this was an example of how working within an information literacy framework had impacted on her as a learner. Later on, in the same interview, Lottie said that she had found using the *defining* skill useful:

*[I use it]. for understanding ... I have used it in drama classes ... it is not just a SAC thing* [31 IL- July 1996].

Given Lottie's extensive debating experience, the issue of definition was not a new phenomenon for her, but she indicated that it was not until she worked within the information literacy framework that she considered *defining* as a research skill:

*I do this in debating but I had not really thought about it for research before* [38 IL-May 1996].

In support of this assertion is a comment a teacher made about Lottie's clarity of response. The teacher stated:

*Lottie is developing the ability to be quite clear in her mind where she is going when she starts a research assignment and in her essays* [45 REP- June 1996].

Lottie was quite used to the idea of defining in debating, and perhaps because she was a skilled debater, she thought attending to the *defining* skill in the research was neither necessary nor warranted. After having been in the research group, and treating the skill discretely, she perceived that developing competence in its use benefited her as a learner.

#### **5.3.1.6 on Sandra**

At the beginning of research (stage 2) there was a gap between Sandra's perception of her competence in using the information skill of *defining* and evidence of it in her work. In the first planning exercise Sandra made no attempt to clarify the terms of the task, and indicated that her first task would be to issue surveys. However, in a data instrument [4 IL- November 1995] she

ranked herself highly in the use of the defining skill in four out of the five items of the data instrument. She was 'undecided' about the item, which referred to being able to restate the task in one's own words, and her note of explanation was:

*Stating the task in your own words shows that you understand what you are doing. Sometimes I can do this well, but at other times not so*  
[4 IL- November 1995].

In a SAC research task, which was submitted five months after these data were collected, Sandra defined the terms of the task very clearly, and this use of the *defining* skill was present in subsequent tasks. In the first interview Sandra indicated that being adept at the *defining* skill was an aid to her learning, and she explained this:

*so that you know what to do, where to go, finding out the actual task ahead of you* [18 INT- April 1996].

In an interview a month after she submitted the SAC research task referred to in the previous quotation, Sandra indicated that working with the *defining* skill in the research group had had an impact on her learning. When she was asked for evidence for this she responded first with a comment about being focussed on the task:

*now I can sit down to what I have to do and pretty much define it properly. ...*[37 INT- May 1996].

Then she indicated a personal advantage that she attributed to her increased competence in using the *defining* skill:

*I get more confident talking in the classroom and I don't lose my argument*  
[37 INT- May 1996].

The benefits that Sandra derived from developing competence in utilising the information skill of *defining* were both academic and personal. It helped her determine the parameters and requirements of tasks, and as her control tasks increased, so too did her confidence. Sandra acknowledged that working with the skill discretely contributed to her developing competence in using it.

#### **5.3.1.7 Vivienne**

Vivienne was able to relate to the *defining* skill of the information literacy framework quite early in her time in research (stage 2). In a journal entry [51 GJOU- December 1995], she made reference to a discussion in the research group referring to the terms of the SAC research task topic. She wrote:

*We talked about the definition of 'my culture', and how we would define 'adult' - at first I thought that this assignment was quite easy and thought that I'd just do it from my own personal point of view in essay form. I realised that I would have to do more than this.*

Vivienne observed awareness of what made the information skill of defining important to learning in the first interview. When asked of the importance of this skill to learning she said:

*defining is most important because it helps me understand the topic ... you've got to fully understand what you are doing before you can look for information [18 INT- April 1996].*

She saw significance in this skill not only for understanding, but for clarifying as well in the following very perceptive comment:

*You think you understand but don't really... everything is very brief ...if you don't understand you're stuck basically [18 INT- April 1996].*

Vivienne followed through the idea that she had found the information skill of *defining* useful in her SAC research work because it assisted her understanding of the task:

*Defining and locating skills definitely helped when you are using resources ... because you are able to understand ...it's important to understand the topic ...The skill of defining helps me in learning ... to understand ... to know where to go [18 INT-April 1996].*

In that same interview Vivienne was asked if working within the information literacy framework had had any impact on her using the *defining* skill, and her response was:

*Yes I think I am more conscious of defining now that we have done it as part of a six-stage process. means better understanding.*

In the third interview Vivienne commented that using the defining skill was helpful to her when doing research because it enabled her to interpret the task requirements. She said that

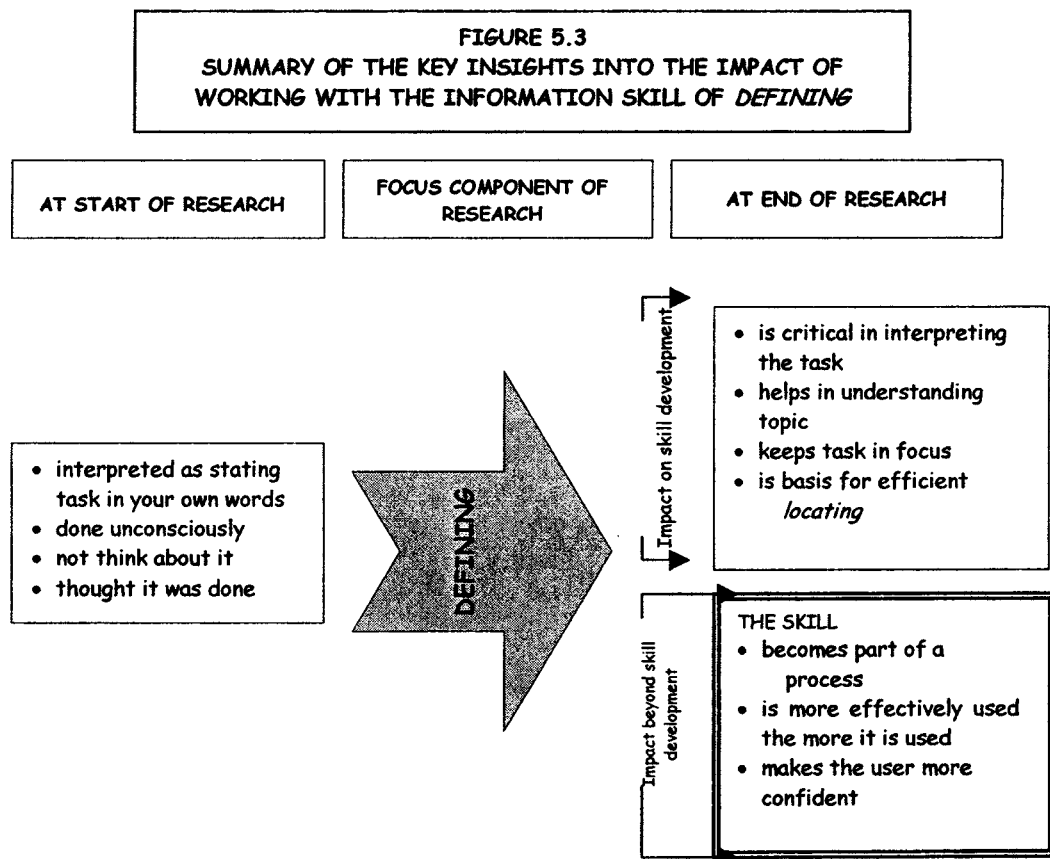
*you tend to get a broader area to do some research on and you have to decide which bit of that area you'll do ... sort of deciding what I'm going to take as the focus of the topic, if you know what I mean like that's pretty general usually [48 INT- July 1996].*

For Vivienne a significant benefit she gained from working with the information skill of defining was it aided her understanding of the question or task, and as a result it helped her to keep on task. Having worked on the

For Vivienne a significant benefit she gained from working with the information skill of defining was it aided her understanding of the question or task, and as a result it helped her to keep on task. Having worked on the defining skill as part of a process helped her to see where the particular skill fitted in the information literacy framework.

### 5.3.1.8 Summary

Figure 5.3 shows working with the defining skill of the information literacy framework had an impact on the learning and experience of the girls.



### 5.3.2 Impact of the information skill of *locating*

The locating skill focuses the information users' attention to where the information needed to complete the task can be found. Competence in this skill enables the users to

- recall relevant information and skills from previous experience
- discern current knowledge
- conduct a realistic search [NSWDE, 1989, p.7].

### **5.3.2.1 on Christina**

A significant element of the impact that the information literacy framework had on Christina's learning was her working with the *locating* skill. Prior to being in the research group Christina would seek for information from one source - the printed medium. The first indication that this pattern was changing during the research (stage 2) period was Christina's responses on a data instrument she completed while working on the first SAC research task. She said that she would locate information by interviewing people. She planned to gather the information she collected from newspapers and reference books, and then would update ideas regularly [10 IL- February 1996]. A month later she revealed that the *locating* skill enabled her to look for information beyond these two sources:

*Library books and newspapers are still good but I have learned to look at different areas where I can find what I need to know as well, such as talking to people* [14 IL- March 1996].

She saw that this new awareness of the possibility of people being resources as having implications for the way she would organise information in her learning:

*getting someone else's opinion - that's a good way to organise, testing what you have read by talking ... might have a different opinion from you ... might notice something you have overlooked* [17 IL- March 1996].

For Christina books and newspapers provided a comfort zone as far as seeking information for tasks was concerned. During the research (stage 2) period she developed her ability in using the information skill of *locating*, seeking information from a broader base.

### **5.3.2.2 on Danielle**

At the beginning of her involvement in the research, two things characterised the way Danielle, as a learner, located information. First, she was used to seeking information from books. After having worked on the skill in an information literacy framework she made this comment:

*I've broadened my research, like gone to different libraries, and done other tactics, like surveying, and asking other people's opinions* [26 IL- May 1996].

Secondly, she was not in the habit of crosschecking information, or seeking and analysing different points of view. This practice had changed five months into research (stage 2). When asked during the second half of the stage

whether or not she could determine any benefit in employing the *locating* skill in her research, Danielle commented:

*I think if you have more variety, it's less open to argument ... If you just base it on one thing you might not be conscious of the actual bias. Say you base your whole assignment on interviewing. People you are interviewing might actually be, like, against what you are talking about. So, if you go and get something else you can balance this with opinions from other places [37 INT- May 1996].*

She acknowledged in a self-evaluation of the first SAC research task that at the start of the research, seeking information by interviewing people would not have been a consideration:

*In locating information, most of my sources previous to learning Information Skills were run to the library and research like anything [24 IL- April 1996].*

Further comments clarified the 'like anything'. Danielle wrote that prior to participating in the research her main focus when she was locating information was to gather- somewhat indiscriminately- as much from books around a given topic as possible. She said that using the *locating* skill resulted in her learning at a higher level:

*... It requires a lot more skill ... it is a new approach [34 IL- April 1996].*

Although it is beyond the parameters of this research, it is interesting to note that in this quotation Danielle implied that working on the skill in the information literacy framework itself required skill. She recognised that skill- presumably in terms of her as a learner- had little place in her former more haphazard approach. Working with the skill of *locating* resulted in her being both more expansive and more discriminating in the sources she investigated.

### **5.3.2.3 on Gloria**

There is evidence to suggest that developing the *locating* skill had an impact on Gloria as a learner. In a comparative analysis of planning sheets for the first and second SAC research tasks Gloria said of working with this Information Skill:

*it's allowed me to see there's more than one option to look at... not necessarily just books [interviewing people]. ... they have personal experiences, rather than just what's written in books [22 IL- April 1996].*

Gloria was developing an awareness of herself as a source of information. In another comparative analysis sheet- this time between the first and third tasks- she said that:

*[in]...Geog it enabled me to get information myself from seeing the field and what I can interpret from it [38 IL-May 1996].*

As well as indicating that she sought information from beyond the standard sources she said of the *locating* skill:

*it's helped me broaden my view - now I'm guided by more correct ... more updated information [36 IL- May 1996].*

Gloria commented that she was becoming more discerning in the information that she used. In a data instrument she indicated that she had come to test the information for bias. She also now checked its accuracy. One way of doing this she found was to check the date of publication. As well as this she was becoming increasingly conscious of changes in her interpretation of the facts that might be present in information sources [28 IL- May 1996].

Gloria's increased competence working with the *locating* skill resulted in her seeking information from a broader range than she did prior to the research. Part of her development of a more discerning approach to information collected was because she became sensitive to aspects not only of the content of the information but also of details of its source.

#### **5.3.2.4 on Helen**

Prior to her joining the research, Helen displayed limited competence in terms of the *locating* skill, seeking information primarily from books (4 IL- November 1995). She indicated in a journal entry that this started to change when she began to work on the first SAC research task. She made an emphatic observation in the journal:

*what a very important resource for research people's social experience is [51 GJOU- November 1995].*

Five months later in an interview Helen made a comment that indicated an even greater developing competence in the use of the *locating* skill, even though she was not entirely confident:

*[SAC locating has enabled me] to find a lot of information but also a growing understanding of ways in which the information skills are*



*different I often get the locating and selecting skills not confused but drawn together a bit* [18 INT- April 1996].

Interestingly, in the same interview, Helen said that

*[beyond SAC] ... That's a skill I've always had. I use it but not really consciously ... I go and find information but I guess I don't see it as a skill ... where I look for information has increased but not all that dramatically.*

This apparent lack of certainty was reflected in an earlier data instrument [4 IL-November 1995] where Helen ranked herself as 'undecided' in three of the nine items on the instrument. By the time she had been working on her second research task she made the following comment:

*There are many different types of material you can get information from, apart from books. There is the print media, and television documentaries and observing people and speaking to people*  
[26 IL- May 1996].

The impact of working with the information skill of *locating* generally was limited to her extending the parameters of her search. There was no evidence in any of the data instruments to indicate that Helen was able to understand locating as a skill and part of the information literacy process. For her it was a mechanical 'thing' that had to be done if one were to do research.

### **5.3.2.5 on Lottie**

Close to the beginning of research (stage 2) Lottie commented that she did not have difficulty locating information because she had become used to seeking it from a variety of sources, and she rated herself highly on all but the item which related to her ability to 'limit investigations to a manageable size' [4 IL-November 1995]. Her response to this item was that she was undecided about her ability, and she made the comment:

*sometimes I don't plan my time well enough to do this*  
[4 IL- November 1995].

When asked in the second interview how the *locating* skill had impacted on her learning both in SAC and in her other subjects, Lottie responded:

*I can find information a lot quicker. I know what to look for now and I save time* [37 INT-May 1996].

As well as noting the impact in terms of her more efficient use of time because of her developing competence using the *locating* skill, Lottie commented on two other results of her use of the skill. She said that she was

able to determine what was relevant to the task. She observed that although the six information skills in the information literacy framework under review were discrete, in terms of definition, they were complementary components of the framework. The observation she made was that developing the defining skill facilitated efficient use of the locating skills:

*It (The locating skill) just helps you find the information. If you find the key words you can find information that is relevant* [37 INT- April 1996].

In a Minute Paper two months later Lottie noted that she now sought information from sources far beyond her texts. As a result of working within the information literacy framework in the research group, Lottie considered that she was more media literate in terms of developing as a discriminating user of the daily media as a resource:

*SAC made me more aware of the media ...I tend to be a lot more aware of how the media is now* [43 IL- June 1996].

In terms of the *locating* skill being part of her broader learning, Lottie said:

*I think it will be part of everything because I am always tracking down organisations and things because of my outside interests* [49 IL- June 1996].

During the course of the research (stage 2) period Lottie developed competence in using the information skill of *locating* and felt that as well as being important in its own right, it was part of an information utilisation process. There is evidence to show that she benefited from this competence in that she found it saved her time, and that it enabled to seek information from a broader range of sources than previously. She predicted the use of the skill would extend to her non-academic life.

### **5.3.2.6 on Sandra**

For Sandra *locating* information was the key to doing a research task. In the planning sheet for the first research task [1 IL-November 1995], this skill was the first one mentioned. In another instrument completed two weeks after the planning sheet Sandra indicated that she used the components of the skill well [5 IL-November 1995]. In the SAC research tasks that she submitted there was evidence that she had located considerable information, mainly from texts from the College library. As she said in the second interview:

*I've always known pretty much how to locate things* [37 INT- May 1996].

Sandra was asked to compare and contrast herself as a learner by considering the way she did the three major research tasks she had submitted during the course. When she contrasted the first two of these tasks she commented that working within an information literacy framework had broadened the parameters of her information-seeking field, and she attributed her success in this task to this broadening:

*The second assignment proved to be more successful because I had used a wider variety of data sources. I collected more evidence ... it was less biased, more open...* [22 IL-April 1996].

She then said that she would continue seeking information from varied sources in the task on which she currently was working. In an interview six months into the course Sandra said that an impact of her development of the locating skill was:

*I look at different sources now scout around for information ... locate different sources to make sure you have enough to fulfil the task ...* [37 GEN- May 1996].

In the third interview a month later, Sandra said that the *locating* skill enabled her to extend her research base:

*It helped me find resources* [48 INT- July 1996].

Seeking information from sources not considered prior to her working in the research group was not the only benefit that Sandra felt she derived from refining her locating skills. In the third interview Sandra observed that the *locating* skill helped her in terms of *organising* her information:

*organise information in a clear, precise way* [48 INT- July 1996].

At first this might seem to be a little misplaced, more relevant to comments relating to the *organising* skill. However, as Sandra became more confident working within the information literacy framework, she used the results of *defining* to guide her *locating*, and she explained it in this way:

*Now I am better using the skills I began to collect information under headings I think of when I am defining* [48 INT- July 1996].

Sandra's awareness of and competence in the *locating* information skill was quite developed when she joined the research. She increased her level of competence while in the research, and saw the information skills collectively as part of a process. She saw two benefits of this increased competence:

seeking information from a wider range of sources than previously, and becoming less biased in her searching.

### 5.3.2.7 on Vivienne

Early in her time with the research group Vivienne was asked to rank herself on a checklist of indicators of information utilisation in terms of aspects related to the information skill of *locating*. There were nine items she had to consider, and she ranked herself highly in all of them [9IL- February 1996]. In the first planning sheet the tasks she outlined that related to the 'locate sources' item on the checklist, indicated that she would:

*collect the information and get rid of unwanted information*  
[4 IL- November 1995].

She did not indicate in the planning sheet just what would be the basis on which she would reject material.

By the time she completed the third planning sheet Vivienne wrote:

*Depending on what direction I take the Power bit I might not interview...*  
[32 IL-May 1996].

The implication here is she was considering the appropriateness of that information source, and in terms of the items on the checklist, she was becoming more discerning in the information she chose to use:

...[I]... *recognise the relative worth of sources* [4 IL- November 1995].

In a journal entry on the day of the first interview, Vivienne indicated that she had checked the information she had and that it was insufficient for her needs:

*I didn't have enough information* [51 GJOU- April 1996].

This acceptance that the need for more information would motivate her to seek further was very different from her learning earlier in the research (stage 1) period. In the first interview she had said that motivation derived from the *locating* skill was coupled with personal preference:

*to research more thoroughly ... looking into sources other than books ... the more interested you are the more you'll do* [18 INT- April 1996].

In the third interview her response to being asked of the impact of working with this skill within the information framework was:

*I'm not sure I'm fully competent just more so now. I'm more thorough*  
[48 INT-July 1996].

In the personal profile as an information user Vivienne commented that, with reference to the task which required her to 'identify possible sources', Vivienne wrote:

*I find this very easy as I like to look at more interesting places and sources* [4 IL- November 1995].

In the first SAC research task there was little evidence of her having sought information from more interesting places and sources, with Vivienne's submission consisting of personal reflection and interview sheets [20 IL- April 1996]. For the second SAC research task Vivienne used printed sources, multimedia, instruments requiring subjects to respond to both higher and lower order questions, and she sent an email message to a kibbutz asking for information. She did not receive a reply to this request; rather than accept what might have been a gap in her information, she sought the information from elsewhere. She wrote:

*The kibbutz hasn't got back to me so I really have to look up information*  
[25 IL- May 1996].

She used similar sources for the third SAC task, and she also used the print media and a television documentary. In the third interview when asked what had been the impact of working with the information skill of locating on her work both in and beyond SAC, Vivienne responded that:

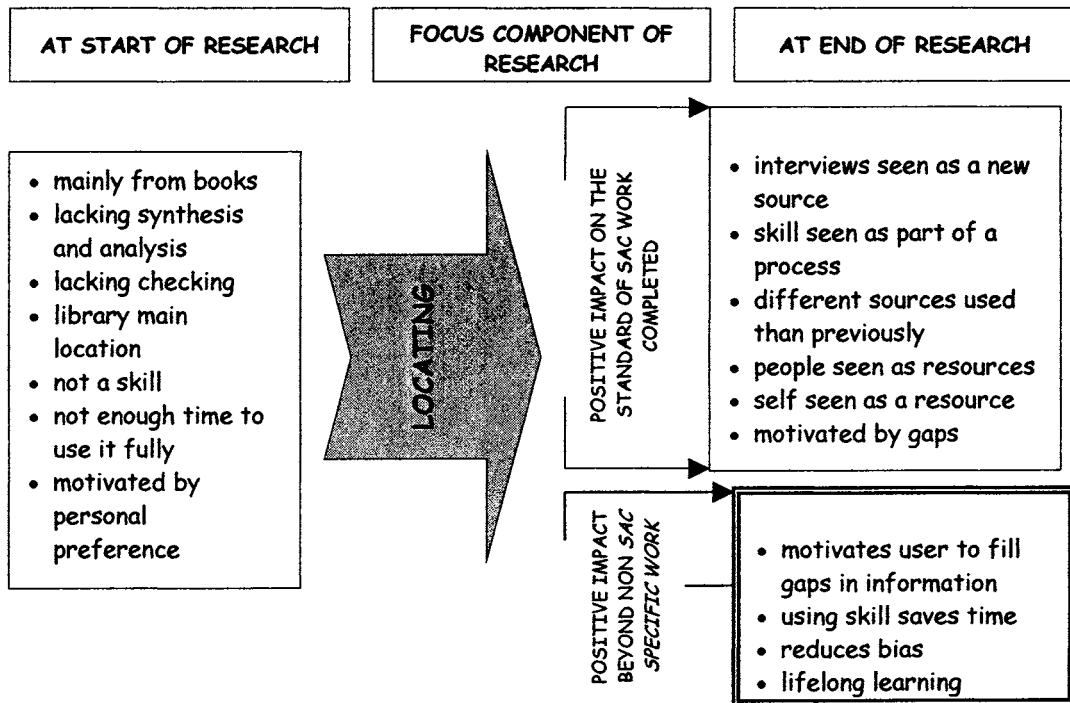
*like before it was books, books and more books whereas now there is more than just books* [48 INT-July 1996].

Evidence from Vivienne's observations and from her completed research tasks shows that during the research (stage 2) period Vivienne increased her competence as a utiliser of the information skill of *locating*. She grew to seek information on a needs basis, and did so from more sources than she did before joining the research.

### **5.3.2.8 Summary**

Figure 5.4 overleaf shows how working with the *locating* skill within the information literacy framework impacted on the learning and experience of the girls.

**FIGURE 5.4**  
**SUMMARY OF KEY INSIGHTS INTO THE IMPACT**  
**OF WORKING WITH THE INFORMATION SKILL OF *LOCATING***



### 5.3.3 Impact of the information skill of *selecting*

The *selecting* skill focuses the information users' attention on what of the information that has been gathered is needed to complete the task.

Competence in this skill enables the users to:

- assess the usefulness of each source
- use key words to guide information location
- make decisions about deficiencies in the information
- devise a system for recording their own information
- record quotations as sources of information [NSWDE, 1989, p.7].

#### 5.3.3.1 on Christina

Christina reported that working consciously with the *selecting* skill had an impact on her learning in terms of relevance. She made an astute observation on the place of audience for her submitted work, and that the *selecting* skill

increased the efficiency of the impact of her work. As early as the first interview Christina replied to being asked whether working on the selecting skill had had an impact on her as a learner, in this way:

*Now [in SAC] I select the information I really need that's relevant to the question rather than around the general area...it's no good just putting in all of the information and hope that somebody will understand some of it, and [beyond SAC]. Look at information critically and check it with other ones and select information that's most relevant and important...so if I've got about ten pages of information then I go through and if some of it does not connect to the question then I do not include it [18 INT -April 1996].*

In the third interview Christina indicated that she was continuing to refine her ability to investigate the worth of sources:

*At first you feel strange saying this whole book is one-sided, but bias can be in a whole book not just an extract. {48 INT- July 1996}.*

Christina's comments suggest that being more competent in using the *selecting* skill allowed her to be more comfortably discriminating in terms of the information she ultimately used in her responses. She developed the ability to check both the sources and the information they contained.

#### **5.3.3.2 on Danielle.**

As far as Danielle was concerned, the *locating* skill and the *selecting* skill were intertwined. By the end of research (stage 2) Danielle had moved from seeking information primarily from books to working with a wide range of sources. As well as extending her source base, she was beginning to read the information critically:

*I've been asking a lot more of opinions on things which I am researching because now it's not only from books the class probably are using [37 INT-May 1996].*

Self-awareness of her ability to discern information she collected was evident in Danielle's comments on how the *selecting* information skill impacted on her as a learner. Prior to working within the information literacy framework, Danielle was loath to discard hard-earned information, and was inclined to equate 'amount' and 'worth', and she was able to acknowledge this:

*I used to think 'OK, The more the better' [17 IL- April 1996].*

She would include material not for its relevance to the task, but for the sake of perhaps picking up extra marks:

*I'm now able to select just what I need and not just add on hoping for extra marks, then [disappointingly] the teacher will say, 'You don't need that. Why did you put it in?' [17 IL- April 1996].*

Her experience after working within the framework allowed her to:

*realise the main specifics you want. Going through the defining step [helps me do this]. Then selecting. You know what you want, and you don't use excess information [18 INT- April 1996].*

Danielle noted another result of the precision in her learning; she stated this in the second interview:

*...[I began].. not to ramble on about nothing in an assignment [38 INT- May 1996].*

In the same interview she commented on a personal benefit to her as a learner that using this information skill produced:

*Now that I've seen what I'm supposed to do, I can actually select ... I know what I am doing, and I am sure of myself [37 INT- May 1996].*

This confidence in her ability to be discerning is something that she knew was different from her learning prior to joining the research:

*I knew that I shouldn't just write down everything. From past experience I did it - I haven't done it now [since being part of the research] [22 IL-April 1996].*

Evidence suggests that Danielle experienced a change in learning from having worked with the information skill of *selecting*. A characteristic of her previous learning had been to opt for quantity of information rather than for quality. She tended not to be concerned with the credibility or the accuracy of the information she collected.

### **5.3.3.3 on Gloria**

Gloria saw the value of the *selecting* skill as being an aid to understanding, helping her to distinguish accurate from inaccurate information. She wrote in the comparative analysis of the planning sheets for the first and third research tasks:

*helps me to see that not all things are right. I can get rid of some things if they are not up to date ... to see what is the most correct information [36 IL-May 1996].*

'Relevance' was the main determining factor in this part of the learning process for Gloria. She sought in both the information she collected and in her own response in terms of how it related to how she had defined the task:



*doing the selecting ... allowed me to see what's relevant to the topic, and look back over the definition* [22 IL- April 1996].

There is evidence to suggest that the use of the *selecting* skill had an impact on Gloria as a learner. Because of her involvement in the research she developed a sensitivity to the matter of relevance and credibility when using information.

#### **5.3.3.4 on Helen**

In Helen's first SAC research task there was no evidence that she was competent in using the information skill of *selecting*. Helen acknowledged this in a self-evaluation of the task:

*I realise that you have to select your information carefully rather than just throwing it all in.* [19 IL- April 1996].

Then in the planning sheet for the second SAC research task she wrote:

*I would try to find information I could use to support my opinion ... I would put my information in some sort of order ...decide which way would be the most effective for presenting information* [23 IL-April 1996].

This planning sheet was completed at the same meeting she completed the self-evaluation of the first SAC research task, and although in the planning sheet she mentioned the *selecting* skill- and the *evaluating* skill- these were not mentioned in the self-evaluation.

Six months later, when asked to comment on the similarities and differences between her first and third planning sheets Helen observed:

*In the first activity I jumped straight from finding information to presenting it. In the second activity I sorted through and picked out relevant information and then organised it* [36 IL- September 1996].

Helen developed the ability to make metacognitive observations about the use of the *selecting* skill. She expressed in the first interview that her increasing ability to decide on relevance of information was a result of her having worked within the information literacy framework:

*In SAC the selecting skill has enabled me to pick out the information that is relevant to the topic... instead of putting in all of the information I located.* [18 INT- April 1996].

She made a significant comment in a journal entry after having been in the research:

*An English teacher once told me that more writing means more marks*

[51 GJOU- April 1996].

Of course, the unknown factor here is the context in which the point from the teacher was made. Twelve months after the research (stage 2) period finished, Helen reflected accurately on herself in terms of the *selecting* skill in this way:

*I would waste a lot of time putting in pointless information I should have filled the space with relevant information* [49 IL- September 1997].

Helen came to an awareness that a benefit of using this information skill of *selecting* was the more efficient use of time. In a journal entry half way through the research (stage 2) period Helen acknowledged that she was overcoming a reluctance to consider the *selecting* skill, and that she was developing a sense that to ignore the skill would be disadvantaging herself:

*I understood that I was putting into practice the defining, locating and presenting skills. By the end [I saw]... selecting saves time. I was starting to use [it] in other subjects....* [51 GJOU- April 1996].

This issue of time is of real interest to Helen, as she indicated in the third interview:

*[I] used to be a very rushed worker... time was an effort and everything I tried to do as quickly as possible. Now I try to answer the questions a lot more thoroughly* [48 INT- July 1996].

Evidence in Helen's responses shows that working with the information skill of *selecting* had an impact on her learning. At the start of the second stage of the research, she avoided it in effect, concentrating on how she would present the information she had collected. She came to the point of realising the worth of *selecting* to the quality of her responses and to her as a learner.

#### **5.3.3.5 on Lottie**

In terms of using the information skill of *selecting* Lottie came to the point of recognising two significant benefits it afforded her, and this recognition was quite different from her initial stance. When research (stage 2) began Lottie said she used all of the skills automatically, and had no need of developing any of the skills. In a class discussion Lottie had said that she did not need to work on the information skills because she did them anyway, quite naturally as part of research [52 RJOU- December 1995].

In the first SAC research task that Lottie completed as a member of the research group, there was evidence that she had begun to operate within an information literacy framework. For example, she set out clearly her definition of the components of the task, and she not only reported the results of interviews but also synthesised them.

In the first interview she indicated that working with the *selecting* skill had enabled her to more confidently choose the information that was relevant to the task. In response to the question of the impact of the *selecting* skill on her learning Lottie said:

*You say yes this information is relevant or it's not. So you don't end up writing about stuff that is not really relevant [18 INT- April 1996].*

A characteristic of the way Lottie conducted research for tasks had been to collect vast amounts of information. Working with the *selecting* skill enabled her not only to select relevant material from the information she had located, but also it enabled to be more selective while she was involved in the actual locating. Part of her response when asked to comment on how the *selecting* skill had impacted on her learning beyond SAC was:

*Whenever I research something I get these pages and pages of notes. Now once I read it I find a lot of it repeats and I just usually find the simplest way it's written and I take it from that [18 INT- April 1996].*

Lottie commented in the second interview on her developing ability to *select* information at the *locating* stage, and not necessarily as part of a separate stage of her research. When asked whether the *selecting* skill had helped her as a learner in areas other than SAC she replied:

*It helps in every subject ... information tends to repeat itself and if you know what you have already read you can cut it out [39 GEN- May 1996].*

In the third interview, Lottie indicated that working with this *selecting* skill had helped her to keep focussed on the task set:

*I have become a lot more aware of selecting. I wasn't really that aware of that step before [48 INT- July 1996].*

In this same interview Lottie expressed a way in which the *selecting* skill had impacted on her as a learner in two ways. First, in terms of process of learning. She stated:

*I can go direct to the point now ...able to stick to the task [48 INT- July 1996].*

Secondly, in terms of the quality of the work, Lottie said:

*the tasks aren't so waffly now* [48 INT- July 1996].

Working with the information literacy framework enabled Lottie to become aware of the place of the *selecting* skill in her learning. A benefit she experienced related to the issue of relevance. As had been the case with other girls in the research, Lottie had tended to be seduced by the amassing of information on a particular topic. By the end of the research (stage 2) period she was consciously becoming more competent with the matter of relevance.

#### **5.3.3.6 on Sandra**

In the second interview when she reflected on her learning and how it might have changed since working within the information literacy framework, Sandra commented on what is a reality for many researchers. After having expended considerable time and effort locating information, sometimes the focus in choosing what to include in the final written submission becomes less a matter of relevance and more a matter of including as much of the collected information as possible. Sandra reflected on her experience:

*sometimes I found it hard to disregard information I have got from my sources ... now I can select information that needs to be included*  
[37 INT -May 1996].

Sandra considered the fact that she had refined the information skill of *selecting* resulted in two significant impacts on her learning. First, she indicated that by focusing on *selecting* which information to include and which was to be discarded, she was more able to distinguish between fact and opinion. In her words:

*you distinguish between fact and opinion, which information would be best to achieve your aim* [37 INT- May 1996].

Secondly, there was the matter of relevance. When she was asked in the first interview midway through the course to comment on the work she had done on the *selecting* skill in terms of her learning, Sandra said:

*you get the most important information from what you have read ... select bits that are of importance ... summarise.* [18 INT- April 1996].

The fact is Sandra was developing this skill in her work, which was evident in the differences that the researcher noticed in the major SAC research tasks

that were submitted throughout the course. In the last task there was a much closer adherence to the major line of argument than there had been in the first task submitted. This notion of relevance was echoed in the third interview:

*A lot of the information I used to collect wasn't really relevant and I'd just include it. Now I distinguish what is good to use and what is not ... discard excess information [48 INT- July 1996].*

Working with the *selecting* skills within the information literacy framework enabled Sandra to observe and develop competence in terms of the relevance of information she both considered and ultimately used in responses.

### **5.3.3.7 on Vivienne**

Early in the second stage of the research Vivienne was asked to consider how she used information. As part of this consideration she was asked to rank herself in terms of her competence in using the information skill of *selecting*. There were 12 items, and in only two did Vivienne not rate herself highly. The first of the 12 items referred to using keywords to locate potentially useful information within sources, and Vivienne commented that:

*even though knowing what those keywords are is easy, trying to find information through them can be difficult [4 IL- November 1995].*

The second of these items asked her how well she would 'decide what to do about deficiencies within information'. Vivienne commented:

*This can be very tricky and can make task seem very confusing and difficult. [4 IL- November 1995].*

During research (stage 2), the girls completed self-evaluation data instruments. These reflective exercises asked questions such as 'What things have you learned about in doing this project?' When Vivienne was working on the second of the SAC research tasks set for the course, in response to being asked in one of these exercises 'Have you learned any skills that you did not have before?' Vivienne responded:

*I have learned to be more critical of information ...not just include all the information I have found but to be selective [34 IL-May 1996].*

The spirit of this comment was apparent in the first interview. In this Vivienne was asked to comment on the impact that using this information skill of *selecting* had on her learning in SAC, and her response was:

*More- not 'critical', but rather than collecting all the information and just putting it ... just answering the question a bit more ... find out what you really relate to and what you really mean* [18 INT- April 1996].

In terms of the impact of the *selecting* skill on her learning beyond SAC, Vivienne said:

*now there's stuff left over I won't put in what's not relevant*  
[18 INT- April 1996].

In the same interview, Vivienne also made the following comment:

*the hardest thing... choosing carefully not just choosing quickly.*  
[18 INT- April 1996].

There was evidence in tasks that Vivienne completed throughout research (stage 2) that she was using the *selecting* skill with increasing beneficial effect. In the first SAC research task, the main source she used to collect information was interviewing. There was no analysis of the information so gained, and the only use to which the information was put was that it was alluded to in some personal reflections that she made.

In the third SAC research task Vivienne sought information from a variety of sources including encyclopedias, news print media and multi-electronic media; from the information she collected from these sources she selected information that related to the requirements of the task. She also made a small but effective attempt to cross-reference her information sources.

Two expectations of competence in using the information skill of *selecting* are that users should be able to 'begin to assess the usefulness of each source' and 'identify information that has links with the task.' When she was completing a data instrument that asked her to rank herself in terms of elements of the information skills, Vivienne ranked herself highly in terms of each of these elements of the skill. Of the former she said:

*balancing up which information best suits your purpose the best comes down to your personal opinion and way of doing things, and on the latter she wrote links can be easily seen in the information* [4 IL-November 1995].

By the time the second interview was conducted, Vivienne had revised her opinion of her performance, and said:

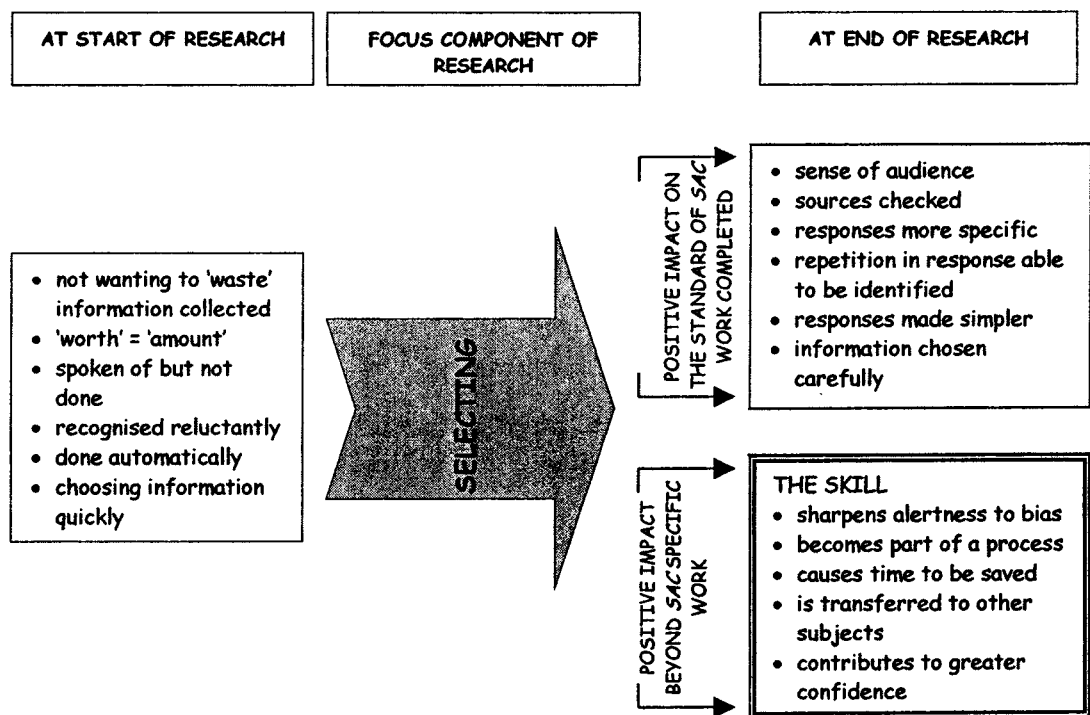
*be careful with the information, make sure that it is true and that it does apply ... [Consequently] you write something that is not biased*  
[37 INT- May 1996].

Throughout research (stage 1) Vivienne developed competence in the information skill of *selecting*. She moved from focusing on the quantity of information collected to focusing on its worth. In doing this she became more discerning and more confident in rejecting information collected.

### 5.3.3.8 Summary

Figure 5.5 shows that working on the information skill of selecting had an impact on the learning and the experience of the girls.

FIGURE 5.5  
SUMMARY OF KEY INSIGHTS INTO THE IMPACT  
OF WORKING WITH THE INFORMATION SKILL OF *SELECTING*



### 5.3.4 Impact of the information skill of *organising*

The organising skill focuses the information users' attention on the best way to use the information in completing the task. Competence in this skill enables the users to

- review the purpose of the task
- structure the information
- review the structure and adjust it if necessary [NSWDE, 1989, p.8].

#### **5.3.4.1 on Christina**

Christina noted midway through the second stage of the research that in her learning, the development and use of the information skill of *organising* had been of benefit to her because:

*[I have been able to] ...be able to have the information organised so that you can put it into logical sequences so that the reader will understand you and you will answer the question. ... be able to not necessarily answer the question as one question but as parts of the question, to see different ways of structuring the answer*  
[18 INT April 1996].

When asked towards the end of research (stage 2) to comment in what ways she approached research tasks differently from when the research group commenced, Christina said:

*My organising skills have also been developed and I have now seen the importance ... begun to synthesise my work* [42 IL- June 1996].

Christina attributed this change in her learning in terms of:

*the work done on this skill in our meetings and also picking up on other researchers' methods. I now have a greater understanding of this organising skill* [42 IL- June 1996].

Christina's developing competence with the *organising* skill was reflected in the quality of her SAC research tasks. She recognised the benefit to be gained from attending to the structuring of both the question or task, and her response. By developing an ability to synthesise in her responses, Christina produced responses to research tasks that displayed depth and cohesion [47 IL- July 1996].

#### **5.3.4.2 on Danielle**

By working within an information literacy framework Danielle noted that she understood what was entailed in the *organising* skill, even though her attention to it was somewhat less than careful:

*At least, I understand the skill, and how to organise my work, and what it helps me to do to present what I want but ...I've just got to sit down and organise it* [18 INT- April 1996].

She began to articulate the way she incorporated the *organising* skill into her learning in her statement:

*what I do is I have my information that I have selected it I organise it in a form that is easy to see and understand - maybe spread all my work out and put it in categories, and then decide what I'll do with them*  
[18 INT- April 1996].



She recorded an experience she had in one of her courses other than SAC. Here she reviewed another student's work in terms of the *organising* skill, and then she evaluated her own work in terms of that same skill:

*In Modern History we had to read over essays that people had done. I could read through and see that they should have put one - like - one section before another and it would have made more sense, and that they hadn't organised their quotes correctly. And then I looked at mine and realised I'd done that too* [38 IL- May 1996].

As the time approached for Danielle to submit a research task in SAC, notes she made in her journal indicated that the *organising* skill had become part of her learning framework. The first quotation refers to her work on the second research task:

*I've started to classify my information using sub-headings ... I still need more information so that the comparison can be strong* [51 GJOU- May 1996].

And the second referred to the work she was doing on the third SAC research task:

*I've nearly enough information to write up my rough draft. I also have to think about how I will present the information* [51 GJOU- July 1996].

In each of these two circumstances Danielle's use of the *organising* skill enabled her to determine whether or not she needed to extend her information search.

With increased competence using the information skill of *organising* Danielle observed how sound structure in a response can affect the overall impact. Prior to submitting the third SAC research task, Danielle indicated in a journal entry that she had worked with the *organising* skill:

*Overall I am pleased with my work and my organising* [51 GJOU- July 1996]

#### **5.3.4.3 on Gloria**

There is evidence to suggest that the *organising* skill has had an impact on Gloria as a learner. In the first interview Gloria said that she formerly would have considered the essay as the universally appropriate form of *organising* information:

*I usually do it in essay form- introduction, body and conclusion. I never usually do it in tables or anything* [18 INT- April 1996].

A month after this interview, in the comparative analysis of planning sheets for the first and the third SAC research tasks she made two points which

indicated a development from that position - that by developing the organising skill, she not only understood the information better, but also that she learned it more effectively:

*It has helped me not only to understand but also to learn it and keep it in my memory ... if it's not in a long essay [36 IL- May 1996].*

In an instrument that asked the girls to comment on themselves as operators within an information literacy framework Gloria was asked how her learning had changed since research (stage 2) started, and she isolated the *organising* skill as a key change in the following way:

*... Mainly in my organising skill. I automatically just thought when I was given an assignment to just do an essay and then we have been shown so many ways we can organise information, and then the presentation might be different [42 IL—June 1996].*

Certainly there was a degree of overlap here with the *presenting* skill. However, another indication of Gloria's self-perception that she working with the organising skill had enhanced her learning is evidenced in the third interview. Here she commented on incorporating an information literacy framework in her learning in Geography, stating:

*we have just been on a field trip and ... we recorded ... information ... and I used them then ... instead of writing it all out - what they said and things - jot down quick little notes and little diagrams to help me remember things [48 INT- July 1996].*

Towards the end of research (stage 2) Gloria was asked to comment on ways she was working on her current SAC research task and ways she had worked on the first one. She commented:

*I presented the first assignment in essay form, and what people said in interviews. In this assignment I have already tried to tally some information so I can look at it as statistics, and then I might put them between other sections [39 IL -May 1996].*

Increased competence in using the *organising* skill became evident in the metacognitive comments Gloria made. She developed the ability to work with smaller units of information at depth, and then use them as part of the full response.

#### **5.3.4.4. on Helen**

In the same interview Helen indicated that the information literacy framework had helped her understand her learning beyond the SAC curriculum area:

*the work we did on organising helped me because in Modern History we have to write lots of essays and things and a lot of the comments I would get at the end of the essays said that I needed to basically synthesise my work, rather than putting it all in separate points*  
[48 INT- July 1996].

At the start of research (stage 2) Helen did not display competence in using the *organising* skill. She believed that the contrary was the case, as shown in the high ranking she gave herself in an early data instrument, a checklist of information use [9 IL- November 1995]. There was no evidence of competence in the first SAC research task. Indeed, the information she presented might be described as an 'unstructured reflection'.

In the checklist the two items to which she responded as being 'undecided' related to structure: 'review the structure in the light of the purpose of the task' and 'adjust the structure where necessary'. In all other responses she indicated that she performed 'very well'. Perhaps Helen had not considered 'structure' as being part of organising information. Indeed, perhaps she had not considered it at all, as she suggested in a journal entry five months after the second stage of the research began:

*Another skill I tend to skip is organising - I go usually straight to the presenting* [51 GJOU- April 1996].

In a subsequent journal entry a month later, Helen was able to note a significance of the *organising* skill, reflecting:

*When organising I have to synthesise the information* [51 GJOU- May 1996].

This noted significance was supported by a report made by one of Helen's teachers. In the College report issued at the end of the first semester after the conclusion of research (stage 2), Helen's Modern History teacher observed that Helen was able to form opinions on historical issues by synthesising information, by:

*feeling her way through historical situations and people's lives*  
[53 REP- March 1997]

Helen made further observations on her developing competence in using the *organising* skill when she evaluated the second SAC research task. In this task she moved towards a more integrated response to the research requirements. Helen noted:

*[I] now organise my information under headings even if I take them away before the one I hand up and only put in relevant information rather than just throw in as much information as possible [34 IL- May 1996].*

Two benefits to Helen's learning that resulted from close working with the information skill of *organising*. Her responses were integrated, and their content was relevant to the set tasks.

#### **5.3.4.5 on Lottie**

It appears by what she said about herself as a learner that Lottie believed she tended to stray from the task at hand. When she was asked to comment on the impact of the *organising* skill on her learning in both SAC and in other curriculum areas, she said that:

*I'm beginning to develop other skills too- and with it not to waffle*  
[13 IL- March 1996].

Lottie tended to arrive at points by rather circuitous routes when she was speaking. This tendency to waffle orally was far less evident in Lottie's written work. In the first SAC research task Lottie divided the task into clearly defined sections, and the information she used within each of these sections was relevant. In the later works she submitted for assessment, Lottie continued to keep her response well within the parameters of the task. This was in spite of the fact that in the first planning sheet [1 IL- November 1995] Lottie said that she did usually plan the structure of her written responses.

Lottie alluded to her awareness of the importance of structuring the information in the first interview when she said:

*Now when I think about it, it's no use if you have this information if you can't understand it. Well I can't. I just like to have it set out simply so I can read exactly what I am talking about [18 INT- April 1996].*

In the same interview Lottie suggested that both in SAC and in other subject areas this was one of the differences in her learning that she had noticed after having worked within an IL framework:

*that it's organised in the simplest most efficient way. I don't like to waste a lot of time, which is what I used to do [18 INT-April 1996].*

In the third SAC research task the simplicity and efficiency was to be found in Lottie's analysis of the resources she used. In this task she chose to include a lengthy article that was relevant to her work. Rather than discuss its content -

which is similar to what she had done in earlier tasks - she included it as an appendix, and in the body of her work, presented a thoughtful analysis of it. [47 IL- July 1996]. In this third task the overall structure contributed to Lottie's work being a cohesive whole in contrast to her earlier SAC tasks.

There is evidence to suggest that Lottie's learning benefited from her working closely with the information skill of *organising*. She improved on an already sound sense of structure, incorporating more synthesising of information.

#### **5.3.4.6 on Sandra**

Sandra's comments on the impact of the organising skill on her learning referred to the importance of the clarity of the message in the way information is organised. In the first interview Sandra commented that:

*you need a good system otherwise it would be pretty pointless because your ideas would not be clear* [18 INT- April 1996].

Integral to the way Sandra organised her information early in her time with the research group was that it fit the mode of presentation on which she had decided:

*I look at the presenting first ... will the way I am organising fit into the way I want to present the work?* [10 IL- February 1996].

By the time of the interview conducted at the end of research (stage 2), Sandra's approach to organising her work had altered. When asked to comment on the impact on her learning that resulted from her becoming more skilled in using the information skill of organising, she said:

*In SAC I organise information in a clear, precise way* [37 INT- July 1996].

Clarity and precision became the focus in Sandra's work. When she organized the information in her responses, rather than choose the way that would best suit her preferred style of presentation, Sandra began to choose the way that made best use of the information.

In an earlier interview Sandra said that not only was using the organising skill important for research, but also it was an important life skill because it helped her to clarify facts in her own mind:

*organising the facts helps me form opinions ... organising is important for life* [37 INT- May 1996].

Evidence shows that Sandra benefited from the organising skill in that the responses to task increased in precision and clarity. She recognised the importance of structuring a response, and that the *organising* skill could be a life skill.

#### **5.3.4.7 on Vivienne**

The data instrument that asked the students to rank themselves in terms of their use of the information skills was administered twice - at the beginning of the research (stage 2) period, and towards the end [4 IL- November 1995, and 42 IL- June 1996]. Vivienne's ranking of herself as a user of the *organising* skill was the same in both of the instruments except for the item that referred to a student's being able 'to combine information into larger units of information.' The first time she completed the instrument she ranked herself on the second highest increment, and in the second she ranked herself on the highest. Superficially there is not a great deal of difference between these two rankings, but what were significant were the comments that she wrote. On the first checklist, she commented on *organising* skill as follows:

*Of all of the skills this is the one I most lack* [4 IL- November 1995].

On the second she wrote:

*I now find it easier to do this than before* [44 IL- June 1996].

Here Vivienne was reporting not only a difference in her use of the *organising* skill, but also on the effect of that difference on her learning.

In terms of a user being able to 'review the purpose of the task' Vivienne made no comment in the first instrument, and ranked herself as doing this 'very well'. In the second instrument she commented:

*It is important to stay on track and by reviewing the purpose of the task you are able to do this* [42 IL- June 1996].

In terms of the items of the instrument that referred to combining information gathered from various sources and to reviewing the structure in terms of the purpose of the task, Vivienne's comments in the first instrument were somewhat superficial, as exemplified in these words:

*the structure in relation to the task is usually easily set out and simple to follow* [9 IL- November 1995].

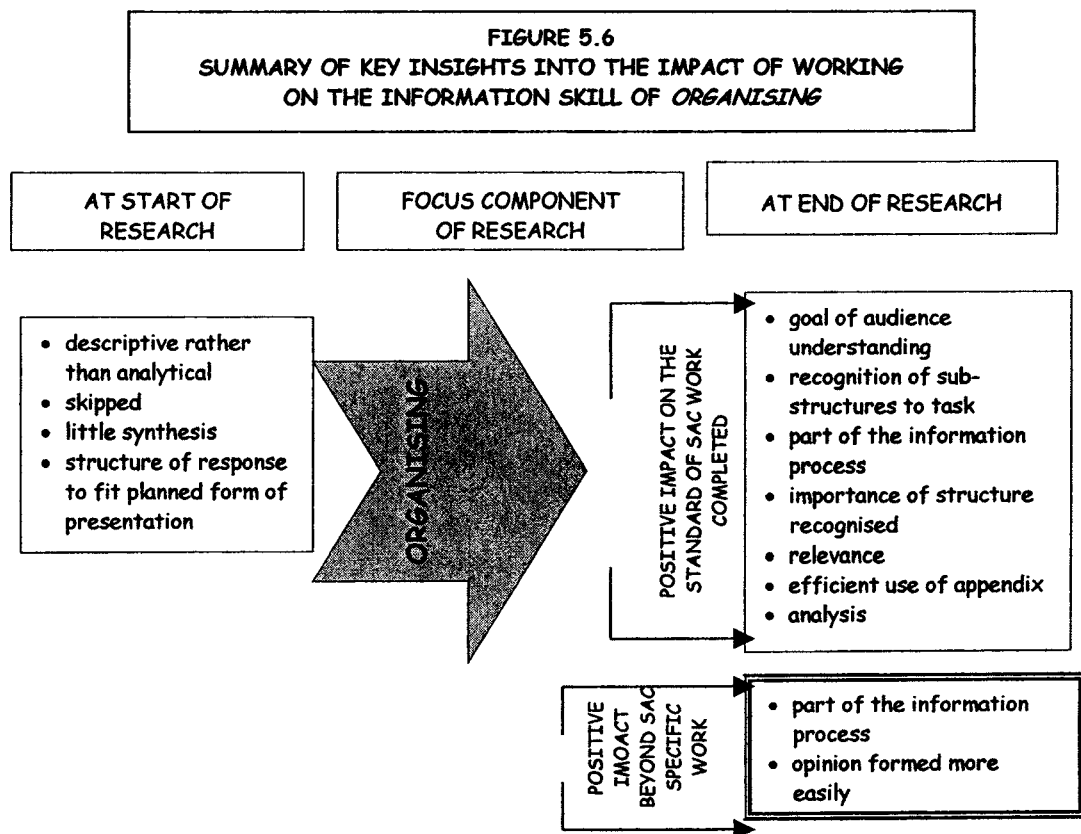
Her comments the second time the instrument was administered made reference to the importance of developing the organising skill in using information, not only in terms of keeping on task, but also in terms of the quality of the final product:

*It is important to stay on track and by reviewing the purpose of the task you are able to do this. I find it easy to combine my sources of information into one block ...Actually structuring the combined information leads to a well-presented, easy-to-understand work, but this is not always so easy [42II- June 1996].*

For Vivienne the evidence shows that she benefited from working with the skill of *organising* in terms both of her ability to structure responses, and her understanding of place of the skill in the process incorporated in the information literacy framework.

#### 5.3.4.8 Summary

Figure 5.6 shows that working on the information skill of *organising* had an impact on the learning and experience of the girls.



### 5.3.5 Impact of the information skill of *presenting*

The *presenting* skill focuses the information users' attention on how the information will be presented. Competence in this skill enables the users to:

- identify the requirements of different forms of presentation
- address the issue of 'audience'
- prepare and present the information [NSWDE, 1989, P.8.]

#### 5.3.5.1 Christina

Prior to joining the research group, Christina's preferred style for *presenting* information was essay form. One of the changes that Christina noted about herself as a learner resulting from participating in the research was that she became more adventurous and more discerning in *presenting* information. She now chose the form of *presenting* that she thought would serve two purposes: allow her findings and conclusions to be expressed the most clearly, and to facilitate her audience's understanding. In the first interview she said:

*look at different ways of presenting things like say graphs and tables ... which ever one is going to present the information clearly ... just more understandable and not too complex for the reader and it just succinctly sets out what you want to say* [18 INT-April 1996].

Soon after the interview she reflected in her journal that in her studies in general she now looked at ways to present the information, while considering the strengths and weaknesses of each way (51 GJOU- March 1996).

In a later interview she carried through this idea of relating the way she learned to the way she presented information:

*I've looked at different ways of presenting things instead of having a one-track mind, always thinking you have to write things out. I now use table and concept maps and graphs and things like that. If I'm trying to transfer something from a textbook or a piece of writing to something I can understand then I'll change it into points or diagrams so that I can understand it* [37 INT- May 1996].

By the time she was working on the last task in the SAC research Christina noted that her increasing competence in using the *presenting* skill had brought about a change in her learning:

*I have a wider view now to ways to present and I do not restrict myself to just writing. that you should take into consideration what it's about* [44 IL-June 1996].



There is evidence that working with the *presenting* skill extended Christina as a learner. She found that presenting information in ways new to her but suitable to the task facilitated her understanding. She came to acknowledge that particular ways of presenting information suited different banks of information.

#### **5.3.5.2 on Danielle**

Her involvement in the research changed Danielle's perceptions of herself in terms of using the information skill of *presenting*. At the time that Danielle was working on her first SAC research task, she was confident that she handled the presenting skill very well [52 RJOU- December 1995]. As the research progressed she became more discerning. In a journal entry that followed a lesson in which the group discussed and evaluated different forms of presentation, Danielle noted:

*From this I realised that the skill of presenting isn't all that easy, though when done well the information is put in a more interesting manner* [51 GJOU- March 1996].

This awareness, however, did not translate to the first research task that she submitted three weeks later. Her submitted task certainly was of an adequate standard, but there was a lack of cohesion. There was a lack of understanding of the requirements of different forms of presentation, in particular the reporting of interview results.

During research (stage 2) she worked at refining the *presenting* skill, and she was prepared to consider seriously different forms of presenting information. For example in a journal entry she noted that she would present some of the information in table form:

*I've decided to put it in a table format under sub-headings*  
[51 GJOU- March 1996].

In the interview that was conducted a month after this journal entry was made, Danielle made comments that suggested that this decision to use tables in her ISAC research task was made after considerable deliberation:

*...just to put my work out as clear as possible, a lot of the time I used to just put my work out in point form. But I think now sometimes now tables are easier. Tables for [presenting] a comparison. Split it down the middle, have one on either section. So instead of going through pages and pages on one subject and then on the other, when you try to do a comparison, when you have them next to each other - you can read one then the other*  
[18 INT- April 1996].

By the time the second SAC research task was submitted a month later, she recognised further benefits of incorporating the *presenting* skill into her learning:

*Just the fact of - I always thought ' OK, just research, get the information, scribble it down get it in, it'll be fine', but with Presenting you realise the better it is presented the better opinion the teacher will have, like when they open the task or essay or whatever it may be, and they look at how you have presented it they will think ' That's a good approach. I like it.' Presenting is a skill [37 INT- May 1996].*

Much of Danielle's responses to questions or prompts about the presenting skill lead to discussion of tables and diagrams. There is evidence to suggest that Danielle acknowledged that tables and diagrams, when used judiciously, presented the information with greater clarity for the audience than would essay form. Underpinning the newfound interest in these modes was a realisation of the desirability of having the form of presentation suit the content being presented.

#### **5.3.5.3 on Gloria**

There is evidence in the data to suggest that working with the *presenting* skill has impacted on Gloria as a learner.

In the comparative analysis of the planning sheets for the first and third tasks Gloria reflected on the style and quality of presentation of the first and third research tasks submitted during research (stage 2). Her comments seem to relate more to the requirements of the information skill of *organising* - ' I didn't know how to combine'. However, the context of her comments indicated she was making them with reference to the information skill of '*presenting*' in that she was writing of the need to keep both the audience and the content in mind when choosing a form for presentation. Gloria wrote:

*How I presented the answer changed quite a lot because the first assignment was mainly written work and then a questionnaire that I didn't really relate. I just didn't know how to combine ... I did three things, the essay, the questionnaire and the poster which did not really symbolise the information. It was not as it should have been [36 II- May 1996].*

Gloria saw the development of the Presenting skill as being important for understanding and for learning, both of herself and of the reader. This realisation was indicated in the first interview, when she was commenting on

the advantage of using tables to present information that was of a comparative nature:

*they are easier for me to learn. If I'm learning more easily then I should put it that way. [chances are] others will learn from me putting it into tables [18 INT- April 1996].*

In this interview Gloria indicated that the way work was presented had both an aesthetic and a cognitive advantage:

*when you are collating the information you are compacting it so that it is easier to understand as well as to look at [18 INT- April 1996].*

She put these dual notions into practice, and this was evident in the improved quality of work that was presented in SAC.

By the time she was working on the last SAC research task in the research Gloria noticed that increasing competence in using the *presenting* skill had brought about a change in her learning. She noted:

*I will include pictorial representations and tables as I feel they are easier to understand. I also inappropriately used pictures in my first assignment. It really only had cutouts on it. I thought it looked good but it did not say things.... there was no real information. I used pictures which did not prove anything in my research. In my second assignment - I have planned to present the data in a way that I understand it and others may understand it best in the form of tables, graphs and pictorial representations [37 IL- May 1996].*

Gloria's work with the information skill of *presenting* raised her awareness that while creativity has its place in presentation, it also needs to be both complementary to the content that is being presented, and suitable to the audience.

#### **5.3.5.4 on Helen**

At the beginning of research (stage 2) the *presenting* skill was the one facet of using information in which Helen said she was quite competent. In the personal profile as an information user instrument she indicated that she handled very well each of the aspects indicated in the items [4 IL- November 1995]. As the research progressed Helen noted changes in her use of the *presenting* skill.

In the planning sheet for the second SAC research task Helen acknowledged that:

*I can see how all of the information skills must be used and not just the presenting one which is what I used to focus on* [23 IL- April 1996].

Looking to the other aspects of an information literacy framework certainly was a conscious decision on her part, and she was able to comment on herself as a user of information in this way:

*In the first sheet I concentrated a lot more on presenting the information. In the second sheet I concentrated more on the understanding of the question* [44 IL- June 1996].

Lest the researcher thought that the love of presenting was for learning's sake, at the end of research (stage 2) Helen commented that

*I would like to focus less on the presenting but I can't help it as this is the more interesting part of the task which allows you to be a bit different* [48 INT- July 1996].

Helen's starting point as far as this skill was concerned was interesting, in that she was conscious of the appearance of the response – not for any communicative purpose, but for appearance's sake. As the research progressed there is evidence to show that Helen recognised the significance of the *presenting* skill as a part of an information literacy framework.

#### **5.3.5.5 on Lottie**

Lottie's work with the *presenting* skill enabled not only competence in the skill but also metacognitive observation. In a Minute Paper early in research (stage 2) Lottie indicated that she would:

*like to get better at presenting information in less traditional and more effective way* [8 IL- February 1996].

When asked at the first interview what she meant by 'traditional' (20 GEN- April 1996) in this context, Lottie said that she meant 'straight notes'. The self-assessment made in the Minute paper was supported by a comment she made in the second interview [39 GEN- May 1996]:

*I always stick to a pretty similar form of presentation.*

Lottie appeared to be re-evaluating her use of the *presenting* skill throughout the research. She acknowledged the possibility that 'straight notes' might not be the most efficient way of presenting information. In the self-evaluation sheet that she completed after having submitted the first research task, Lottie

was asked if she had learned any skills she did not have before. She responded:

*I learned to draw much better diagrams* [21 IL- April 1996].

In the self-assessment sheet Lottie completed after having submitted the second SAC research task, she indicated that:

*I probably could learn some new skills - how and when to use bar graphs because I don't use them that often* [34 IL- May 1996].

Here she acknowledged that forms of presentation needed to be considered not only with reference to content but also with reference to appropriateness.

Towards the end of research (stage 2) Lottie commented in the third interview:

*I think I'm a lot more organised now in my presenting, I think it's because I've been made more conscious of it* [48 INT-July 1996].

Lottie believed that one of the significant changes she experienced from working in the information literacy framework related to her *presenting* competence. She developed an openness to ways other than those with which she was comfortable. In the second interview she said:

*I always like to stick to a pretty similar sort of presentation* [37 INT-May 1996].

Two months later her perceptions had changed and she commented:

*like when you're all talking together you get new ideas about how to approach things; like people had different ways of doing, ways of presenting their information, some people had diagrams, and circles and pictures and all sorts of things and I was just doing it under headings* [48 INT- July 1996].

She was working on the third SAC research task when she made this comment, and in the work she later submitted, there was evidence that she was prepared to experiment with forms of presentation quite different from her usual ones. This evidence of greater competence in using the *presenting* skill was enhanced by Lottie's willingness to continue to explore her options.

### 5.3.5.6 on Sandra

At the beginning of research (stage 2) Sandra's first planning sheet indicated she knew how she wanted to present the information. In the first planning sheet she mentioned she would be:

*presenting all my research and findings on photocopied sheets ... to be handed out* [1 IL-November 1995].

There was no consideration of the factors involved in preparing what was actually going to appear on those sheets, something on which she had rated herself highly in the personal profile as a user of information [4 IL- November 1996].

By the time she did the second planning sheet several months later she displayed understanding of what was entailed in using the presenting skill. There was the matter of the timing of deciding what form of presentation she would use. Rather than have the way she organised her information dictated by the presentation, Sandra wrote that she would work through the information, decide on her line of argument, and then in using the presenting skill she would opt for what would be interesting, informative and clear to the reader:

*decide what approach to take ... explain why I chose that and then deciding on my presentation ... how best to explain my views*  
[24 IL- April 1996].

In the second interview, Sandra said that using this particular information skill had helped her:

*see what you have done and how you've done it, and get your information across to the readers so that they know what your aim was*  
[37 INT- May 1996].

Close to the end of the course Sandra was asked to comment on any similarities or differences she had noticed in the way she had approached and done assignments in other subjects at the start of her time in the research group, and how she was doing them at this stage. In her response she commented that:

*SAC has taught me how to use the information skills process and apply it to all assignments ... It's taught me different ways of presenting information as well* [36 IL- May 1996].

In a Minute Paper Sandra completed prior to submitting the third SAC research task, she said:

*It's important to experiment with different styles and ways of presenting information, if they suit* [38 IL-May 1996].

This is somewhat different from a comment she made in the second interview:

*I've kind of kept to the basic way I have always presented information ... I just find it comfortable* [38 IL- May 1996].

Sandra's developing competence with the information skill of *presenting* is shown in her willingness to move out of her comfort zone and to explore the possibilities for presenting information in ways new to her, and with a view to her audience.

### **5.3.5.7 on Vivienne**

At both the beginning and the end of the research period Vivienne indicated that she gained satisfaction from the way she presented her work. However, the depth of understanding of what is entailed in the *presenting* skill increased throughout the research (stage 2) period.

When asked early in the research to comment on the information skill of presenting [4 IL- November 1995]. Vivienne mentioned the enjoyment of actually presenting a task; and, the ease with which she was able to choose the form the presentation would take. When asked to complete the same data instrument seven months later [42 IL- June 1996], Vivienne mentioned the interest and sense of originality that presenting information in different ways provided for her as a learner. She also said that in choosing a form of presentation, the suitability of that form for the audience had to be considered.

When she was working on her first SAC research task, Vivienne indicated in a journal entry that she was taking some time trying to decide how she would present the information that she had chosen to include in her research task:

*I've already planned out what I want to do but I don't really know how to present the information* [51 GJOU- December 1996].

The form that she finally chose was in two parts - both handwritten: a couple of pages of her own comments, and information gathered from interview. The form in which the third research task was presented was of a much higher standard. It included an introductory section that established the terms of reference she was using in the task information, from several sources, which was used as a basis of discussion, and her reflections on the topic with

reference to that information. The sources that she used were cited in a bibliography.

In the first interview Vivienne was asked to comment on whether her learning had been affected from her working on the information skill of *presenting* and she replied that:

*in most subjects like you write out information and maybe copy a few charts that have already been done but this [skill] sort of makes it clearer in your head as well as the way you set it out... rather than just write it out to finish it. You see it more clearly, it makes it gel*  
[18 INT- April 1996].

Here she acknowledged benefits of being competent in the use of the skill, and in the third interview Vivienne commented that after having worked with this skill

*I look at different types of presenting now ... overheads and stuff ... talking ... recording.* [50 GEN- July 1996].

In the same interview she predicted that her increasing competence in the use of the *presenting* skill would have long term benefits for her, saying:

*I want to do marketing so it will be very important.*

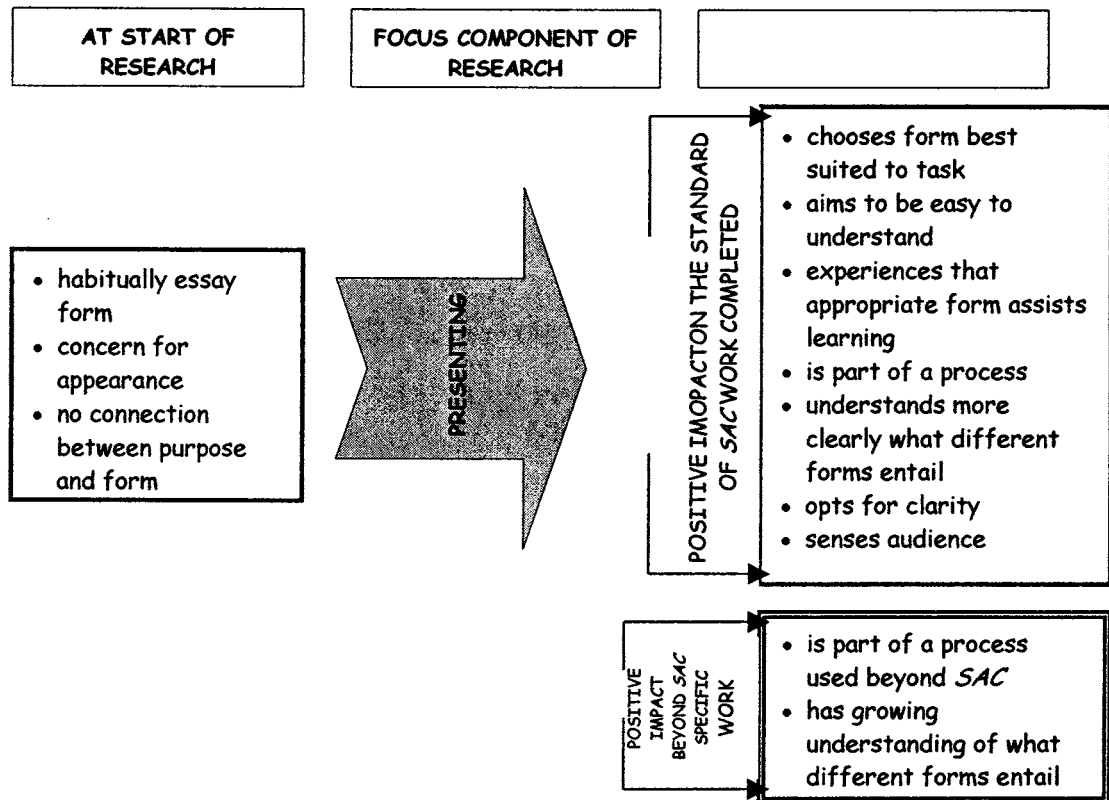
There is evidence to show that Vivienne increased in competence as a result of working closely with the information skill of *presenting*. She moved from a position of choosing a form that pleased her to choosing a form that suited both the content and the audience.

### **5.3.5.8 Summary**

Figure 5.7 overleaf presents convincing evidence that working with the *presenting* skill of the information literacy framework had an impact on the learning and experience of the girls.



FIGURE 5.7  
SUMMARY OF KEY INSIGHTS INTO THE IMPACT OF WORKING  
ON THE INFORMATION SKILL OF *PRESENTING*



### 5.3.6 Impact of the information skill of *evaluating*

The locating skill focuses the information users' attention to users assessing what they learned from performing the task. Competence in this skill enables the users to:

- determine whether or not the task has been completed
- assess their use of the information skills process in doing the task
- examine strengths and weaknesses in specific information skills
- identify increases in knowledge
- set personal goals for developing increased competence in the use of the skills [NSWDE, 1989, P.8.]

One of the personal observations from her 36 years as a teacher that the researcher makes is that students are quite 'marks-oriented', which is not so surprising given the system in which they are being educated. When a submission is returned to them after having been corrected, the interest as a

general rule is in the mark that was awarded. Sometimes there might be some interest in the comment that the marker has made. When the students in the research group discussed the information skill of assessing, it was clear that they were thinking in terms of marks gained, rather than in terms of the skill being part of a learning framework. The researcher consulted with colleagues and with the knowledge and understanding of the girls in the research group, opted for the word 'evaluating'. This was a teaching decision; the researcher sought to ensure that the girls saw the skill did not relate to the mark, but rather that it related to evaluating themselves as learners, and as evaluating their use of the framework.

Initial sifting of the data revealed that with the skill of *evaluating*, there was a marked degree of similarity between the comments each of the girls made.

#### **5.3.6.1 on Christina.**

Christina said early in research (stage 2) that she tended not to evaluate her work before she submitted it, but after she received it back from the teacher. The evaluation she made was marks-related rather than focusing on learning:

*I feel I could improve ... [on the evaluating skills]...because like many other people I know I will only reassess my work after receiving it back marked if I have lost marks. In some cases this is good because you tend to remember your mistakes and not make them again. But this also tends to take away from the purpose - learning (4 IL- November 1995).*

Two months later, Christina noted in her journal that while she doing an SAC research task she was evaluating as she went along - before she finished it and submitted it- *I questioned the relevance of certain points (52 GJOU- January 1996).*

Her comments on the change from considering evaluation to be related to marks gained for work to being a part of the whole learning process became a source of comment in later interviews. In the interview half way through the second stage of the research she not only demonstrated an understanding of the skill but also an awareness of its worth to learning:

*[You]. ... look back and see if you have gone through all the steps, how well you did each of the steps, how relevant your work is...critically look at the ways you do things and the processes you go through and the time you spend on each of the steps. How relevant each of them are to what you want to present [18 INT-April 1996].*

### 5.3.6.2 on Danielle

In her first planning sheet there was no indication that Danielle would evaluate the process she was going to implement when doing her research task. For her, to get the task completed was the focus of her energies. The thought of having to redo parts of the task as a result of what surfaced in an evaluating exercise was not something that she happily contemplated as acknowledged in a Minute Paper completed after the second interview:

*I think a lot of people are actually scared of their mistakes and actually fixing them after they have spent so much time [39 GEN- May 1996].*

In an earlier interview Danielle indicated that she could see the benefit to be gained from asking key questions relating to the *evaluating* skill such as ‘Do the end products of my research, as presented, meet the requirements of the task?’ and ‘Which information skills did I use competently in this task?’ She said:

*I know I've done this because I've never been told my answer was irrelevant. I do it, hand it in, and see what the teacher thinks about it [18 INT- April 1996].*

In the Minute Paper written a month after this interview, Danielle’s comments demonstrated much more recognition that now she used the evaluating skill:

*Doing the skill really is just to see what I should have done better, why I might not have gone so well, and also see what I should do for next time [38 IL- May 1996].*

A journal entry made around the same time indicated that although Danielle was applying the evaluating skill to her learning much more broadly than having concern simply for the marks that were awarded for the task, there was a little reluctance in doing so:

*When you can notice it should be done again it is in the back of your mind if you don't...and the answer is more accurate [51 GJOU- April 1996].*

In spite of this reluctance Danielle recognised a benefit gained from developing a competence in the use of the evaluating skill was that it helped her in a practical way, in determining ways to improve her learning:

*Well, hopefully I'm improving. Like, myself, I've always been able to see where I should be doing better and stuff, and now I can actually see what I have to do [51 GJOU- May 1996].*

Danielle also made a comment that related to an exercise she completed in one of the group meetings. This exercise required the students to evaluate the

process used and the content presented in the research task that they had just submitted. In this self-evaluation exercise, Danielle commented that she could use the contents in a particular topic she was studying in another subject, and that she could use the information skills employed across her curriculum studies. Later on that day, on reflection Danielle noted that the presenting skill and the locating skill could have been more fruitfully applied in her research task [22 IL- April 1996]. This metacognitive observation contrasts strongly with the quotation above expressing Danielle's concern that to go back over one's work with the view to changing it if needed, is a waste of valuable time.

### 5.3.6.3 on Gloria

There is evidence to suggest that the *evaluating* skill has impacted on Gloria as a learner. In the second and third interviews she expressed the idea that development of the *evaluating* skill was integral to her developing as a learner operating within an information literacy framework. In the second interview she said:

[this skill]. .. *enabled me to see what I can improve* in [37 INT- May 1996].

A statement made in the following interview supported this:

*it helps me see how I should improve* [48 INT- July 1996].

Gloria developed the *evaluating* skill in two broad ways. First, there was the evaluation of the content:

*I also learned how to evaluate statistics and things like that more thoroughly* [46 IL-June 1996].

Secondly there was the evaluation of the process. In a checklist of herself as an information user, Gloria said that she rarely reviewed her work, and rarely reviewed the process she had used [9 IL- February 1996]. In the third interview she indicated a significant change in her competence in the *evaluating* skill:

*If I've enough information, I'll go and evaluate the steps. ...I define, locate, select and all of that, but I put in an evaluation after each one* [48 INT- July 1996].

In evaluating the process of learning within an information literacy framework Gloria did not treat the skills necessarily in a sequence, but rather she worked in loops. In a data instrument issued close to the end of the research period Gloria wrote that:

*I learn better when I go over it ...[the task]. when I go over the task I make sure I have completed it, and fix the parts left out or not done so good [sic]. If I have not completed it and I do not go over it, I will not complete it [44 IL-June 1996].*

From someone whose communication skills generally are well recognised, this idea was expressed rather clumsily, but it did convey Gloria's point that the use of the *evaluating* skill enabled her to attend to the requirements of the task.

#### **5.3.6.4 on Helen**

In the third interview Helen reflected that when she was first asked what the information skill of *evaluating* might entail, she thought it probably had to do with allocation of marks, and she was a little surprised when she read the items related to this skill as listed in the personal profile as a user of information. When she completed this data instrument [4 IL- November 1995] it was with reference to the evaluating skill that she not surprisingly scored herself the lowest.

In Helen's first planning sheet there was no evidence that she would evaluate the work she had planned, but as her work in the research progressed Helen was able to make this comment in the first interview:

*[In SAC]... You learn a lot from going back ... you see the things you can improve in [18 INT- April 1996].*

Helen recognised a change in her use of the *evaluating* skill in terms of how she planned her responses to research tasks. In the final comparative exercise, Helen observed that:

*In the second planning sheet I concentrated more on understanding the question ...looking back to the question we had to do and seeing if I was answering it. [36 IL- May 1996].*

In the third interview when asked to comment on her use of the skill she responded:

*I guess I probably do ... I always reread my work ... I still sometimes don't do it consciously. I do read back over it and make sure I have answered the question or covered a skill but I've not thought of that as a skill itself [48 INT- July 1996].*

Later on the same interview, when asked if she went through each of the six skills in order, Helen said that:

*A lot of the time I have to loop anyway because when I'm, say, selecting I realise I need more information. Sometimes I'll go and look for information and I find I'm not really sure what the task wants me to do, so I have another look at the definition [48 INT July 1996].*

#### **5.3.6.5 on Lottie**

Throughout the research Lottie's competence in using the *evaluating* skill developed, as did her awareness of its worth. In the personal profile as a user of information Lottie's responses indicated a lack of certainty in terms of her understanding herself as a user of this information skill. The data instrument required that she rank herself in terms of outcomes of *evaluating* one's work. In three of these responses Lottie indicated that she was unsure of her competence (41 IL- November 1995).

By the first interview Lottie tentatively acknowledged that she was becoming aware of her increasing competence in using the *evaluating* skill. Lottie was asked to comment on whether or not she had employed this skill. Her response indicated a tentative acknowledgment:

*When I did the grey sheet [19 IL- April 1996] I realised there is probably a better way I could have done the assignment but I realised it too late [18 INT- April 1996].*

In the same interview she was asked if she thought that this skill could be of benefit to her as a learner, and she responded:

*[The skill]. ...helps me see a more logical way of presenting information in the future ... [Beyond SAC]. ... Just basically with the assignment or task or whatever. Just so that I'd done it.*

By the time the third interview was conducted, Lottie was using the skill not only to evaluate the task as a whole, but also evaluate her own research work:

*Looking at it now I've dropped India, I'm beginning to wonder if it really is a cross-cultural study. At first I didn't like the topic as it didn't seem to have much to do with opinion... was much harder because I had to do so much research [48 INT- July 1996].*

#### **5.3.6.6 on Sandra**

In the first two planning sheets nothing that Sandra wrote indicated any recognition of the place of the *evaluating* skill in her learning, although in the

personal profile as an information user she expressed that generally she used the skill well or very well [4 IL- November 1995]. Her perceptions had changed by the time she completed the planning sheet for the third SAC research task. In this data instrument Sandra indicated not only would she evaluate her work, and her use of the process, but also that:

*I'd evaluate other people's opinions and reactions to my assignment ...record the opinions of others so that I may apply their opinions to other research tasks* [32 IL- May 1996].

Sandra's competence in using the *evaluating* skill developed steadily throughout the research.

In the first interview Sandra was able to comment on her use of this particular information skill of evaluating. When asked to comment on it in terms of her work in SAC, she responded that:

*... it enables you to criticise your own work, see what you did and did not do ... discuss ways of improving it* [18 INT- April 1996].

A similar response was forthcoming when Sandra commented on the skill with reference to her work in other subjects. Here her response was:

*in the final stages of submitting you read through it again and say I want to change this now and you might change the whole thing.*  
[18 INT- April 1996]].

In this interview she said that by incorporating the evaluating stage into her use of information she was able to determine:

*if it fits what you are aiming at ... if it pretty well tells you what the task... if you've included information for the task ... if it gets your information across clearly... and is to the point.*

In a journal entry a fortnight after this interview, Sandra seemed to have had a change of heart in terms of a positive response to the worth of the *evaluating* skill. She made a somewhat grudging comment on the worth of the *evaluating* skill:

*I don't really use this process much, since the task has ended, but I suppose I should include it as one of my steps since it can be of use and value to completing another task* [51 GJOU- May 1996].

Later, in the third and final interview, Sandra's attitude to the *evaluating* skill's worth was more positively expressed with her statement that she planned to incorporate this skill in her learning beyond SAC:

*I intend to use it in other assignments.* [48 INT--July 1996].

Given that there was no evidence of her having incorporated it into her learning at the start of the course, it is significant to note that towards the end of the research group, Sandra made this point - in the second interview:

*I think this is the most important because you are the main critic of your own work* [37 INT- May 1996].

### **5.3.6.7 on Vivienne**

Throughout research (stage 2) Vivienne made significant progress as a user of the *evaluating* skill. At the time of the first interview, Vivienne had not integrated this skill into her learning, as she expressed when asked about the impact of this skill in her learning beyond SAC:

*in other subjects they don't tell you to so I sort of think if it's over, it's over* (In the context from which this quotation is taken, it is clear that 'it' refers to the task at hand.) [18 INT- April 1996].

A month later, in the second interview, Vivienne expressed the opinion that working with the *evaluating* skill:

*has helped me see what I had not done in the steps, to try and fix them When I was doing chemistry and stuff I'd assess how I went ... I'd usually locate everything- I'd spend hours looking but not spend much time putting it together to complete the task* [37 INT- May 1996].

In the third interview two months later, Vivienne reflected:

*I've dropped Chemistry now so that's not relevant, but I've used it in Music heaps because we have been doing a lot of sort of assignments* [48 INT July 1996].

In the personal profile as a user of information, Vivienne indicated that she was undecided on whether or not she was able to assess her use of the information literacy framework in completing the research task, and whether or not she was able to examine her strengths and weaknesses in specific information skills. She expressed the opinion that in terms of the information skill of *evaluating*:

*it was always used, but it is a bit of a waste ...when looking over marks you set the goal to better your work* [4 IL- November 1995].

This latter comment suggested that for Vivienne 'evaluating' was related not to the process of learning, but rather to reviewing the marks allocated by the examiner.



Six months later when she completed this data instrument again, Vivienne said:

*I find this skill of evaluating to be very useful. I am more likely to pick up my strengths and weaknesses and to plan to improve the skills rather than look back on the task and see how well I completed it after it is marked. I can also recognise increases in knowledge [42 IL-June 1996].*

Vivienne had mentioned this sense of the information skill of evaluating being useful to her learning process in the third interview. She commented that an advantage of having worked with the evaluating skill in this information literacy framework was:

*Realistically makes me see how many faults there are along the way [48 INT- July 1996].*

#### **5.3.6.8 Summary**

At the beginning of the research group meetings there was a lack of competence in use of the information skill of *evaluating by* the seven girls. The two common threads in the early data instruments were:

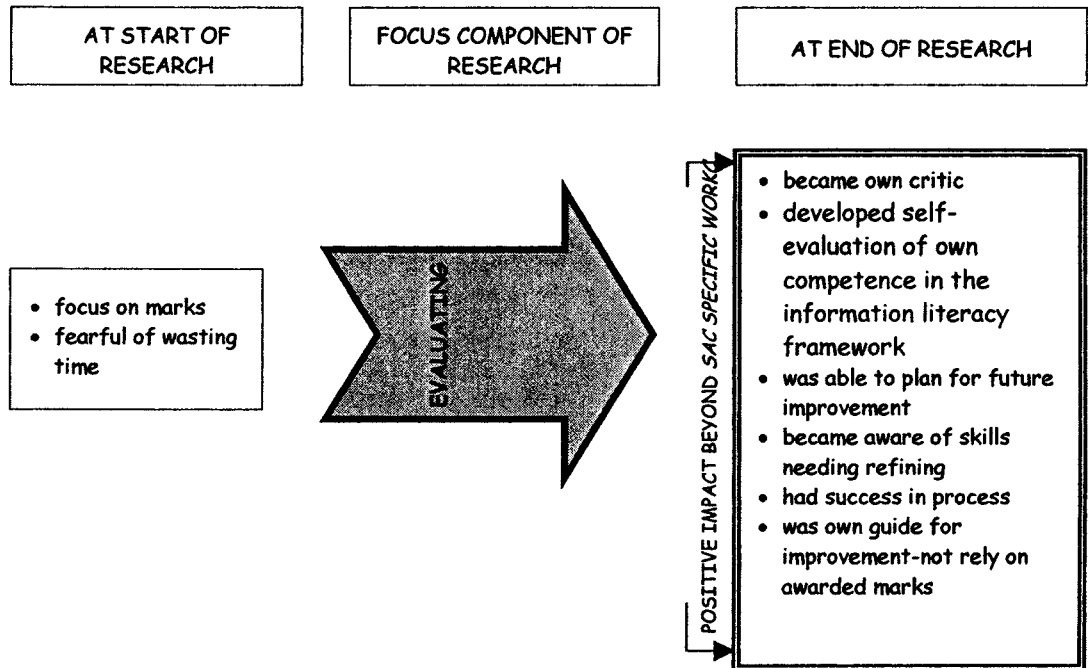
- a sense that ‘evaluating’ was marks-based, trying to work out why a certain mark was allocated to a piece of work; and,
- a sense of what girl described as ‘fear’ that to go back over work once you had decided on a plan of action was tantamount to wasting precious time.

By the end of the research each girl’s competence in using the skill had developed. Evidence to support this assertion included:

- taking responsibility for one’s learning;
- improved quality of the end-product;
- developing metacognitive ability.

Figure 5.8 overleaf shows working with the *evaluating skill* of the information literacy framework had an impact on the learning and experience of the girls.

**FIGURE 5.8**  
**SUMMARY OF KEY INSIGHTS INTO THE IMPACT**  
**OF WORKING ON THE INFORMATION SKILL OF EVALUATING**



**5.4 SUMMARY OF FINDINGS, USING A FRAMEWORK ADAPTED FROM VYGOTSKY.**

The context for the data analysis was adapted from the Vygotsky [1975] framework of three components- a baseline, a mediation factor and an endline. The baseline for this research is evidence of the girls' competence in using the six information skills of the information literacy framework, and the endline is evidence of their competence at the end of the research. The mediation factor is the information literacy framework of learning that they experienced in research (stage 2) and while they completed a curriculum area closely related in spirit to the information literacy framework. Section 5.4 presents two different groups of findings, following the structure of this chapter. It presents the impact of the information literacy framework on the girls' learning and then it presents the impact of the six component skills of that framework.

#### **5.4.1 Summary of findings concerning the impact of working within the information literacy framework**

The research finds that the information literacy framework impacted on the learning of the girls. The findings from the analysis of data are grouped into three:

- underlying belief of the group about the six information skills
- attitude to the group about working with the six information skills
- common features of work submitted.

First, the girls strongly presented their opinions about the six information skills. There was unanimous agreement that there was no need for them to focus on the framework because they did it all automatically. Not only did they believe they fulfilled the requirements of the skills as set down in the text [NSWDE, 1988], but also the claim was that they were competent users of the skills.

By the end of research (stage 2) the girls had experienced a change in these opinions. Working with the six skills closely, and growing familiar with what each skill entailed, led each member of the group to an understanding of each skill. Rather than look at the name of any one of the skills, e.g., *defining*, and then say 'Well, I've answered the question, so I must be competent with this skill', they came to understand the component requirements of each skill. With this understanding came an awareness that they previously had not been incorporating the six skills in their learning, and they had not been working within an information literacy framework.

Secondly just as the girls expressed strongly their thoughts about the framework, so too did they about working closely with the information skills. Data collected show that in the group's early opinion, working directly with these component parts of this particular framework of learning was pointless (because they did not need the practice), a waste of time, and irrelevant to their SAC course that was the context of the research. Working closely with the information skills was seen by the end research (stage 2) to have had a favourable impact on their learning. The skills were beginning not to be seen as isolated activities, but rather as parts of a process that helped to keep learners focused. As competence in using the skills increased, they were seen

as a useful structure for learning, and this structure facilitated the favourable completion of tasks. Not only were the skills appreciated as steps in the learning process, but because they flagged areas that needed improvement, both in the content of whatever task in hand, and in broader learning. When they were understood too, the skills were also seen as having relevance to learning in areas beyond SAC.

The research tasks that the girls submitted throughout research (stage 2) provided useful examples of the areas in which any impact of working with the framework could be seen. In the first SAC research task, there were features that suggested a lack of competence in utilising information within the framework. Generally, the work was descriptive and in some instances, superficial, and undoubtedly the reason for this outcome could be partly attributed to the fact that the sources that the girls accessed were limited almost entirely to books. The responses tended to be in the form of paragraphs, even though the task lent itself both to a wider range of sources, and to forms of responses beyond paragraphs. Infrequently the sections of the responses displayed unity.

Considerable changes as evidenced in the quality of the SAC research tasks occurred by the end of research (stage 2). An obvious observation was that the responses became increasingly more focused, and the content more relevant as the research progressed, with task requirements being met with increasing competence. The findings indicate that this facet of improvement was a result of more systematic planning, deriving frequently from work with the *defining* skill. This planning contributed to more effective forms of presentation, and responses wherein the parts became part of a cohesive whole. The girls moved beyond seeking material only from books; this was done with discernment, and with sources being checked for authenticity. The responses presented evidence of growing competence with synthesis and analysis.

This evidence shows that characteristics of the girls' learning had changed through research (stage 2). The evidence also allows for observations on two areas that were not specifically related to the SAC curriculum area that was the context for the research. These two non-curriculum sets of findings were 'Advantages to the girls as learners', and 'Personal advantages.' The girls

expressed in the research that using the six information skills as part of a process within the information literacy framework resulted in planning their task responses better and analysing them more effectively. They produced increasingly more relevant work, with the emphasis being quality of argument and presentation rather than length of response. Early in research (stage 2), part of the resistance to learning about the framework was that the girls were pressured for time. By the end of the second stage of the research the framework was seen to have them save time because they were using it more efficiently, and a suggested reason for this change was that the six skills gave them a cognitive map for their learning. As mentioned above, the quality of the responses improved, and this change reflects an advantage of the work the group did within the framework, namely, engaging in higher order thinking. In research (stage 3), twelve months after the meetings finished, the girls commented they continued to enjoy the advantages of the information literacy framework in their studies. At the end of the second year out of secondary school they had incorporated the framework in their lives and in their learning.

As well as the advantages experienced as learners, the findings are that the group experienced personal advantages from the framework. Evidence showed increases in both the retention rate of new learning, and also increased personal confidence. One of the girls made the point that her confidence increased with the increased time she spent working within the framework.

#### **5.4.2 Summary of findings concerning the impact of working with the six discrete information skills**

The following six subsections report summaries of the impact of each of the six discrete information skills.

##### **5.4.2.1 Impact of the information skill of *defining***

The endline evidence leads to the finding that working with the information skill of *defining* had a positive impact on learning. At the baseline a distinct lack of competence was displayed and this manifested itself in three ways. First, this skill was considered to have been done without any thought given to it- and this was apparent in the written responses submitted early in the second stage of the research. Secondly, *defining* was considered to have been

done simply because the task was finished. The third indicator of lack of competence was the view that *defining* meant stating the task in one's own words.

After experiencing the mediation factor of close work with the defining skill, evidence shows that the competence of the group developed, with a resultant positive impact on the girls' learning. The effect of this competence as shown in the SAC research tasks is that thoughtful interpretation of the task contributed to a clear focus on the requirements of the task. Learning within the information framework came to be seen as entailing a process of which *defining* was part, not a cognitive activity done in isolation. Competence in *defining* was seen as providing a basis for efficient *locating* with searches being focussed rather than random.

As was shown with the other information skills, competence in *defining* was seen to increase with practice. Owing to the domino effect, efficient use of the *defining* skill kept the task in focus. This resulted in marked improvement in the girls' curriculum responses; their satisfaction in the improvement increased their confidence as learners.

#### **5.4.2.2 Impact of the information skill of *locating***

The endline evidence leads to the finding that working with the information skill of *locating* had a positive impact on learning. At the baseline one perception was that *locating* was not really an information skill at all, because it simply was what one needed to do. The group almost exclusively relied for information on books, mainly from the College's library. In the early days of research (stage 2), a reason commonly expressed was that time pressures did not facilitate conscious use of this information skill. When sources were accessed there was no evidence that they were checked for authenticity or reliability.

At the end of research (stage 2) the endline evidence showed that the group was becoming more competent in using the skill of *locating*, and that this had a positive impact on their learning. The skill was seen as part of a process that enhanced their learning, particularly in that it afforded them a wealth of information not previously realised. With this development they were exposed

to a wider range of opinion, resulting in a developing awareness of bias. Searches for information were less motivated by personal preference for different sources, and more motivated by the need to fill out gaps in information. The most obvious impact on learning of developing competence in this skill was the enthusiastic embrace of varying sources other than library books. A significantly new experience for the group was to see people-including themselves- as sources. As far as the baseline notion that locating was not given much attention because of pressures of time, the endline experience was that developing competence in the use of the skill saved time.

#### **5.4.2.3 Impact of the information skill of *selecting***

The endline evidence leads to the finding that working with the information skill of *selecting* had a positive impact on learning.

Again the claim across the group was that this information skill did not need to be worked on because it was used automatically. The claim was that indicators of competence in the skill were practised, but this was not demonstrated in the submitted responses. Two practices motivated the girls in their use of the skill of *selecting*. Across the group after the information was located there was a tendency to move into copies of the final submission. Information to be used was decided on quickly, the basis of selection being whether or not the information could be moulded into a response. The dominant feature of the baseline for this skill was the reluctance of the group not to use any information they had located. There was a sense that to do so was a waste of time and effort, and the result was that what could be called 'padding' appeared in responses. This sense was reinforced by a belief that the length of the response was a reliable indicator of the worth of the piece of work.

The endline evidence strongly supports the finding that working with this information skill had a positive impact on the learning of the group. Girls chose information more thoughtfully, with the purpose of the SAC research task clearly in focus. Their responses were more specific, contained fewer and fewer distracting irrelevancies, and were sensitive to audience. Whereas in the early days of research (stage 2) information might be repeated because the author had lost focus of the task, at the end of the stage, repetition was

identified and attended to. The girls came to appreciate the benefit of checking sources, and displayed discernment in their use of them. Increase in confidence as learners, was attributed to the increased competence in using this skill.

#### **5.4.2.4 Impact of the information skill of *organising***

The endline evidence leads to the finding that working with the information skill of *organising* had a positive impact on learning. The baseline established for this research showed competence in this skill was very low. For example, one of the girls stated that she skipped it when doing the early tasks, even after she had completed the checklist that listed all of the indicators of competence. At the beginning of the research the group's work was descriptive, lacking any effective analysis or synthesis. The form of presentation was sometimes decided upon before any information was located, and this early decision affected the cohesion of the end product.

At the end of research (stage 2) the competence of the group in using this skill had grown. Far from it being an option that could be discarded, *organising* came to be seen as being part of the process that underpinned the information literacy framework. The developing competence of all members of the group in using the skill was apparent in the quality of their responses to SAC research tasks. These developed into synthesised information forming effectively structured analytical arguments that had the audience in mind. Girls commented that increased use of the skill helped them work with material that was relevant to the task. In moving from the descriptive responses, they found the *organising* skill useful in terms of forming opinions and expressing these with confidence in their work.

Beyond the confines of the research, all girls commented further that they appreciated the benefits of using the *organising* skill in their studies and their employment since leaving school.

#### **5.4.2.5 Impact of the information skill of *presenting***

The final endline evidence leads to the finding that working with the information skill of *presenting* had a positive impact on learning. One feature of the girls' work that dominated the baseline data was their lack of



competence in using this skill. In the few instances when they flirted with other than the basic essay form of presentation, the end result was designed with no connection between it and the purpose of the response. The major concern was for appearance, and the issue of relevance was not considered.

The endline is that the girls' competence in using the *presenting* skill impacted on their learning. With a developing sense of audience the submitted works were clearer than the earlier ones, and the line of argument was easily understood. Girls' comments indicated that by being discerning about the impact of different forms of presentation, they as learners experienced the benefit of learning from doing the task. The realisation that certain forms suited certain SAC research tasks more than others did, resulted in the actual submission being a learning experience, rather than being an aesthetic one as it was at the start of the research. The interconnectedness of the *presenting* skill with the other skills was noted, as was the idea that this skill was part of a process, not an entity isolated from all else in the learning process.

There was little comment on the *presenting* skill in the research (stage 3) data. One girl did comment that in her office when a report was requested of the employees, she was more readily able to present information in the form the employer wanted than were other colleagues new to the job. She indicated that the reason for this skill was that in the second stage of the research she learned that different tasks needed different forms of presentation, and she was able to adapt her presentation skills to the task the employer had given them.

#### **5.4.2.6 Impact of the information skill of *evaluating***

The concluding endline evidence leads to the finding that working with the information skill of *evaluating* had a positive impact on learning. Of all of the information skills it is the competence developed in terms of the *evaluating* skill that is the most significant.

In Figures 5.4 to 5.8, the endline findings could be categorised into the impact that working with the particular skill had on the increased competence in using the skill, and on learning beyond SAC. So profound was

the intensive use of the evaluating skill, that the impact blurred those boundaries, because the skill had become part of the girls as learners.

At the very beginning of research (stage 2) there was a unanimous misunderstanding of what the skill entailed. The group believed that it had to do with the mark that was awarded for a submission. When the competence indicators were presented to the girls, ignorance was replaced by reluctance, with the girls seeing no value in going back over any part of their plan or draft with a mind sufficiently open to make significant changes if they were needed. They seemed to be making the 'ignorance is bliss' wisdom their own.

The last evidence collected leads to findings that marked changes in attitude towards and competence in using the skill of *evaluating* enhanced the girls' learning. Owing to its nature the evidence comes primarily from the observations the girls made, rather than from any improvement in quality of the responses submitted.

The girls noted that the evaluating skill did not operate in isolation, and this conclusion led them to use it not only at the end of the SAC research task, but throughout. They developed the capacity to look at their work honestly, with the focus being the relationship between what was done and what needed to be done in order to fulfil the task. As they were evaluating holistically, and developing their competence in this particular skill as part of a process, they in fact developed themselves as their own critics, and evaluated themselves as learners within the framework as a whole. This honest self-evaluation meant they were not threatened by revealing particular skills- or component indicator of the skills- that needed to be refined. The girls became their own guides for self-improvement. The *evaluating* skill has been utilised by girls in their studies, and in employment.

#### **5.4.3. INTERACTION IN THE MEDIATION PHASE**

The intensive exposure that the researcher claims as the mediation factor in Section 3.2.4 consisted of the girls learning and the researcher teaching an HSC subject. The mediation was not an impersonal phase, but rather it was one in which teacher and learners, researcher and participants, constantly interacted, as is possible in a small group of seven students and one teacher. In choosing the research context the researcher was guided by the social

literacy component of the subject *Society and Culture* which was not a content-driven subject.

The role of the researcher as teacher was to facilitate the girls' development as utilisers of information as required by the SAC syllabus. The development was directed by the six information skills. The focus of the researcher as teacher was on the girls and their progress. The researcher was not only conscious of but also sensitive to the duality of her role. In a journal entry in April, 1996, the researcher stated the need to *bring up the social literacy aim again* [RJOU April, 1996].

The mediation factor as presented suggests that while it does not depend on a particular personality type to make the information literacy framework work, it cannot occur without interaction between learners and teacher.

Chapter Six that follows makes conclusions on the research as a whole, and gives recommendations.

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## **CHAPTER SIX:** **CONCLUSIONS AND RECOMMENDATIONS**

### **6.1 INTRODUCTION**

Three areas of activity present themselves in research:

- the participants;
- the setting; and,
- the research question.

In the current research these three areas not only had in common the particular research experience, but also a close connection to the secondary school scene in New South Wales. The research context was a subject offered as an HSC option for students. The research was conducted in a school that is part of the system of schools organised by the CEO, Sydney, located in the Inner West Region of that system.

Research in Australia [Todd, McNicholas & Sivanesarajah, 1992; Todd, Lamb & McNicholas, 1993], had shown that learning of students in lower ability and mixed ability groupings was enhanced by their participation in learning in an information literacy framework that focussed on the six information skills of Defining, Locating, Selecting, Organising, Presenting and Evaluating. Similar research had been conducted in New Zealand and the United Kingdom.

What research had not yet shown was how utilisation of information in an information literacy framework impacted on the learning of gifted students. The current research investigated this very matter.

Gifted students already have been shown to have their own learning needs [Langhehr, 1994]. For reasons ranging from the ignorant to the political, sometimes these needs can be unattended in a classroom. The research reported in this thesis aimed to determine whether or not teaching using an information literacy framework would be of benefit to gifted students. The selection of participants was based on a checklist of characteristics of giftedness derived from the domains of giftedness described by Gagne [1993]. This checklist had been used previously by the CEO of the Inner West of the Archdiocese of

Sydney as a means of identification for a program for gifted and talented students.

To make the research beneficial to the participants it was conducted using an information literacy framework within a Board of Studies 2 unit Higher School Certificate subject. The information skills that constituted the framework of learning that was under scrutiny closely related to the requirements of SAC, the subject that was the setting for the research. The girls who accepted the invitation to participate in the research had the opportunity to continue with the subject for their secondary exit credential, the HSC. No participant chose to do this, but each one understood clearly she had this option.

The nature of the research marked the girls in it as a distinct group. However, the researcher saw nothing in the analysis of data to suggest that there is any evidence that the Hawthorne effect applied.

## **6.2 CONCLUSIONS**

The conclusions arising from the research findings cover two areas of positive impact of the learning framework: advantages in formal learning and advantages in life situations both during and beyond the research experience.

### **6.2.1 Formal learning**

The positive impact of experiencing the particular learning framework was extremely significant for each one of the seven girls. Each participant experienced significant changes in learning that she identified as being a result of working within the information literacy framework. The level of competence increased substantially with practice, indicating the importance of reinforcing the framework if students are to gain lasting benefit from it. In specific terms, the effect on formal learning is to be found in the following areas:

- the quality of the work the participants completed
- the understanding that the participants developed of the framework and the process entailed in it
- the growth in metacognitive awareness.

Systematic exposure to the information skills as a process resulted in all of the participants producing improved responses to tasks. At the beginning of the second stage of the research period there was little evidence to suggest that the participants could approach a task as competent users of information. Planning was *ad hoc*, search range and techniques were limited, presentation generally was unimaginative, and there was no evidence to suggest that the participants evaluated themselves as learners while they were doing tasks.

By the end of research (stage 2) the responses to tasks that the participants presented were more cohesive, more substantial, more efficiently organised and more suitably presented than were the responses to the first task. There was evidence that in completing the series of SAC research tasks the participants became reflective learners. In short, by the end of the research the indicators of lack of competence as users of information had undergone significant changes. The participants identified the cause of these changes to be their making conscious use of the information skills that constituted the particular information literacy framework being studied.

From the research it can be concluded that for gifted students, as with the other groups of students, a gap between perception and reality can be lessened by informed practice. At the beginning of the research there was a lack of understanding of the information skills as part of a process of learning. In the initial data collection there was a sense among the participants that they did not need to be schooled in the information skills that constituted the information literacy framework that was at the heart of the research. They claimed that they automatically incorporated the skills into their learning, and that to be referring to them so consistently was unnecessary. In the expressed opinion of one of the girls, *doing the skills are too basic for Year 11 because we use them anyway* [Vivienne, GJOU December 1995]. As the research progressed, the participants expressed increasing awareness that their initial perceptions were flawed. The more they understood the process involved in the framework of learning, the more competent they became at using information. This claim of increased competence was valid, because it was reflected in the work the participants submitted. For example, comparing SAC research tasks completed in April 1996 with those submitted in July 1996 at the end of the second stage of the research period it was clear that participants had

incorporated the six information skills in their learning. They developed an understanding of the skills not as unrelated tools, but as parts of a process of learning that could be undertaken by other teachers.

A third conclusion that the research affords, is that systematic exposure to the information skills process in the information literacy framework contributed to the metacognitive development of these gifted girls. In terms of themselves as learners, at the beginning of research (stage 2) the participants displayed metacognitive uncertainty. Almost to a person they said that they did not need to learn how to use the information skills of defining, locating, selecting, organising, presenting and evaluating, because they did those things automatically. Just as emphatically they said that they did not want to change from their habitual way of learning. The interesting question that arose from this finding was: if the skills involved in the framework were so entrenched in their learning, why would dealing with the skills that constituted that framework be a change? By the end of research (stage 2) the participants had identified the paradox. One could speculate whether this still would have happened beyond developments in the use of information skills, maybe in metacognitive development.

The research has demonstrated clearly that the information skill that most facilitates the development of metacognition is the skill of evaluating. In their novice stage of using the information skills the participants tended to work through the skills in a linear fashion, and hence they would evaluate their learning of the whole. As they became more competent users of information within the information literacy framework, they evaluated their learning during their SAC research tasks. At times this evaluating might result in their even revisiting the original defining of components of the task. The researcher speculates that at the start of the research group meetings this finding would have been rejected by the girls as a waste of precious time. By the end of the second stage of the research the participants confidently spoke about themselves as learners. They indicated how and where they had developed as learners, and they could identify the aspects of their learning to which they needed to attend.

### **6.2.2 Girls' personal lives**

The research was set in an educational context, and the nature of the major findings relates to the extremely positive impact of the information literacy framework on the learning of a group of gifted secondary school participants as students of SAC. As well as the participants reaping benefit in their studies in that subject, another significant area of advantage was the impact of the framework on the participants beyond the boundaries of the SAC research context. In specific terms a favourable impact of the framework was evident in the following areas:

- it was seen to contribute to more efficient use of time;
- the participants experienced its impact on their self-esteem;
- during research (stage 2) it was used in curriculum areas other than SAC;
- the participants used it in other curriculum areas in their HSC studies in the first year of research (stage 3); and,
- in research (stage 3), three years after the research period ended, the participants were still deriving benefit from continued use of it.

First, concern about not having enough time to fit in all that needs to be attended to in life was a reason girls gave for not joining the research. The participants recognised of their own accord that using the framework resulted in saved time. In early research meetings, concern was expressed that imposing another dimension on their studies would take up valuable study time. By the end of research (stage 2) they were reporting of their own accord that the skills of the framework were enabling them to move through tasks more quickly. The data instruments were not leading, and the findings came from the participants' own volition.

Secondly, participants commented specifically on a sense of wellbeing as a learner within the framework. This perception was attributed to the fact that the framework enabled them to learn at a higher level than before. It also enabled them to produce work that was of a standard pleasing to them. Beyond the research group, in particular three influences on their increased self-esteem were notable.



The participants developed greater confidence in themselves as learners. Part of this was based on a sense of pride in being able to access the information literacy framework because of their competence in using the skills. Two comments from the research (stage 3) data put this notion in their words:

- *I feel proud in having been part of it. It will help me in my career.*  
[49 IL- July 1997].
- *The course which I have studied for three semesters was in the same line of thought as information skills* [50 IL- November 1999].

The participants developed a sense of ownership for their learning because of their competence in incorporating the framework. Two typical responses suggested that they were well equipped to direct their own learning:

- *I have had to work out ways to get around problems* [49 IL].
- *I set my own deadlines for individual sections of the task* [49 IL].

There was a developing sense that being information literate was going to equip them well in varied ways in their lifelong learning. A deepening of social consciousness is apparent in the following statement:

*More aware of the value and unique quality of the ideas of others*  
[49 IL].

The long term presence of the impact of working in the framework was viewed both philosophically:

*The process becoming somewhat second nature* [50 IL- November 1999];

and practically:

*There is a strong emphasis on goals and performance in my firm-*  
[50 IL-November 1999].

Thirdly, while they were involved in the research, four of the participants operated within the information literacy framework while working in subjects beyond the research setting. They reported their belief that their learning in those subjects improved because of the skills of the framework. They commented on improvement in clarity and accuracy of responses, experimenting with different modes of presentation, extending their usual resource supply.

Fourthly, participants attributed the fact that the information literacy framework became embedded in their learning to the longitudinal nature of the research. In the school year following the research group meetings [49 IL] six

of the participants reported that they were using the information skills in their other subjects after the regular research meetings ceased. The following extracts from girls' writing support the conclusion that for six of the seven girls, the information literacy framework was embedded in their learning twelve months after the conclusion of research (stage 2):

- *I no longer have to think about it. I think that is because now I really carry out the skills automatically. It wasn't just a unit we did in class.*
- *It ... [the framework] has been a great help to me in my senior high school studies. Being information literate is essential to develop as a learned scholar...*
- *Although there has been an impact of working within this framework I think this has been a sub-conscious change in attitude.*
- *I [am] more open to different learning ideas. The course made me aware of my abilities.*
- *I am still specially defining and checking I am on track.*
- *I think about questions with more logic now, particularly when I evaluate and not only predict marks.*

Finally three years after the research group meetings finished, five of the seven participants responded to a research (stage 3) instrument. Each participant indicated that she had derived benefit from using the framework either in her tertiary studies, or in her work, or in both of these activities. Included in this group of five was one participants whose response to the 1997 instrument was:

- *I don't really think it has had any significant impact on myself.*

In 1999 she was asked to comment on whether or not she was aware of using the information literacy framework in the years since she left school. She stated:

- *Yes, especially for writing [articles]. You have to be able to research and find stuff fast.*

In responses from the remaining four participants there was an agreement that they were continuing to experience benefit from continued use of the

information literacy framework. This is apparent in the following selection of extracts from their responses:

- *I regularly use information skills in my work... in an environment where such skills are extremely important, it really opens up your eyes to see how much difference getting into good habits when completing tasks makes. ... how important it is to complete each step thoroughly, from having an understanding of exactly how well you did it.*
- *I find that as a reporter and collator of information ... the information skills have been beneficial in skimming away the crap from the reality, so the data appears newsworthy and visually stimulating.*
- *My initial response was no, but after thinking about it I have. I think I use them more now since I have taken up Industrial Relations. This course involves essay writing and discussions rather than numerical responses.*
- *They are silent mechanisms which I undertake to complete my studies.*

### **6.3 LOGISTICAL MATTERS**

The researcher presents three reflections concerning the logistics of the research.

#### **6.3.1 Changing 'Assessing' to 'Evaluating'**

The six information skills that constitute the information literacy framework reported in this thesis are listed in their document of origin. Although these are discrete skills they form part of a process. The researcher believes that it was wise to rename the 'Assessing' and to call it 'Evaluating'. The participants integrated the skill with the other five, rather than separating it from the process and focussing on marks as the researcher's experience believes the word 'assessing' would lead them to. The researcher sees great benefit in this nomenclature being used not only in research but also in classroom instruction.

#### **6.3.2 Noting particular merit of four sets of instruments**

A copy of each data instrument appears in Appendix 2. The researcher found that four of the instruments set themselves apart in terms of providing the richest data, and these instruments provided the richest evidence in this research:

- Comparative instruments, in which the participants commented on the basis of current experience and on reflection.
- Minute Papers and Journals in which the participants presented open comments about their reality as members of the research.
- Interviews that had a basic structure, and also allowed follow-up from previous instruments, and on-the-spot clarifications of points made.
- Research tasks that provided irrefutable evidence on the stage of the girls' competence in utilising information.

### **6.3.3 Recognising the on-going nature of the process**

Not surprisingly given the cognitive nature of the experience in the research group, the participants developed competence as utilisers of information at varying rates. The researcher believes that the research findings support the idea that the information literacy framework based on the six information skills is worth the consideration of all teachers in secondary schools. The gifted students proved to respond to the framework similarly to the mainstream and lower ability participants in earlier research. Coupled with this belief is the certainty that success in developing information literacy depends on the process not being a 'one-off' experience, but rather an on-going one. This finding is particularly significant because of the varying rates at which students develop competence in using the information skills. Despite the reason for this not being a principal aim of this research therefore not investigated, there is strong evidence to suggest confidently that teachers not be disheartened at these individual differences, and that they be mindful that they are dealing with a process of change in the way of working, not with raw content.

## **6.4 RECOMMENDATIONS ARISING FROM THE RESEARCH**

The research was longitudinal, and as shown in Table 3.6, it involved the participants applying a concentrated approach to the information literacy framework over time. Compelling issues arise from the research. The particular framework of learning already has been shown to facilitate the learning of mainstream and lower ability groups at the secondary level of education. The current research shows that the particular framework also facilitates the learning of gifted students. The research strongly indicates that

were an information literacy framework of learning, incorporating information skills, used consistently in all classrooms, then students of all ability levels would benefit substantially. For the researcher, this reality and the research as it was conducted and reported in this thesis underpin the following five recommendations.

#### **6.4.1 Recommendation 1: Curriculum design**

The language and the expectations of Board of Studies curriculum documents that govern the local curriculum in schools in NSW presuppose more of skills development in students, and less of them absorbing content distributed by teachers. This is a significant shift in the documents, and it demands an equally significant shift in teaching styles. A logical extension of this recommendation is that at the local level, people responsible for curriculum areas incorporate skills development into locally used curriculum programs.

#### **6.4.2 Recommendation 2: Education into competence as utilisers of information**

The world in which the young people in school today will make their careers on completion of their studies demands that they are competent utilisers of information. Schools have spent considerable resources to provide information technology. Now focus should be directed to ensuring that the students have the information skills necessary to deal competently with information that they gather, whether it be from the new technology, or from paper-based resources.

#### **6.4.3 Recommendation 3: Employment of teachers**

Circumstances similar to those presented in Recommendation 1 could apply to the employment of all teachers. At universities in NSW undergraduates are required to complete satisfactorily courses in Information Skills. In the Inner West region of the Catholic Education Office— the region of the school at which the research was conducted— there is now an Audit requirement that there be evidence in the curriculum that information skilling (*sic*) be shown.

When school administrators are considering applicants for teaching positions in a school, an ability to teach within an information literacy framework, or a willingness to learn how to do so, desirably would be a relevant factor in the final appointment decision.

#### **6.4.4 Recommendation 4: Assistance for reluctant teachers**

Some staff balk at providing for the needs of gifted students. The reasons may vary, but often they are expressed in terms of not having the training to give these students special consideration in a classroom. The information literacy framework was not devised specifically for gifted and talented students. However the research clearly shows that using the framework is of benefit to these students, just as it is of benefit to mixed ability and slow-learner groups. Staff who are reluctant to address the needs of gifted and talented students in their classes overtly should find the framework a non-intrusive way of improving the learning of these students. The interaction that results in the classroom from teaching the framework in non-intrusive because it is a process that can be integrated into curriculum areas.

#### **6.4.5 Recommendation 5: Implications of classroom experience for lifelong learning**

The research presents the challenge that it is inequitable to allow in schools only teaching styles that are mono-directional and content-focussed. Classrooms need to have variety to ensure that students develop the skills needed to contribute effectively in an era that requires them to be competent users of information. Such classroom experience will allow the students to develop as learners in the way all groups are able to within an information literacy framework.

#### **6.4.6 Recommendation 6: Professional development**

The research provides sound evidence to support the idea that all ability groups within a class will benefit from this particular framework when it is used continually. The results from this research should provide a direction for administrators of teacher education programs, schools and systems of schools planning preservice and inservice opportunities.

#### **6.4.7 Recommendation 7: Duty of care, equity, and litigation**

The research raises matters of duty of care and equity. It demonstrates that there is a learning framework available that facilitates the development of potential of gifted students as well as had been previously demonstrated for

mainstream and lower ability students. Indeed, in a society that is increasingly litigious schools might find themselves at fault in regard to these two matters.

## **6.5 FUTURE DIRECTIONS FOR RESEARCH**

The research and its attendant recommendations open up a number of possibilities for further research.

### **6.5.1 The Hawthorne effect**

The Hawthorne experiment showed that the very fact that a person knows she is part of a research study may cause behavioural changes. Further research could investigate - under necessarily different research conditions - whether something other than the mediation factor of the current research brought about the observations presented in the findings.

### **6.5.2 Impact of the framework on boys**

Recently concerns have been raised in NSW about the suitability of the current education scene for boys. This concern might be informed by research into boys' competence as utilisers of information, whether those boys be gifted, experiencing learning difficulties, or considered overall in a mixed ability group.

### **6.5.3 Impact on discrete groups of students in primary school**

Anecdotal evidence suggests that the information literacy framework suits the learning of primary students in NSW. The six information skills are taught in some primary schools as part of the curriculum. Worthwhile knowledge could be gained from research into mixed ability, slow learners and gifted groups in these schools.

### **6.5.4 Maturation**

The findings of the current research show that experience with and developing as learners in an information literacy framework has impacted favourably on the group under review. As indicated in Section 3.3.2.3 the research did not attempt to investigate maturation. But what if an unknown factor such as maturation was indeed the reason for the improved learning, and not an information literacy framework after all? There is room for research in this area.

### **6.5.5 Cross - curricular research**

The current research context was *Society and Culture*, and the reasons for this choice are presented in Section 1.3.2. An opening for research here would be investigating the impact of the information literacy framework when the research context was another curriculum area.

### **6.5.6 Implications for teaching methodology**

The research raises questions that, if investigated, undoubtedly would inform the education and teacher education fields. What would encourage them to trial the information literacy as a framework to be implemented in their classes? How can the emphasis on content-driven methodology be informed with reference to the information literacy framework? Would there be benefit to education if teacher education programs that currently include a unit on information skills were reconfigured?

### **6.5.7 School resources issues.**

The research opens up areas for investigations into matters related to school resources. Would a concentrated use of the information literacy framework in a school mean that funding of faculties might need to be changed? At the systemic level, would funding for schools using the framework intensively need to be adjusted to provide more resource opportunities, both on and off campus?

### **6.5.8 Methods of inservicing teachers**

The quick response to the research possibilities into methods of inservicing might be that it would be the same as for other inservicing: either offer the opportunity and wait for acceptances, or include the inservice as part of performance appraisal. Research into each of these could test the likelihood of commitment to a framework because of its inherent worth, rather than general interest or self-interest.



### **6.5.9 Extent of the transfer of skills to working life.**

The longitudinal nature of the current research allowed for research (stage 3) exploration, but this was not the main focus. Further longitudinal research into the worth of the framework well into the employment period of the former participants would be beneficial to the vocational side of education.

### **6.5.10 The framework becoming part of life throughout primary and secondary school.**

What if students experienced this particular information literacy framework from Year 1 to Year 12? The researcher believes that such a longitudinal study would provide exciting information for educators -and political leaders who determine funding for education – for a long time to come.

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University of Technology, Sydney

21 February, 1996

Professor Christine Deer  
 School of Teacher Education  
 Kuring-gai Campus, UTS

Dear Chris

**Re: HREC 96/10 - DEER, Prof Christine, BARNSELY, Dr Graham, TODD, Mr Michael (for LAMB, Ms Elizabeth - PhD student) - "Information literacy and the learning of secondary gifted & talented students"**

The UTS Human Research Ethics Committee considered your request for approval of the above project at its meeting of 13 February 1996. The Committee approved the application, subject to the following provisos:

- i. that the consent form be countersigned by each child's parent or guardian,
- ii. that the consent form contain the information that participants are free to withdraw from the study at any time, without giving a reason and without adversely affecting their academic progress.

The approval number is UTS HREC 96/10A. Would you please forward a copy of the revised consent form to Susanna Davis at the Research Office.

The NHMRC guidelines require us to obtain a report about the progress of the research, and in particular about any changes to the research which may have ethical implications. The attached report form must be completed at least annually, and at the end of the project (if it takes more than a year), or in the event of any changes to the research as referred to above, in which case the Research Ethics Officer should be contacted beforehand.

I also refer you to the AVCC guidelines relating to the storage of data. The University requires that, wherever possible, original research data be stored in the academic unit in which they were generated. Should you submit any manuscript for publication, you will need to complete the attached *Statement of Authorship, Location of Data, Conflict of Interest* form, which should be retained in the School or Faculty, in a place determined by the Dean.

Please complete the attached (green) report form at the appropriate time and return to Susanna Davis, Research Ethics Officer, Research Office, Broadway. In the meantime, if you have any queries please do not hesitate to contact either Susanna or myself.

Yours sincerely,

Production Note:  
 Signature removed prior to publication.

Associate Professor Ashley Craig  
 Chair  
 UTS Human Research Ethics Committee

Office City campus, No. 1 Broadway, Sydney NSW  
 Campuses Balmain, City, Kuring-gai, St Leonards

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August 3, 1995

Dear Parent,

As you would know from the letter you have received from Sister Fidelis, your daughter has been offered a place in the research I am doing as the basis of my doctoral studies at the University of Technology, Sydney.

This research investigates the impact of an information literacy framework that is based in six information skills, on the learning of gifted secondary students. Your daughter has been selected as a result of consultation I have had with her teachers and with Sister Fidelis, and with a specific set of characteristics of giftedness that has been used by the Catholic Education Office in their gifted education programs.

Please read through the consent for that appears below, and the attached information sheet. If you and your daughter agree that she will be participant in the research, then please enter your signatures, and have your daughter return the form to the College within the next couple of days.

Yours Faithfully,

---

 Date: .....

I, ....., agree to participate in the research conducted by Miss Lamb into an information literacy framework and gifted students' learning.

I understand that the research will be carried out while I am studying *Society and Culture* - Preliminary Year- at meetings held out of school hours.

I understand I will not be asked to reveal anything I do not want to reveal, and that I can leave the research group at any time, without giving a reason, and at no risk to my academic progress in my other subjects at the College.

I am aware that if I have any concerns about the research group, I can contact Miss Lamb or one of her supervisors from UTS: Professor Deer, Dr. Barnsley or Mr Todd. I understand that research data gathered in the study will be published in a thesis, and might be published appropriately elsewhere.

Girl's signature: ..... Parent's Signature: ..... Date: .....

**INFORMATION SHEET CONCERNING THE RESEARCH GROUP,  
FOR PARENTS AND GIRLS**

This research is part of my PhD studies at the University of Sydney, and it is exploring whether or not an information literacy framework of learning based on six information skills, has an impact on the learning of gifted secondary school students .

The study is a longitudinal one, with the bulk of it happening during the girls' Preliminary Year. The context for the research is *Society and Culture*, a subject not offered at the College as an elective. After the research in the Preliminary Year is completed, I am prepared to take any of the girls through to the HSCE in that subject, if that is her choice.

The data instruments used in the research primarily will be responses that the girls would make in their study of *Society and Culture* . Instruments that do not fall into this category will be complementary to the subject.

We will meet formally on Friday mornings out of school hours twice a month to begin with, on the understanding that if more frequent meetings are required, then they will be arranged. In between meetings the girls will work on directed exercises and on independent studies, and each girl will keep a journal. In this journal she is required to keep a log of the time spent on the subject, and to make comments on her progress. These journals are data instruments for the research.

I am happy to address any questions or concerns you might have now or during the research.

This research has been approved by Sister Fidelis, and it has her full support.

Yours Sincerely

**11 SOCIETY AND CULTURE**

Your task is to provide information and present it at a community meeting.

The topic is: *Becoming an adult member of a group in a culture different from your own*

**WRITE ALL OF THE STEPS YOU WOULD MOVE THROUGH TO RESEARCH THIS TOPIC, RIGHT UP TO PRESENTING IT TO THE GROUP**

Name: .....

Date: .....

### PROFILES OF SELF AND GROUP

IN THE COLUMN RANK UP TO SIX STATEMENTS THAT MOST STRONGLY APPLY TO THAT PERSON

- Easily understands new ideas and concepts
- Is interested in learning new methods and techniques
- Enjoys reading
- Communicates effectively
- Uses appropriate material, tools and processes at a high level
- Follows instructions with enthusiasm
- Is a leader in practical activities
- Generates a large number of ideas or solutions to problems or questions, and often offers unusual, unique and clever responses
- Is a high risk-taker, is adventuresome and speculative
- Displays a keen sense of humour, and sees humour in situations that may not appear too humorous to others.

C	D	G	V	S	L	H

**SCHOOL LIFE QUESTIONNAIRE**

Mark each item according to the following: 1: strongly disagree 2: disagree 3: agree 4: strongly disagree

MY SCHOOL IS A PLACE WHERE

01	TEACHERS TREAT ME FAIRLY IN CLASS				
02	I FEEL PROUD TO BE A STUDENT				
03	THE THINGS I LEARN ARE IMPORTANT TO ME				
04	PEOPLE LOOK UP TO ME				
05	I FEEL DEPRESSED				
06	I FIND IT EASY TO GET TO KNOW OTHER PEOPLE				
07	I ACHIEVE A STANDARD IN MY WORK THAT I CONSIDER SATISFACTORY				
08	I LIKE LEARNING				
09	I GET ENJOYMENT FROM BEING THERE				
10	OTHER STUDENTS ARE VERY FRIENDLY				
11	I FEEL RESTLESS				
12	TEACHERS GIVE ME THE MARKS I DESERVE				
13	I HAVE ACQUIRED SKILLS THAT WILL BE OF USE TO ME WHEN I LEAVE				
14	I ALWAYS ACHIEVE A SATISFACTORY STANDARD IN MY WORK				
15	OTHER PEOPLE CARE WHAT I THINK				
16	TEACHERS TAKE A PERSONAL INTEREST IN HALPING ME WITH MY				
17	PEOPLE TRUST ME				
18	MIXING WITH OTHER PEOPLE HAS HELPED ME UNDERSTAND MYSELF				
19	I FEEL LONELY				
20	THINGS THAT I LEARN WILL HELP ME IN ADULT LIFE				
21	I KNOW PEOPLE THINK A LOT OF ME				
22	I KNOW HOW TO COPE WITH THE WORK				
23	TEACHERS HELP ME TO DO MY BEST				
24	I GET UPSET				
25	I AM GIVEN A CHANCE TO DO WORK THAT REALLY INTERESTS ME				
26	I KNOW WELL ENOUGH TO BE SUCCESSFUL				
27	THE THINGS I AM TAUGHT ARE WORTHWHILE LEARNING				
28	I FEEL IMPORTANT				
29	TEACHERS ARE FAIR AND JUST				
30	I AM A SUCCESS AS A STUDENT				
31	I REALLY LIKE TO GO TO SCHOOL EACH DAY				
32	I LEARN TO GET ALONG WITH PEOPLE				
33	I FEEL WORRIED				
34	THE WORK I DO IS A GOOD PREPARATION FOR MY FUTURE				
35	I FEEL PROUD OF MYSELF				
36	OTHER STUDENTS ACCEPT ME AS I AM				
37	I HAVE LEARNED TO WORK HARD				
38	I GET ON WELL WITH STUDENTS				
39	I FIND THAT LEARNING IS A LOT OF FUN				
40	TEACHERS LISTEN TO WHAT I SAY				



**INFORMATION SKILLS**

1: very poorly 2: poorly 3: undecided 4: well 5: well

<b>STUDENTS SHOULD BE ABLE TO</b>		<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>COMMENTS</b>
<b>DEFINE</b>	Relate the task to their learning						
	Clarify the meanings of the words of the task						
	Identify and interpret key words and ideas in the task						
	State the task in their own words						
	Work out the parts of the task						
<b>LOCATE</b>	Recall relevant information and skills from previous experience						
	Recognise strengths and limitations of current knowledge and decide whether additional information / skills are needed						
	Limit investigations to a manageable size						
	Identify possible sources ( people, organisations, places, print/non-print materials, objects)						
	Recognise the relative worth of sources						
	Select the best of the sources to use						
	Locate sources and appropriate equipment						
	Use appropriate equipment						
	Record details of sources that are used						

SELECT	Begin to assess the usefulness of each source						
	Use key words to locate potentially useful information within sources						
	Skim each source for information						
	Identify information that links with the task						
	Assess and respect privacy and ownership of information						
	Decide what to do about deficiencies within information						
	Decide whether information is closer to fact or opinion						
	Express the credibility of sources that express opinion						
	Identify inconsistency and bias in sources						
	Devise a system for recording their own information						
	Summarise information						
Record quotations and sources of information							
ORGANISE	Review the purpose of the task						
	Combine the information into larger units of information						
	Combine the units of information into a structure						
	Review the structure in light of the purpose of the task						
	Adjust the structure where necessary						

PRESENT	Identify the requirements of different forms of presentation						
	Consider the nature of the audience for presentation						
	Select a form and style of presentation appropriate to the audience and the content of the material						
	Prepare the presentation						
	Present the information						
EVALUATE	Review the extent to which the end products meet the requirements of the task						
	Assess the use of this process in completing the task						
	Examine the strengths and weaknesses in specific information skills						
	Set personal goals for the future development of information skills						

11 SAC

Name/code:

.....

MINUTE PAPER

11 SAC :- February 7, 1996  
**RECAP AFTER THE HOLIDAYS**

**A. THE 'ARE-WE-ALL-ON-THE-SAME-TRAM' EXERCISE**

Were I in your shoes I would say the following. On the line next to each statement, indicate the degree to which my statement coincides with your opinion.

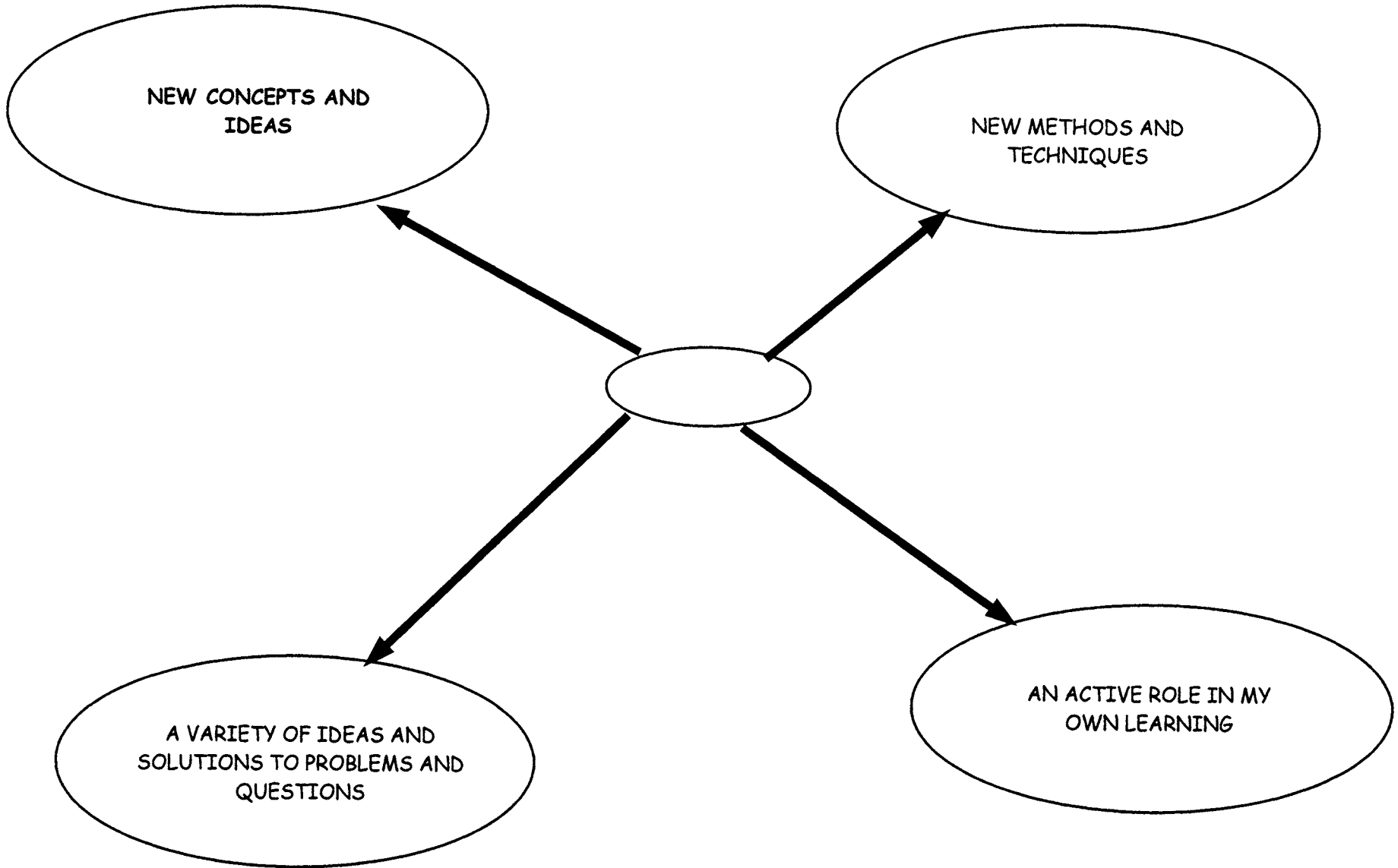
1. I am doing Preliminary Year SAC  
 +.....-
2. At the end of the Preliminary Year I will have the option  
 to continue SAC as an HSC subject.  
 +.....-
3. SAC involves me as a researcher.  
 +.....-
4. My being a researcher requires that I have research skills  
 +.....-
5. The Information Skills have the potential to help me as  
 a researcher  
 +.....-
6. The nature of the SAC classes so far would be useful  
 had they been taught in other subjects of mine  
 +.....-

**NOW PROVIDE SOME OTHER STATEMENTS ON WHERE YOU  
 PERCEIVE WE ARE AT.**

- 7.
- 8.
- 9.
- 10.

**B. PLANNING CONSIDERATIONS FOR THE NEXT TWO  
 TERMS**

1. Collection of data by the teacher
  2. Course related research work of the girls
- Other ( please write here things you hope will happen. These will be included as far as possible)



## CHECKLIST AS A USER OF INFORMATION

APPENDIX 2.8

**SECTION A: AT THE END OF THE STATEMENT MARK THE APPROPRIATE SPACE. (The fifth column is for 'This does not apply in this particular task')**

In doing this task I was able to	+VE			-VE	NA
• clarify the meanings of the words in the task					
• recognise the relative worth of sources					
• devise a system for the information I gathered					
• skim each source for information					
• adjust the structure of the presentation when necessary					
• identify and clarify the meanings of the words in the task					
• assess the credibility of sources that expressed opinions					
• review the extent to which the end -product met the requirements of the task					
• locate sources and appropriate equipment					
• select an appropriate form and style of presentation					
• identify inconsistency and bias in sources					
• recall relevant information from previous experience					
• assess my use of the I.S. In completing the task					
• identify information that had links with the task					
• recognise the strengths/weaknesses of my current knowledge and decide whether additional information was needed					
• identify my strengths and weaknesses in specific I.S.					
• state the task in my own words					
• begin to assess the usefulness of each source I used					
• identify increases in knowledge					
• select the best of the sources to use					
• review the purpose of the task					
• identify possible sources of information					
• combine the units of information into a structure					
• record details of information I used					
• record quotations and sources of information					
• work out parts of the task					
• decide what to do about deficiencies in the information assess and respect the privacy of the information					
• combine the information into larger units of information					
• limit the investigation to a manageable size					
• summarise information					
• review the structure in the light of the purpose of the task					
• decide whether the information was closer to fact or opinion					
• set personal goals for the further development of I.S.					

PROJECT PLANNING WORKSHEET  
WHAT HAVE I ACHIEVED?

Name: .....

Date:

.....  
What things have you learned about in doing this project?.

---

---

---

---

---

Have you learned any skills that you didn't have before?

---

---

What grade do you think this deserves? Why?

---

---

---

What could you improve, and how?

---

---

---

---

---

How can you use what you have learned , in other areas?

---

---

---

---

---

---



WHAT HAVE I DONE SO FAR?

WHEN WILL I MOVE TO THE REMAINING STAGES?

WHAT DETERMINES MY TIMING?

### WAYS OF PRESENTING INFORMATION

WAY	STRENGTHS FOR THIS EXERCISE	LIMITATIONS FOR THIS EXERCISE	WHEN LIKELY TO USE

SECTION A: AT THE END OF THE STATEMENT MARK THE APPROPRIATE SPACE. (The fifth column is for 'This does not apply in this particular task')

In doing this task I was able to	-VE			-VE	NA
• clarify the meanings of the words in the task					
• recognise the relative worth of sources					
• devise a system for the information I gathered					
• skim each source for information					
• adjust the structure of the presentation when necessary					
• identify and clarify the meanings of the words in the task					
• assess the credibility of sources that expressed opinions					
• review the extent to which the end -product met the requirements of the task					
• locate sources and appropriate equipment					
• select an appropriate form and style of presentation					
• identify inconsistency and bias in sources					
• recall relevant information from previous experience					
• assess my use of the I.S. In completing the task					
• identify information that had links with the task					
• recognise the strengths/weaknesses of my current knowledge and decide whether additional information was needed					
• identify my strengths and weaknesses in specific I.S.					
• state the task in my own words					
• begin to assess the usefulness of each source I used					
• identify increases in knowledge					
• select the best of the sources to use					
• review the purpose of the task					
• identify possible sources of information					
• combine the units of information into a structure					
• record details of information I used					
• record quotations and sources of information					
• work out parts of the task					
• decide what to do about deficiencies in the information assess and respect the privacy of the information					
• combine the information into larger units of information					
• limit the investigation to a manageable size					
• summarise information					
• review the structure in the light of the purpose of the task					
• decide whether the information was closer to fact or opinion					
• set personal goals for the further development of I.S.					

SECTION B. IN THE LH BOX NOTE SKILLS YOU USED IN THIS RE-SEARCH TASK, AND IN THE RH BOX NOTE ADDITIONAL ONES YOU NOW THINK YOU COULD HAVE USED.

--	--

Name: .....

Name: .....

Date: .....

**PROFILES OF SELF AND GROUP**

**IN THE COLUMN RANK UP TO SIX STATEMENTS THAT MOST STRONGLY APPLY TO THAT PERSON**

- Easily understands new ideas and concepts
- Is interested in learning new methods and techniques
- Enjoys reading
- Communicates effectively
- Uses appropriate material, tools and processes at a high level
- Follows instructions with enthusiasm
- Is a leader in practical activities
- Generates a large number of ideas or solutions to problems or questions, and often offers unusual, unique and clever responses
- Is a high risk-taker, is adventuresome and speculative
- Displays a keen sense of humour, and sees humour in situations that may not appear too humorous to others.

C	D	G	V	S	L	H

Name: .....

Date: .....

**COMPARATIVE ANALYSIS OF  
YOUR FIRST TWO PLANNING EXERCISES**

In what ways is what you wrote in the second planning exercise similar from what you wrote in the first one? Account for these similarities.

In what ways is what you wrote in the second planning exercise different from what you wrote in the first one? Account for these differences.

What grade ( A to E) do you think your response warrants?? Why?

How can what you learned in doing this response, to other subjects

**11 SOCIETY AND CULTURE**

Your task is to provide information and present it at a community meeting.

The topic is: *Adolescents are complete individuals who are adjusting to profound changes*

**WRITE ALL OF THE STEPS YOU WOULD MOVE THROUGH TO RESEARCH THIS TOPIC, RIGHT UP TO PRESENTING IT TO THE GROUP**

PROJECT PLANNING WORKSHEET  
WHAT DO I HAVE TO DO?

Name:.....

Date: .....

Subject :

What is the topic?

How much time do you have?

What particular aspects are you interested in?

Do you have time to cover them all? If not, make a selection of the most interesting aspects.

What do you know about already? Give a brief outline.





PROJECT PLANNING WORKSHEET  
WHERE CAN I FIND THE INFORMATION I NEED

Name: .....

Date: .....

Make a list of possible sources .

Which sources should you use first?

Have you found enough sources to help you answer your initial question? If not, do you think you should change your topic?

PROJECT PLANNING WORKSHEET  
WHERE CAN I FIND THE INFORMATION I NEED

Name: .....

Date: .....

Make a list of possible sources .

Which sources should you use first?

Have you found enough sources to help you answer your initial question? If not, do you think you should change your topic?

PROJECT PLANNING WORKSHEET  
HOW DO I CHOOSE MY INFORMATION?

Name: .....

Date:

.....  
What different types of material are available?

It's a waste of time to read through every source if it's not relevant to your project. There are various clues for you to save time.

How do you find out if the material is reliable?

How do you find out if it is up-to-date?

How do you find out if it is too simple or too complicated?

How do you find out if the source contains what you are looking for?

Have you found enough information. If not, should you change your topic?

PROJECT PLANNING WORKSHEET  
HOW CAN I USE THESE RESOURCES?

Name: .....  
.....

Date:

What will help you find what you are looking for?

Will you read all of the material in the resources?

PROJECT PLANNING WORKSHEET  
WHAT SHOULD I KEEP A RECORD OF?

Name: .....  
.....

Date:

Look back at your questions on the first of these sheets. Which things are the most important?

How will you record the information?

written notes	_____
video tape	_____
audio tape	_____
floppy	_____
photocopy	_____
other methods	_____

How will you record your sources?

## 11 SOCIETY AND CULTURE

Your task is to provide information and present it at a community meeting.

The topic is:

*'The whole is equal to the sum of the parts.'*  
With this as a title consider the issues of Power and Authority in society.

**WRITE ALL OF THE STEPS YOU WOULD MOVE THROUGH TO RE-SEARCH THIS TOPIC, RIGHT UP TO PRESENTING IT TO THE GROUP**





- What grade (A to E) do you think your task deserves, and why?

How can you use what you have learned in doing this task, in other subjects

Name: .....

Date:

**COMPARATIVE ANALYSIS OF  
YOUR FIRST AND YOUR THIRD PLANNING EXERCISES**

In what ways is what you wrote in the third planning exercise similar from what you wrote in the first one? Account for these similarities.

In what ways is what you wrote in the third planning exercise different from what you wrote in the first one? Account for these differences.

Comment on any differences in the way you did tasks in other subjects at the start of the Preliminary Year, and the way you are approaching and doing current ones. Account for these differences. [Extend your answer overleaf]

Name: .....  
.....

Date:

**PERSONAL PROFILE**

Date of birth: ..... Place of birth:  
.....

List siblings and self, and ages in years:

Interests / hobbies, and reasons for preference:

Career ambitions:

Plans for the next six years:

If asked what you are like, what would a close friend say about you?

What teaching style do you find most useful for your learning?

What teaching style do you find least useful for your learning?

What do you think is the aim of school teaching?

Name: .....

Date:

.....  
**COMPARATIVE COMMENTS ON SELF AS AN INFORMATION  
USER**

This data instrument asks you to comment on points of similarities and differences between your work now and six months ago.

Comment on any similarities between the way you approached and did the first *SAC* assignment, and the way you are approaching and doing the current one

Account for these similarities

Comment on any differences between the way you approached and did the first *SAC* assignment, and the way you are approaching and doing the current one

Account for these differences.

Comment on any similarities between the way you approached and did assignments in other subjects at the start of the Preliminary Year, and the way you are approaching and doing current ones.

Account for these similarities

Comment on any differences between the way you approached and did assignments in other subjects at the start of the Preliminary Year, and the way you are approaching and doing current ones.

Account for these differences.



Name: .....

Date: .....

**Research (Stage 3)**

**RECOGNISE THIS? PLEASE COMPLETE THE TABLE BY**

in column 1 copying the ranking from the buff sheet [2 GIF November 3, 1995]

in column 2 copying the ranking from the yellow sheet [21 GIF April 1, 1996]

in column 3 copying the ranking from the blue sheet [33 GIF May 17, 1995]

in column 4 identifying up to six characteristics that apply to you and ranking them with '1' as the highest

CHARACTERISTICS OF GIFTEDNESS	1	2	3	4
• Easily understands new ideas and concepts				
• Is interested in learning new methods and techniques				
• Enjoys reading				
• Communicates effectively				
• Uses appropriate material, tools and processes at a high level				
• Follows instructions with enthusiasm				
• Is a leader in practical activities				
• Generates a large number of ideas or solutions to problems or questions, and often offers unusual, unique and clever responses				
• Is a high risk-taker, is adventuresome and speculative				
• Displays a keen sense of humour, and sees humour in situations that may not appear too humorous to others.				

- Consider columns 1 and 4. Where possible, account for any differences.

- Consider column 4 and the last one you did in the group. Where possible account for any differences.

Name: ..... Date:.....

RESEARCH (STAGE 3) READING OF DRAFT

The following are factually incorrect:

I disagree with the following interpretations and I give reasons for my disagreement:

General comments:

FIRST VIDEO-TAPED INTERVIEW

Name: .....

Date: .....

FOCUS: Impact of a particular information literacy framework on the learning of a group of gifted secondary girls

---

- A. As you know, my research is looking at Information Skills and the gifted student. Can you tell me what those skills are?
- B. Have they helped you in your learning? (If so, how?)  
What have they enabled you to do?
- C (i) In your *SAC* work, what has working with the *defining* I.S. enabled you to do?  
Why do you say this?  
How do you know?
- C (ii) In your *SAC* work, what has working with the *locating* I.S. enabled you to do?  
Why do you say this?  
How do you know?
- C (iii) In your *SAC* work, what has working with the *selecting* I.S. enabled you to do?  
Why do you say this?  
How do you know?
- C (iv) In your *SAC* work, what has working with the *organising* I.S. enabled you to do?  
Why do you say this?  
How do you know?
- C (v) In your *SAC* work, what has working with *presenting* I.S. enabled you to do?  
Why do you say this?  
How do you know?
- C (vi) In your *SAC* work, what has working with the *evaluating* I.S. enabled you to do?  
Why do you say this?  
How do you know?

- D (i) Beyond your *SAC* work, what has working with the *defining* I.S. enabled you to do?  
Why do you say this?  
How do you know?
- D (ii) Beyond your *SAC* work, what has working with the *locating* I.S. enabled you to do?  
Why do you say this?  
How do you know?
- D (iii) Beyond your *SAC* work, what has working with the *selecting* I.S. enabled you to do?  
Why do you say this?  
How do you know?
- D (iv) Beyond your *SAC* work, what has working with the *organising* I.S. enabled you to do?  
Why do you say this?  
How do you know?
- D (v) Beyond your *SAC* work, what has working with *presenting* I.S. enabled you to do?  
Why do you say this?  
How do you know?
- D (vi) Beyond your *SAC* work, what has working with the *evaluating* I.S. enabled you to do?  
Why do you say this?  
How do you know?
- 

E: OTHER MATTERS

SECOND VIDEO-TAPED INTERVIEW

Name: .....  
.....

Date:

THE FOLLOWING QUESTIONS ARE SPRINGBOARDS FOR EXTENDED DISCUSSION, AND WILL BE ASKED OF EACH GIRL

- To focus this interview, would you tell me what my research is about?
- How do you feel about having been chosen to be in this research group because you were identified as being 'gifted' ?
- Do you see yourself as being gifted?
- How do you define gifted?

(PICK UP POINTS FOR ELABORATION AS INDICATED IN TRANSCRIPT OF FIRST INTERVIEW.)

- How does the skill of *defining* help you in your learning?

What evidence do you have for saying that?

What are the consequences of developing your use of the *defining* skill?

How might you use the *defining* skill in the future?

- How does the skill of *locating* help you in your learning?

What evidence do you have for saying that?

What are the consequences of developing your use of the *locating* skill?

How might you use the *locating* skill in the future?

- How does the skill of *selecting* help you in your learning?

What evidence do you have for saying that?

What are the consequences of developing your use of the *selecting* skill?

- How does the skill of *organising* help you in your learning?  
  
What evidence do you have for saying that?  
  
What are the consequences of developing your use of the *organising* skill?  
  
How might you use the *organising* skill in the future?
- How does the skill of *presenting* help you in your learning?  
  
What evidence do you have for saying that?  
  
What are the consequences of developing your use of *presenting* skill?  
  
How might you use the *presenting* skill in the future?
- How does the skill of *evaluating* help you in your learning?  
  
What evidence do you have for saying that?  
  
What are the consequences of developing your use of the *evaluating* skill?  
  
How might you use the *evaluating* skill in the future?
- **ANY OTHER MATTERS.**

THIRD VIDEO-TAPED INTERVIEW

Name: .....

Date:

.....

The first set of questions—not on this sheet- is different for each girl, picking up on thoughts from the first two interviews and from researcher observation throughout the course of the research.

The second set of questions is the same as for the second interview.

- To focus this interview, would you tell me what my research is about?
- How do you feel about having been chosen to be in this research group because you were identified as being 'gifted' ?
- Do you see yourself as being gifted?
- How do you define gifted?

(PICK UP POINTS FOR ELABORATION AS INDICATED INTRANSCRIPT OF FIRST INTERVIEW.)

- How does the skill of *defining* help you in your learning?

What evidence do you have for saying that?

What are the consequences of developing your use of the *defining* skill?

How might you use the *defining* skill in the future?

- How does the skill of *locating* help you in your learning?

What evidence do you have for saying that?

What are the consequences of developing your use of the *locating* skill?

How might you use the *locating* skill in the future?

- How does the skill of *selecting* help you in your learning?

What evidence do you have for saying that?

- How does the skill of *organising* help you in your learning?

What evidence do you have for saying that?

What are the consequences of developing your use of the *organising* skill?

How might you use the *organising* skill in the future?

- How does the skill of *presenting* help you in your learning?

What evidence do you have for saying that?

What are the consequences of developing your use of *presenting* skill?

How might you use the *presenting* skill in the future?

- How does the skill of *evaluating* help you in your learning?

What evidence do you have for saying that?

What are the consequences of developing your use of the *evaluating* skill?

How might you use the *evaluating* skill in the future?

#### ANY OTHER MATTERS.

The third set of questions are additional ones.

In the second interview you said you use IS in ..... What effect did/ has that had?

How has your learning changed since we began our meetings?

What do you think is the reason for this?

Since our meetings stopped, have you given any thought to the fact you had been invited to join because you were identified as gifted?

Since our meetings stopped, how have you benefitted from the work we did in *SAC*? Will you take this further? How?



## APPENDIX 3.1

### ORDER OF DATA INSTRUMENTS

CODE	DATE	INSTRUMENT
01 IL	November 1995	Planning sheet 1
02 GIF	November 1995	Profile (self)
03 GEN	November 1995	School Life Survey
04 IL	November 1995	Personal profile as a user of information
05 IL	November 1995	Minute paper 1
06 GEN	February 1996	Recap after Christmas holidays
07 GIF	February 1996	Concept map on self as gifted learner
08 IL	February 1996	Minute paper 2
09 IL -	February 1996	Checklist as a user of information
10 IL	February 1996	Minute paper 3
11 IL	February 1996	'What have I achieved?' sheet
12 IL	March 1996	Minute paper 4
13 IL	March 1996	'What have I done, and when?' sheet 1
14 IL	March 1996	Minute paper 5
15 IL	March 1996	Course specific 'Presenting' sheet 1
16 IL	March 1996	Course specific presenting sheet 2
17 IL	March 1996	Minute paper 6
18 IL	April 1996	Interview 1
19 IL	April 1996	Self-evaluation of research task 1
20 IL	April 1996	Research task 1
21 GIF	April 1996	Profile (self and group)
22 IL	April 1996	Comparative analysis of planning sheets 1 and 2
23 IL	April 1996	Planning sheet 2
24 IL	April 1996	Minute paper 7
25 IL - 30 IL	May 96	PIP sheets 1-6
31 IL	May 1996	'What have I done, and when?' sheet 2
32 IL	May 1996	Planning sheet 3
33 GIF	May 1996	Profile ( self and group)
34 IL	May 1996	Self-evaluation of research task 2
35 IL	May 1996	Research task 2
36 IL	May 1996	Comparative analysis of planning sheets 1 and 3
37 INT	May 1996	Interview 2
38 IL	May 1996	Minute paper 8
39 IL	May 1996	'What have I done, and when?' sheet 3

40 IL	June 1996	Minute paper 9
41 GEN	June 1996	Personal details profile
42 IL	June 1996	Comparative comment on self as user of information
43 IL	June 1996	Minute paper 10
44 IL	June 1996	Minute paper 11
45 REP	Various	Reports from college
46 GEN	June 1996	Repeat of School Life Survey
47 IL	July 1996	Research task 3
48 INT	July 1996	Interview
49 IL	September 1997	Post research - 1
50 IL	November 1999	Post research - 2

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